

*SECTION 206-09: Anti-Lock Brake System (ABS)  
and Stability Control*

*2014 Explorer Workshop  
Manual*

*DIAGNOSIS AND TESTING*

Procedure revision date:  
06/03/2013

## Anti-Lock Brake System (ABS) and Stability Control

### DTC Chart: ABS Module

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. [REFER to Section 100-00, Diagnostic Methods](#) for information about these practices.

### DTC Chart: ABS Module

DTC	Description	Action
C0001:49	TCS Control Channel A Valve 1: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0002:49	TCS Control Channel A Valve 2: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>

C0003:49	TCS Control Channel B Valve 1: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0004:49	TCS Control Channel B Valve 2: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0010:49	Left Front Inlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0011:49	Left Front Outlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p>

		If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new ABS module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .
C0014:49	Right Front Inlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new ABS module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0015:49	Right Front Outlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new ABS module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0018:49	Left Rear Inlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new ABS module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
C0019:49	Left Rear Outlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without</p>

		<p>adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
C001C:49	Right Rear Inlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u>. REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
C001D:49	Right Rear Outlet Control: Internal Electronic Failure	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module has failed internally. CLEAR the <u>DTCs</u>. REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
C0020:11	ABS Pump Motor Control: Circuit Short To Ground	<p>This <u>DTC</u> indicates that part of the <u>ABS</u> module and/or part of the <u>HCU</u> has failed internally. CLEAR the <u>DTCs</u>. TEST DRIVE the vehicle. REPEAT the self-test.</p> <p>If the <u>DTC</u> returns, INSTALL a new <u>ABS</u> module and new <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
C0020:12	ABS Pump Motor Control: Circuit Short To Battery	<p>This <u>DTC</u> indicates that part of the <u>HCU</u> has failed internally. CLEAR the <u>DTCs</u>. TEST DRIVE the vehicle. REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without</p>

		<p>adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the DTC returns on vehicles with adaptive cruise control, INSTALL a new ABS module and HCU. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
C0020:13	ABS Pump Motor Control: Circuit Open	REFER to Section 206-09, <a href="#">GO to Pinpoint Test V</a> .
C0020:71	ABS Pump Motor Control: Actuator Stuck	REFER to Section 206-09, <a href="#">GO to Pinpoint Test V</a> .
C0030:07	Left Front Tone Wheel: Mechanical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0031:01	Left Front Wheel Speed Sensor: General Electrical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AJ</a> .
C0031:19	Left Front Wheel Speed Sensor: Circuit Current Above Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AJ</a> .
C0031:29	Left Front Wheel Speed Sensor: Signal Invalid	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0031:2F	Left Front Wheel Speed Sensor: Signal Erratic	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0031:64	Left Front Wheel Speed Sensor: Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0033:07	Right Front Tone Wheel: Mechanical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0034:01	Right Front Wheel Speed Sensor: General Electrical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AJ</a> .
C0034:19	Right Front Wheel Speed Sensor: Circuit Current Above Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AJ</a> .
C0034:29	Right Front Wheel Speed Sensor: Signal Invalid	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0034:2F	Right Front Wheel Speed Sensor: Signal Erratic	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0034:64	Right Front Wheel Speed Sensor: Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .

C0036:07	Left Rear Tone Wheel: Mechanical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0037:01	Left Rear Wheel Speed Sensor: General Electrical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C0037:19	Left Rear Wheel Speed Sensor: Circuit Current Above Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C0037:29	Left Rear Wheel Speed Sensor: Signal Invalid	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0037:2F	Left Rear Wheel Speed Sensor: Signal Erratic	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0037:64	Left Rear Wheel Speed: Sensor Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C0037:95	Left Rear Wheel Speed Sensor: Incorrect Assembly	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C0039:07	Right Rear Tone Wheel: Mechanical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C003A:01	Right Rear Wheel Speed Sensor: General Electrical Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C003A:19	Right Rear Wheel Speed Sensor: Circuit Current Above Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C003A:29	Right Rear Wheel Speed Sensor: Signal Invalid	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C003A:2F	Right Rear Wheel Speed Sensor: Signal Erratic	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C003A:64	Right Rear Wheel Speed Sensor: Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test B</a> .
C003A:95	Right Rear Wheel Speed Sensor: Incorrect Assembly	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .
C0040:64	Brake Pedal Switch A: Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test E</a> .
C0044:28	Brake Pressure Sensor A: Signal Bias Level Out of Range/Zero Adjustment Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test C</a> .
C0044:49	Brake Pressure Sensor A: Internal Electronic Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test C</a> .

C0044:64	Brake Pressure Sensor A: Signal Plausibility Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test C</a> .
C0061:28	Lateral Acceleration Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	<p>This <u>DTC</u> indicates a concern with the lateral acceleration sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0061:64	Lateral Acceleration Sensor: Signal Plausibility Failure	<p>This <u>DTC</u> indicates a concern with the lateral acceleration sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0062:28	Longitudinal Acceleration Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	<p>This <u>DTC</u> indicates a concern with the longitudinal acceleration sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0062:64	Longitudinal Acceleration Sensor: Signal Plausibility Failure	<p>This <u>DTC</u> indicates a concern with the longitudinal acceleration sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0062:76	Longitudinal Acceleration Sensor: Wrong Mounting Position	<p>This <u>DTC</u> indicates a concern with the longitudinal acceleration sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>

C0063:28	Yaw Rate Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	<p>This <u>DTC</u> indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0063:64	Yaw Rate Sensor: Signal Plausibility Failure	<p>This <u>DTC</u> indicates a concern with the yaw rate sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0064:28	Roll Rate Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	<p>This <u>DTC</u> indicates a concern with the roll rate sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C0064:64	Roll Rate Sensor: Signal Plausibility Failure	<p>This <u>DTC</u> indicates a concern with the roll rate sensor which is integral to the <u>RCM</u>. RETRIEVE and RECORD all <u>RCM DTCs</u>. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a>.</p> <p>If no <u>RCM DTCs</u> are present, REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a>.</p>
C101A:1C	Vacuum Pressure Sensor: Voltage Out of Range	REFER to Section 206-09, <a href="#">GO to Pinpoint Test Q</a> .
C101A:2A	Vacuum Pressure Sensor: Stuck In Range	REFER to Section 206-09, <a href="#">GO to Pinpoint Test Q</a> .
C101A:2F	Vacuum Pressure Sensor: Erratic	REFER to Section 206-09, <a href="#">GO to Pinpoint Test Q</a> .
C101A:62	Vacuum Pressure Sensor: Compare Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test Q</a> .
C1B00:29	Steering Angle Sensor: Signal Invalid	For vehicles equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid data from the <u>SCCM</u> regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>SCCM</u> . <a href="#">REFER to</a>

		<p><a href="#">Section 211-05, Steering Column Switches</a></p> <p>.</p> <p>For vehicles not equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid data from the <u>PSCM</u> regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all <u>PSCM</u> <u>DTCs</u> as directed by Interactive Diagnostics. <a href="#">REFER to Section 211-00, Steering System</a>.</p>
C1B00:41	Steering Angle Sensor: General Checksum Failure	<p>For vehicles equipped with active park assist, the <u>ABS</u> module receives the steering wheel angle sensor information from the <u>SCCM</u> over the <u>HS-CAN</u>. CARRY OUT a self-test of the <u>SCCM</u>. <a href="#">REFER to Section 211-05, Steering Column Switches</a></p> <p>.</p> <p>For vehicles not equipped with active park assist, the <u>ABS</u> module receives the steering wheel angle sensor information from the <u>PSCM</u> over the <u>HS-CAN</u>. RETRIEVE and REPAIR all <u>PSCM</u> <u>DTCs</u> as directed by Interactive Diagnostics. <a href="#">REFER to Section 211-00, Steering System</a>.</p>
C1B00:64	Steering Angle Sensor: Signal Plausibility Failure	<p>For vehicles equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid data from the <u>SCCM</u> regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>SCCM</u>. <a href="#">REFER to Section 211-05, Steering Column Switches</a></p> <p>.</p> <p>For vehicles not equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid data from the <u>PSCM</u> regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all <u>PSCM</u> <u>DTCs</u> as directed by Interactive Diagnostics. <a href="#">REFER to Section 211-00, Steering System</a>.</p>
C1B00:86	Steering Angle Sensor: Signal Invalid	<p>For vehicles equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid data from the <u>SCCM</u> regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all non-</p>

		<p>network DTCs in the SCCM . <a href="#">REFER to Section 211-05, Steering Column Switches</a> .</p> <p>For vehicles not equipped with active park assist, this DTC sets when the ABS module receives invalid data from the PSCM regarding the steering wheel angle sensor input. RETRIEVE and REPAIR all PSCM DTCs as directed by Interactive Diagnostics. <a href="#">REFER to Section 211-00, Steering System</a> .</p>
C1B14:11	Sensor Supply Voltage A: Circuit Short to Ground	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AE</a> .
C1B14:12	Sensor Supply Voltage A: Circuit Short to Battery	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AE</a> .
C1B14:1C	Sensor Supply Voltage A: Circuit Voltage Out of Range	<p>This DTC indicates that part of the ABS module has failed internally. CLEAR the DTCs . REPEAT the self-test.</p> <p>If the DTC returns on vehicles without adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the DTC returns on vehicles with adaptive cruise control, INSTALL a new ABS module and HCU . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
U0001:88	High Speed CAN Communication: Bus Off	REFER to Section 418-00, <a href="#">GO to Pinpoint Test AD</a> .
U0100:00	Lost Communication With ECM/PCM A: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test F</a> .
U0104:00	Lost Communication With Cruise Control Module: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test G</a> .
U0131:00	Lost Communication With Power Steering Control Module: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test S</a> .
U0138:00	Lost Communication With All Terrain Control Module: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test T</a> .

U0140:00	Lost Communication With Body Control Module: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test I</a> .
U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	REFER to Section 206-09, <a href="#">GO to Pinpoint Test K</a> .
U0151:88	Lost Communication With Restraints Control Module: Bus Off	REFER to Section 206-09, <a href="#">GO to Pinpoint Test W</a> .
U0300:51	Internal Control Module Software Incompatibility: Not Programmed	<p>This <u>DTC</u> sets due to incomplete or improper flash programming procedures, or due to an internal failure of the module. If the module has just recently been reprogrammed, ATTEMPT to program the module using as-built data.</p> <p>If the <u>DTC</u> returns or if the <u>ABS</u> module has not been recently reprogrammed, CLEAR the <u>DTCs</u> . REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
U0401:68	Invalid Data Received From ECM/PCM A: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>PCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>PCM</u> . <a href="#">REFER to Section 303-14, Electronic Engine Controls</a> .
U0402:68	Invalid Data Received From TCM: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>TCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>TCM</u> . Refer to the appropriate section in Group <a href="#">307</a> for the procedure.

U0405:68	Invalid Data Received From Cruise Control Module: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>C-CM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>C-CM</u> . <a href="#">REFER to Section 419-03B, Cruise Control - Adaptive</a> .
U0420:68	Invalid Data Received From Power Steering Control Module: Event Information	For vehicles equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>SCCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>SCCM</u> . <a href="#">REFER to Section 211-05, Steering Column Switches</a> .  For vehicles not equipped with active park assist, this <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>PSCM</u> . RETRIEVE and REPAIR all <u>PSCM</u> <u>DTCs</u> as directed by Interactive Diagnostics. <a href="#">REFER to Section 211-00, Steering System</a> .
U0422:68	Invalid Data Received From Body Control Module: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>BCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>BCM</u> . <a href="#">REFER to Section 419-10, Multifunction Electronic Modules</a> .
U0439:68	Invalid Data Received From All Terrain Control Module: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>ATCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>ATCM</u> . <a href="#">REFER to Section 308-07A, Four Wheel Drive (4WD) Systems</a> .
U0452:68	Invalid Data Received From Restraints Control Module: Event Information	This <u>DTC</u> sets when the <u>ABS</u> module receives invalid network data from the <u>RCM</u> . RETRIEVE and REPAIR all non-network <u>DTCs</u> in the <u>RCM</u> . <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a> .
U2007:46	Valve(s): Calibration/Parameter Memory Failure	This <u>DTC</u> sets due to incomplete or incorrect module programming, or due to an internal failure of the module. If the module has just recently been reprogrammed, ATTEMPT to program the module using as-built data.  If the <u>DTC</u> returns on vehicles without

		<p>adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U2100:00	Initial Configuration Not Complete: No Sub Type Information	<p>CHECK the service history for recent service actions related to the <u>ABS</u>. This <u>DTC</u> sets due to incomplete or improper <u>PMI</u> procedures.</p> <p>If there have been recent service actions with this module, REPEAT the <u>PMI</u> using as-built data.</p> <p>If there have been no recent service actions and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If there have been no recent service actions and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U2100:41	Initial Configuration Not Complete: General Checksum Failure	<p>CHECK the service history for recent service actions related to the <u>ABS</u>. This <u>DTC</u> sets due to incomplete or improper <u>PMI</u> procedures.</p> <p>If there have been recent service actions with this module, REPEAT the <u>PMI</u> using as-built data.</p> <p>If there have been no recent service actions and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If there have been no recent service actions and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>

U2100:54	Initial Configuration Not Complete: Missing Calibration	<p>CHECK the service history for recent service actions related to the <u>ABS</u> . This <u>DTC</u> sets due to incomplete or improper <u>PMI</u> procedures.</p> <p>If there have been recent service actions with this module, REPEAT the <u>PMI</u> using as-built data.</p> <p>If there have been no recent service actions and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If there have been no recent service actions and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
U2100:55	Initial Configuration Not Complete: Not Configured	<p>CHECK the service history for recent service actions related to the <u>ABS</u> . This <u>DTC</u> sets due to incomplete or improper <u>PMI</u> procedures.</p> <p>If there have been recent service actions with this module, REPEAT the <u>PMI</u> using as-built data.</p> <p>If there have been no recent service actions and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> .</p> <p>If there have been no recent service actions and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	<p>CHECK the service history for recent service actions related to the <u>ABS</u> . This <u>DTC</u> sets due to incomplete or improper <u>PMI</u> procedures.</p> <p>If there have been recent service actions with this module, REPEAT the <u>PMI</u> using as-built data.</p>

		<p>If there have been no recent service actions and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS module</u>. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If there have been no recent service actions and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS module</u> and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U2107:00	Collision Mitigation By Braking: No Sub Type Information	This <u>DTC</u> sets when the collision warning request from the <u>C-CM</u> occurs too often or lasts too long. RETRIEVE and REPAIR all <u>DTCs</u> in the <u>C-CM</u> . <a href="#">REFER to Section 419-03B, Cruise Control - Adaptive</a> .
U2108:62	Adaptive Cruise Control: Signal Compare Failure	<p>This <u>DTC</u> sets when the <u>ABS module</u> detects an acceleration value that is implausibly higher than what was requested.</p> <p>DIAGNOSE all other <u>ABS module DTCs</u> before diagnosing this <u>DTC</u>.</p> <p>If there are no other <u>ABS module DTCs</u> present, INSPECT the <u>ABS module</u> electrical connector and REPAIR or INSTALL new as necessary. If the connector is OK, REPEAT the self-test.</p> <p>If the <u>DTC</u> returns, INSTALL a new <u>ABS module</u> and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U3000:41	Control Module: General Checksum Failure	<a href="#">GO to Pinpoint Test AL</a> .
U3000:43	Control Module: Special Memory Failure	<p>If <u>DTC U3003:16</u> or <u>17</u> is present, DIAGNOSE that <u>DTC</u> before diagnosing <u>U3000:43</u>.</p> <p>If <u>DTC U3003:16</u> or <u>17</u> is <b>not</b> present and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS module</u>. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If <u>DTC U3003:16</u> or <u>17</u> is <b>not</b> present and the vehicle is equipped with adaptive</p>

		cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .
U3000:47	Control Module: Watchdog Safety Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test AE</a> .
U3000:49	Control Module: Internal Electronic Failure	<p>Using a diagnostic scan tool, CARRY OUT <u>PMI</u> on the <u>ABS</u> module using as-built data, then CARRY OUT <u>PMI</u> on the <u>RCM</u> using as-built data.</p> <p>Using a diagnostic scan tool, CARRY OUT the IVD Initialization procedure. CLEAR the <u>DTC</u>. TEST DRIVE the vehicle at speeds greater than 20 km/h (12 mph). CARRY OUT an <u>ABS</u> module self-test.</p> <p>If the <u>DTC</u> returns and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U3000:4B	Control Module: Over Temperature	<p>This <u>DTC</u> sets if the signal from the temperature sensor internal to the <u>ABS</u> module is out of range or is implausible when compared to the temperature sensors inside the <u>HCU</u>. Allow the vehicle to cool down for 15 minutes. CLEAR the <u>DTCs</u>. REPEAT the self-test.</p> <p>If the <u>DTC</u> returns on vehicles without adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>.</p> <p>If the <u>DTC</u> returns on vehicles with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>
U3002:62	Vehicle Identification Number: Signal Compare Failure	REFER to Section 206-09, <a href="#">GO to Pinpoint Test L</a> .
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a> .

U3003:17	Battery Voltage: Circuit Voltage Above Threshold	REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a> .
----------	--	--

## Symptom Chart: Vehicle Dynamic Systems

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. [REFER to Section 100-00, Diagnostic Methods](#) for information about these practices.

Condition	Possible Sources	Actions
<ul style="list-style-type: none"> <li>A module does not respond to the diagnostic scan tool</li> </ul>	<ul style="list-style-type: none"> <li>Fuse</li> <li>Wiring, terminals or connectors</li> <li><u>ABS</u> module concern</li> </ul>	<ul style="list-style-type: none"> <li>REFER to Section 418-00, <a href="#">GO to Pinpoint Test B</a>.</li> </ul>
<ul style="list-style-type: none"> <li>The red brake warning indicator is always or never on</li> </ul>	<ul style="list-style-type: none"> <li>Low brake fluid level</li> <li>Brake fluid level sensor</li> <li>Parking brake applied</li> <li>Parking brake switch</li> <li>Brake booster vacuum sensor</li> <li><u>IPC</u> concern</li> <li><u>ABS</u> concern</li> </ul>	<ul style="list-style-type: none"> <li>RETRIEVE all <u>ABS</u> DTCs and REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>. If no DTCs are present and the indicator is never on, REFER to Section 413-01, <a href="#">GO to Pinpoint Test K</a>. If no DTCs are present and the indicator is always on, REFER to Section 413-01, <a href="#">GO to Pinpoint Test L</a>.</li> </ul>
<ul style="list-style-type: none"> <li>The yellow <u>ABS</u> warning indicator is always or never on</li> </ul>	<ul style="list-style-type: none"> <li><u>IPC</u> concern</li> <li><u>ABS</u> concern</li> </ul>	<ul style="list-style-type: none"> <li>RETRIEVE all <u>ABS</u> DTCs and REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>. If no DTCs are present, REFER to Section 413-01, <a href="#">GO to Pinpoint Test M</a>.</li> </ul>
<ul style="list-style-type: none"> <li>The stability-traction control indicator (sliding-car icon) is always or never on</li> </ul>	<ul style="list-style-type: none"> <li><u>IPC</u> concern</li> <li><u>ABS</u> concern</li> </ul>	<ul style="list-style-type: none"> <li>RETRIEVE all <u>ABS</u> module DTCs and REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>. If no DTCs are present, REFER to Section 413-01, <a href="#">GO to Pinpoint Test N</a>.</li> </ul>

<ul style="list-style-type: none"> <li>• <u>ABS</u> false activation, <u>ABS</u> too sensitive, <u>ABS</u> activates on normal stop</li> </ul>	<ul style="list-style-type: none"> <li>• Front/rear suspension concern</li> </ul>	<ul style="list-style-type: none"> <li>• ELIMINATE the front/rear suspension as the cause of the problem. <a href="#">REFER to Section 204-00, Suspension System</a>, Symptom Chart: Suspension System.</li> </ul>
	<ul style="list-style-type: none"> <li>• Steering wheel angle sensor (vehicles with active park assist)</li> <li>• <u>SCCM</u> (vehicles with active park assist)</li> <li>• <u>PSCM</u> (vehicles with and without active park assist)</li> </ul>	<ul style="list-style-type: none"> <li>• For vehicles equipped with active park assist, RETRIEVE and DIAGNOSE all <u>SCCM</u> and <u>PSCM</u> DTCs . For <u>SCCM</u> DTCs , REFER to the <u>DTC</u> chart in <a href="#">Section 211-05</a> . For <u>PSCM</u> DTCs , REFER to the Interactive Diagnostics in <a href="#">Section 211-00</a> .</li> <li>• For vehicles not equipped with active park assist, RETRIEVE and DIAGNOSE all <u>PSCM</u> DTCs . REFER to the Interactive Diagnostics in <a href="#">Section 211-00</a> .</li> </ul>
	<ul style="list-style-type: none"> <li>• <u>RCM</u> mounting</li> </ul>	<ul style="list-style-type: none"> <li>• CONFIRM the <u>RCM</u> is mounted correctly. <a href="#">REFER to Section 501-20B, Restraints Control Module (RCM)</a> .</li> </ul>
	<ul style="list-style-type: none"> <li>• Loose wheel speed sensor or excessive air gap</li> </ul>	<ul style="list-style-type: none"> <li>• INSPECT wheel speed sensor for looseness or excessive air gap. TIGHTEN or INSTALL new as necessary. REFER to <a href="#">Wheel Speed Sensor — Front</a> and <a href="#">Wheel Speed Sensor — Rear</a> .</li> </ul>
	<ul style="list-style-type: none"> <li>• Parking brake shoes out of adjustment (dragging)</li> </ul>	<ul style="list-style-type: none"> <li>• CHECK and if necessary, ADJUST the parking brake shoes.</li> </ul>
<ul style="list-style-type: none"> <li>• The traction control system cannot be disabled</li> </ul>	<ul style="list-style-type: none"> <li>• <u>IPC</u> message center</li> <li>• A MyKey® restricted key is in use with the AdvanceTrac® always-on feature configured to ON</li> </ul>	<ul style="list-style-type: none"> <li>• REFER to Section 206-09, <a href="#">GO to Pinpoint Test M</a> .</li> </ul>

## Pinpoint Tests

### U3003:16

#### Diagnostic Overview

### U3003:16

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

#### Normal Operation and Fault Conditions

The ABS module, hydraulic pump and solenoid valves require an operating voltage that is between 10 and 17 volts. The ABS module receives this voltage from the BJB . The ABS module has a single ground circuit located in the engine compartment wiring harness. Excessive resistance or an open in one or more of these circuits, a discharged battery or a inoperative charging system will result in the ABS module setting a DTC .

#### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	This <u>DTC</u> sets in continuous memory and on-demand if the voltage supplied to the <u>ABS</u> module falls below 10 volts.

#### Visual Inspection and Diagnostic Pre-checks




- Make sure the vehicle battery terminals and cables are free of any corrosion and other contaminants.
- Make sure the vehicle battery terminals are tightened to their correct torque specifications.
- Make sure BJB fuses 5 (50A), 43 (40A) and 92 (10A) are OK.

#### PINPOINT TEST A: U3003:16

Test Step	Result / Action to Take
<b>A1 RECHECK THE <u>ABS</u> MODULE <u>DTCs</u></b>	

<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, clear the <u>ABS</u> module <u>DTCs</u>.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is <u>DTC</u> U3003:16 still present?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">A2</a>.</p> <p><b>No</b> The system is operating correctly at this time. The DTC may have set due to a previous low battery voltage condition.</p>
<p><b>A2 CHECK FOR CHARGING SYSTEM <u>DTCs</u> IN THE PCM</b></p>	<p><b>Yes</b> REFER to Section 414-00, <a href="#">GO to Pinpoint Test B</a>.</p> <p><b>No</b> GO to <a href="#">A3</a>.</p>
<ul style="list-style-type: none"> <li>• Using a diagnostic scan tool, retrieve all <u>CMDTCs</u>.</li> <li>• <b>Is <u>DTC</u> B1317, B1318, B1676, U3003:16 or U3003:17 present in one or more modules AND are any charging system <u>DTCs</u> present in the <u>PCM</u> ?</b></li> </ul>	
<p><b>A3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE</b></p>	<p><b>Yes</b> If the battery passed the condition test but required a recharge, REFER to Section 414-00, <a href="#">GO to Pinpoint Test B</a> to diagnose the charging system. If the battery passed the condition test and did not require a recharge, GO to <a href="#">A4</a>.</p> <p><b>No</b> INSTALL a new battery. <a href="#">REFER to Section 414-01, Battery</a>.</p>
<ul style="list-style-type: none"> <li>• Carry out the Battery Condition Test. Refer to <a href="#">Section 414-01</a>.</li> <li>• <b>Did the battery pass the condition test?</b></li> </ul>	
<p><b>A4 CHECK THE <u>ABS</u> MODULE SUPPLY VOLTAGE (VPWR_ABS) <u>PID</u></b></p>	<p><b>Yes</b> GO to <a href="#">A7</a>.</p> <p><b>No</b> GO to <a href="#">A5</a>.</p>
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Measure and record the voltage at the battery.</li> <li>• Using a diagnostic scan tool, monitor the <u>VPWR_ABS</u> <u>PID</u>.</li> <li>• <b>Is the <u>PID</u> display within 0.2 volt of the recorded battery voltage?</b></li> </ul>	
<p><b>A5 CHECK THE <u>ABS</u> MODULE VOLTAGE SUPPLY</b></p>	

- Ignition OFF.
- Disconnect ABS module C135.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C135-1		Ground--
C135-8		Ground--
C135-32		Ground--

- **Is each voltage within 0.2 volt of the recorded battery voltage?**

**Yes**GO to [A6](#) .**No**

VERIFY BJB fuses 5 (50A), 43 (40A) and 92 (10A) are OK. If not OK, REFER to the Wiring Diagrams manual to identify the cause of the circuit short. If OK, REPAIR the affected circuit for high resistance or an open.

### A6 CHECK THE ABS MODULE GROUND CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect the battery negative cable. [REFER to Section 414-01, Battery Disconnect](#) .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C135-16	$\Omega$	Ground--

- **Is the resistance less than 3 ohms?**

**Yes**GO to [A7](#) .**No**

REPAIR the circuit.

### A7 CHECK FOR CORRECT ABS MODULE OPERATION

- Ignition OFF.
- Disconnect and inspect ABS module C135 (if not previously disconnected).
- Repair:
  - corrosion (install new connector or terminal - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Connect ABS module C135. Make sure it seats and latches correctly.
- Connect the battery negative cable.

**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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new ABS module. REFER to [Anti-Lock Brake System \(ABS\) Module](#) . If no TSBs address this concern and the vehicle is equipped with

[REFER to Section 414-01, Battery Disconnect](#).

- Operate the system and determine if the concern is still present.
- **Is the concern still present?**

adaptive cruise control, **INSTALL** a new ABS module and HCU. [REFER to Hydraulic Control Unit \(HCU\)](#).

**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.

## Wheel Speed Sensor Erratic Signal DTCs

### Diagnostic Overview

### Wheel Speed Sensor Erratic Signal DTCs

#### Normal Operation and Fault Conditions

The wheel speed sensor utilizes the magnetic strip on the wheel bearing to generate a square wave signal proportional to wheel speed that is sent to the ABS module. The wheel bearing, magnetic strip and wheel speed sensor must be undamaged and free from any contamination to produce a clean signal for use by the ABS module. Also, all 4 tires and wheels must be of the same, manufacturer recommended size for the wheel speed sensor to generate an accurate wheel speed.

#### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C0030:07	Left Front Tone Wheel: Mechanical Failure	These <u>DTCs</u> set in continuous memory and on-demand if there is damage to the wheel speed sensor magnetic strip, damage to the wheel bearing, or contamination or deformation of the wheel bearing seal.
C0033:07	Right Front Tone Wheel: Mechanical Failure	
C0036:07	Left Rear Tone Wheel: Mechanical Failure	
C0039:07	Right Rear Tone Wheel: Mechanical Failure	

C0031:29	Left Front Wheel Speed Sensor: Signal Invalid	These <u>DTCs</u> set in continuous memory and on-demand if the wheel speed sensor magnetic strip is damaged, or if the wheel bearing is not installed correctly. These <u>DTCs</u> also set if an incorrectly sized tire is installed on the vehicle or if an incorrect wheel speed sensor or wheel bearing is installed.
C0031:64	Left Front Wheel Speed Sensor: Signal Plausibility Failure	
C0034:29	Right Front Wheel Speed Sensor: Signal Invalid	
C0034:64	Right Front Wheel Speed Sensor: Signal Plausibility Failure	
C0037:29	Left Rear Wheel Speed Sensor: Signal Invalid	
C0037:64	Left Rear Wheel Speed Sensor: Signal Plausibility Failure	
C003A:29	Right Rear Wheel Speed Sensor: Signal Invalid	
C003A:64	Right Rear Wheel Speed Sensor: Signal Plausibility Failure	
C0031:2F	Left Front Wheel Speed Sensor: Signal Erratic	These <u>DTCs</u> set in continuous memory and on-demand if the wheel speed sensor magnetic strip is damaged, or if the wheel bearing is not installed correctly. These <u>DTCs</u> also set if an incorrectly sized tire is installed on the vehicle, an incorrect wheel bearing is installed or high frequency interference is present.
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	

## PINPOINT TEST B: Wheel Speed Sensor Erratic Signal DTCs

Test Step	Result / Action to Take
<b>B1 CHECK THE DTCs FROM THE ABS MODULE SELF-TEST</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is DTC C0031:01; C0034:01; C0037:01 and/or C003A:01 present?</b></li> </ul>	<p><b>Yes</b> For DTC C0031:01 or C0034:01, REFER to Section 206-09, <a href="#">GO to Pinpoint Test AJ</a> . For DTC C0037:01 or C003A:01, REFER to Section 206-09, <a href="#">GO to Pinpoint Test AK</a> .</p> <p><b>No</b> GO to <a href="#">B2</a> .</p>
<b>B2 CHECK THE TIRES SIZE AND PRESSURE</b>	
<ul style="list-style-type: none"> <li>• Verify that all tires and wheels are the same size and that the tire size and inflation pressures are correct as indicated on the <u>VC</u> label.</li> <li>• <b>Are the wheels and tires OK?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">B3</a> .</p> <p><b>No</b> INSTALL the correct size tire or ADJUST tire pressure as necessary.</p>
<b>B3 CHECK THE WHEEL SPEED SENSOR AND HARNESS FOR DAMAGE</b>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• With the vehicle in NEUTRAL, position it on a hoist. <a href="#">REFER to Section 100-02, Jacking and Lifting</a> , Lifting Points.</li> <li>• Inspect the wheel speed sensor and harness for abrasion, broken connector tabs or water intrusion.</li> <li>• <b>Is the wheel speed sensor and harness OK?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">B4</a> .</p> <p><b>No</b> INSTALL a new wheel speed sensor. REFER to <a href="#">Wheel Speed Sensor — Front</a> or <a href="#">Wheel Speed Sensor — Rear</a> .</p>
<b>B4 INSPECT THE WHEEL SPEED SENSOR MOUNTING</b>	

<ul style="list-style-type: none"> <li>Inspect the wheel speed sensor and fastener for looseness.</li> <li><b>Are the wheel speed sensor and fastener tight?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">B5</a>.</p> <p><b>No</b> TIGHTEN the wheel speed sensor to specification. <a href="#">REFER to Section 206-09</a>, Torque Specifications.</p>
<p><b>B5 CHECK THE WHEEL BEARING MAGNETIC STRIPS FOR DAMAGE</b></p>	
<ul style="list-style-type: none"> <li>Inspect the wheel bearings for abnormal wear or roughness and for deformation or contamination of the seal and magnetic strip.</li> <li><b>Are the wheel bearing(s) OK?</b></li> </ul>	<p><b>Yes</b> INSTALL a new wheel speed sensor. REFER to <a href="#">Wheel Speed Sensor — Front</a> or <a href="#">Wheel Speed Sensor — Rear</a>. DRIVE the vehicle at a speed greater than 20 km/h (12.4 mph). CYCLE the ignition. CARRY OUT the <a href="#">ABS</a> module self-test. If the original <a href="#">DTC</a> returns, GO to <a href="#">B6</a>. If a different <a href="#">DTC</a> returns, REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>.</p> <p><b>No</b> INSTALL a new wheel bearing as necessary. For front wheel bearings, <a href="#">REFER to Section 204-01, Wheel Bearing and Wheel Hub</a>. For rear wheel bearings, <a href="#">REFER to Section 204-02, Wheel Bearing and Wheel Hub - FWD</a> or <a href="#">REFER to Section 204-02, Wheel Bearing and Wheel Hub - All Wheel Drive (AWD)</a>.</p>
<p><b>B6 MONITOR THE ABS MODULE WHEEL SPEED SENSOR PIDs</b></p>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, monitor the <a href="#">PIDs</a> while an assistant drives the vehicle at a speed greater than 20 km/h (12.4 mph).             <ul style="list-style-type: none"> <li>Left front wheel speed sensor (LF_WSPD)</li> <li>Right front wheel speed sensor (RF_WSPD)</li> <li>Left rear wheel speed sensor (LR_WSPD)</li> <li>Right rear wheel speed sensor</li> </ul> </li> </ul>	<p><b>Yes</b> GO to <a href="#">B7</a>.</p> <p><b>No</b> CYCLE the ignition. CLEAR the <a href="#">ABS</a> module <a href="#">DTCs</a>. CARRY OUT the <a href="#">ABS</a> module self-test. If the original <a href="#">DTC</a> returns, GO to <a href="#">B8</a>. If a different <a href="#">DTC</a> returns, REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>.</p>

<p>(RR_WSPD)</p> <ul style="list-style-type: none"> <li>• <b>Are the wheel speed <u>PIDs</u> within 5 km/h (3.1 mph) of each other and the vehicle speed as indicated on the speedometer?</b></li> </ul>	
<p><b>B7 CHECK THE HARNESS AND CONNECTORS</b></p>	
<ul style="list-style-type: none"> <li>• Disconnect the suspect wheel speed sensor electrical connector.</li> <li>• Disconnect <u>ABS</u> module C135.</li> <li>• Inspect the connectors (including any in-line connectors) for:             <ul style="list-style-type: none"> <li>• corrosion</li> <li>• loose or spread terminals</li> <li>• loose or frayed wire connections at terminals</li> </ul> </li> <li>• <b>Were any concerns found?</b></li> </ul>	<p><b>Yes</b> REPAIR as necessary.</p> <p>Refer to Wiring Diagrams Cell <a href="#">5</a> for schematic and connector information.</p> <p><b>No</b> The fault is not present and cannot be recreated at this time. Do not install any new <u>ABS</u> components at this time. Install <u>ABS</u> components only when directed to do so in the pinpoint test.</p>
<p><b>B8 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b></p>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect and inspect <u>ABS</u> module C135.</li> <li>• Repair:             <ul style="list-style-type: none"> <li>• corrosion (install new connector or terminal - clean module pins)</li> <li>• damaged or bent pins - install new terminals/pins</li> <li>• pushed-out pins - install new pins as necessary</li> </ul> </li> <li>• Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>• Operate the system and determine if the concern is still present.</li> </ul>	<p><b>Yes</b> CHECK <u>OASIS</u> for any applicable TSBs . 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> . If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p> <p><b>No</b> 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.</p>

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• <b>Is the concern still present?</b></li></ul> |  |
|--|--|

**C0044:28, C0044:49, C0044:64**

## Diagnostic Overview

**C0044:28, C0044:49, C0044:64**

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

## Normal Operation and Fault Conditions

The ABS module uses internal pressure sensors to determine correct system operation by monitoring internal HCU hydraulic pressures. The pressure sensors are internal to the HCU and cannot be serviced separately. Unintentional brake fluid pressure present when the ABS module is expecting no brake fluid pressure can set this fault.

## DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C0044:28	Brake Pressure Sensor A: Signal Bias Level Out of Range / Zero Adjustment Failure	These <u>DTCs</u> set in continuous memory and on-demand if the brake pressure sensor signals do not match. These faults may be set by either an internal <u>ABS</u> module failure or a pressure sensor failure.
C0044:49	Brake Pressure Sensor A: Internal Electronic Failure	
C0044:64	Brake Pressure Sensor A: Signal Plausibility Failure	

## PINPOINT TEST C: C0044:28, C0044:49, C0044:64

Test Step	Result / Action to Take
<b>C1 CHECK THE BRAKE PEDAL AND BRACKET</b>	
<ul style="list-style-type: none"><li>• Inspect the brake pedal position switch and brake pedal assembly. Verify there is no brake pedal</li></ul>	

**Yes**  
GO to [C2](#).

<p>pressure unintentionally applied due to incorrect brake pedal position switch or brake pedal installation.</p> <ul style="list-style-type: none"> <li>• <b>Are the brake pedal position switch and brake pedal OK?</b></li> </ul>	<p><b>No</b> REPAIR or INSTALL new components as necessary. <a href="#">REFER to Section 206-06B, Brake Pedal and Bracket</a> or <a href="#">REFER to Section 417-01, Stoplamp Switch</a>.</p>
<p><b>C2 CHECK FOR <u>DTCs</u> C0044:28, C0044:49 AND C0044:64 TO RETURN</b></p>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, clear all <u>CMDTCs</u>.</li> <li>• Test drive the vehicle at speeds greater than 32 km/h (19.9 mph).</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Are <u>DTCs</u> C0044:28, C0044:49 and/or C0044:64 present?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">C3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by air trapped in the hydraulic brake system.</p>
<p><b>C3 CHECK FOR CORRECT <u>ABS</u> MODULE TO <u>HCU</u> TORQUE VALUES</b></p>	
<ul style="list-style-type: none"> <li>• Verify all <u>ABS</u> module-to- <u>HCU</u> fasteners are tightened to their correct torque specifications. <a href="#">REFER to Section 206-09,</a> Torque Specifications.</li> <li>• <b>Are the fasteners tightened to the correct specifications?</b></li> </ul>	<p><b>Yes</b> If the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. <a href="#">REFER to Anti-Lock Brake System (ABS) Module</a>. GO to <a href="#">C4</a>. If the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. <a href="#">REFER to Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b> TIGHTEN all <u>ABS</u> module-to-Hydraulic Control Unit (HCU) fasteners. GO to <a href="#">C4</a>.</p>
<p><b>C4 CHECK FOR <u>DTCs</u> C0044:28, C0044:49 AND C0044:64</b></p>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, clear all <u>CMDTCs</u>.</li> <li>• Test drive the vehicle at speeds greater than 32 km/h (19.9 mph).</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Are <u>DTCs</u> C0044:28, C0044:49</b></li> </ul>	<p><b>Yes</b> If the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>HCU</u>. <a href="#">REFER to Hydraulic Control Unit (HCU)</a>. If the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. <a href="#">REFER to Hydraulic Control Unit (HCU)</a>.</p>

**and/or C0044:64 present?****No**

Repairs complete. The system is operating correctly at this time.

**C0040:64****Diagnostic Overview****C0040:64**

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

**Normal Operation and Fault Conditions**

The ABS module receives brake pedal switch input from the PCM over the HS-CAN. The ABS module compares this information against other inputs (wheel speed signals, vehicle speed signal, brake pressure input) to determine if the brake pedal input is valid. A brake pedal switch that is incorrectly installed can cause a signal plausibility concern.

**DTC Fault Trigger Conditions**

DTC	Description	Fault Trigger Conditions
C0040:64	Brake Pedal Switch A: Signal Plausibility Failure	This <u>DTC</u> sets in continuous memory and on-demand if the <u>ABS</u> 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).

**Visual Inspection and Diagnostic Pre-checks**

- Make sure the stoplamp switch electrical connector is connected and free of corrosion and other contaminants.
- Make sure the stoplamp switch is installed correctly.
- Make sure the stoplamp switch is operating correctly.

**PINPOINT TEST E: C0040:64**

Test Step	Result / Action to Take
-----------	-------------------------

<b>E1 CHECK THE STOPLAMPS FOR CORRECT OPERATION</b>	
<ul style="list-style-type: none"> <li>Inspect the brake pedal position switch and make sure it is installed correctly. Check the stoplamps for correct operation by pressing and releasing the brake pedal and observing the stoplamps.</li> <li><b>Do the stoplamps operate correctly?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">E2</a>.</p> <p><b>No</b> <a href="#">REFER to Section 417-01, Exterior Lighting</a>, Symptom Chart: Stoplamps.</p>
<b>E2 CHECK THE <u>ABS</u> MODULE DTCs</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li><b>Are any communication (U-code) <u>DTCs</u> present?</b></li> </ul>	<p><b>Yes</b> REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>.</p> <p><b>No</b> GO to <a href="#">E3</a>.</p>
<b>E3 CHECK THE <u>PCM</u> FOR <u>DTCs</u></b>	
<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, carry out the <u>PCM</u> KOEO self-test.</li> <li><b>Are any <u>DTCs</u> present in the <u>PCM</u> ?</b></li> </ul>	<p><b>Yes</b> <a href="#">REFER to Section 303-14, Electronic Engine Controls</a>.</p> <p><b>No</b> GO to <a href="#">E4</a>.</p>
<b>E4 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b>	
<ul style="list-style-type: none"> <li>Ignition OFF.</li> <li>Disconnect and inspect <u>ABS</u> module C135.</li> <li>Repair:             <ul style="list-style-type: none"> <li>corrosion (install new connector or terminal - clean module pins)</li> <li>damaged or bent pins - install new terminals/pins</li> <li>pushed-out pins - install new pins as necessary</li> </ul> </li> <li>Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>Operate the system and determine if the concern is</li> </ul>	<p><b>Yes</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused</p>

- still present.
- **Is the concern still present?**

by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

## U0100:00

### Diagnostic Overview

## U0100:00

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

### Normal Operation and Fault Conditions

With the ignition ON, the PCM sends messages to the ABS module over the HS-CAN. If the ABS module does not receive these messages within a certain time frame (less than 1 second), the ABS module sets DTCs. For information on the messages sent to the ABS module by the PCM, [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Network Message Chart.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0100:00	Lost Communication With ECM/PCM A: No Sub Type Information	This <u>DTC</u> sets in continuous memory and on-demand if any one of the following messages is missing: transmission gear, <u>AWD</u> torque, throttle position, cruise control status or brake pedal position.

### PINPOINT TEST F: U0100:00

Test Step	Result / Action to Take
<b>F1 CHECK THE COMMUNICATION NETWORK</b>	
<ul style="list-style-type: none"><li>• Ignition ON.</li><li>• Using a diagnostic scan tool, carry out the network test.</li><li>• <b>Does the <u>PCM</u></b></li></ul>	<p><b>Yes</b> GO to <a href="#">F2</a>.</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test A</a>.</p>

<b>pass the network test?</b>	
<b>F2 CHECK THE <u>ABS</u> <u>CMDTCs</u></b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• Clear the <u>DTCs</u>.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• Record the <u>ABS</u> module <u>DTCs</u>.</li> <li>• <b>Is <u>DTC U0100:00</u> retrieved again?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">F3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>
<b>F3 REVIEW THE RECORDED <u>DTCs</u> FROM THE <u>ABS</u> SELF-TEST</b>	
<ul style="list-style-type: none"> <li>• Check the recorded <u>DTCs</u> from the <u>ABS</u> self-test.</li> <li>• <b>Is <u>DTC U3003:16</u> or <u>U3003:17</u> present?</b></li> </ul>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a>. For <u>DTC U3003:17</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a>.</p> <p><b>No</b> GO to <a href="#">F4</a>.</p>
<b>F4 CHECK FOR <u>DTCs</u> IN THE <u>PCM</u></b>	
<ul style="list-style-type: none"> <li>• Using a diagnostic scan tool, carry out the <u>PCM</u> <u>KOEO</u> self-test.</li> <li>• <b>Is <u>DTC P0562</u> or <u>P0563</u> present?</b></li> </ul>	<p><b>Yes</b> For <u>DTC P0563</u>, REFER to Section 414-00, <a href="#">GO to Pinpoint Test A</a>. For <u>DTC P0562</u>, REFER to Section 414-00, <a href="#">GO to Pinpoint Test B</a>.</p> <p><b>No</b> GO to <a href="#">F5</a>.</p>
<b>F5 CHECK FOR <u>DTC U0100:00</u> SET IN OTHER MODULES</b>	

<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the self-test for all modules.</li> <li>• Retrieve the CMDTCs from all modules.</li> <li>• <b>Is <u>DTC U0100:00</u> set in the <u>BCM</u> or in the <u>PSCM</u> ?</b></li> </ul>	<p><b>Yes</b> 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, INSTALL a new <u>PCM</u> . <a href="#">REFER to Section 303-14, Powertrain Control Module (PCM) - 2.0L GTDI</a> or <a href="#">REFER to Section 303-14, Powertrain Control Module - 3.5L Ti-VCT</a> .</p> <p><b>No</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> . If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>
--	---

## U0104:00

### Diagnostic Overview

## U0104:00

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

### Normal Operation and Fault Conditions

With the ignition ON, the C-CM sends the ABS module messages over the HS-CAN . If the ABS module does not receive these messages within a certain time frame (less than 1 second), the ABS module sets DTCs . For information on the messages sent to the ABS module from the C-CM , [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#) , Network Message Chart.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0104:00	Lost Communication With Cruise Control Module: No Sub Type Information	This <u>DTC</u> sets in continuous memory and on-demand if any one of the following collision warning messages is missing: deceleration information, deceleration request or brake system precharge request.

**PINPOINT TEST G: U0104:00**

Test Step	Result / Action to Take
<b>G1 CHECK THE COMMUNICATION NETWORK</b>	<p><b>Yes</b> GO to <a href="#">G2</a> .</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test U</a> .</p>
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the network test.</li> <li>• <b>Does the C-CM pass the network test?</b></li> </ul>	
<b>G2 CHECK THE <u>ABS</u> CMDTCs</b>	<p><b>Yes</b> GO to <a href="#">G3</a> .</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• Clear the <u>DTCs</u> .</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Repeat the <u>ABS</u> module self-test.</li> <li>• Record the <u>ABS</u> module <u>DTCs</u> .</li> <li>• <b>Is <u>DTC U0104:00</u> retrieved again?</b></li> </ul>	
<b>G3 REVIEW THE RECORDED <u>DTCs</u> FROM THE <u>ABS</u> SELF-TEST</b>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a> . For <u>DTC U3003:17</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a> .</p> <p><b>No</b> GO to <a href="#">G4</a> .</p>
<ul style="list-style-type: none"> <li>• Check the recorded <u>DTCs</u> from the <u>ABS</u> self-test.</li> <li>• <b>Is <u>DTC U3003:16</u> or <u>U3003:17</u> present?</b></li> </ul>	

<b>G4 CHECK FOR <u>DTCs</u> IN THE <u>C-CM</u></b>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 419-03B, <a href="#">GO to Pinpoint Test Q</a>. For <u>DTC U3003:17</u>, REFER to Section 419-03B, <a href="#">GO to Pinpoint Test R</a>.</p> <p><b>No</b> GO to <a href="#">G5</a>.</p>
<b>G5 CHECK FOR <u>DTC U0104:00</u> SET IN OTHER MODULES</b>	<p><b>Yes</b> 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, INSTALL a new <u>C-CM</u>. <a href="#">REFER to Section 419-03B, Cruise-Control Module (C-CM)</a>.</p> <p><b>No</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>

## U0140:00

### Diagnostic Overview

## U0140:00

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

### Normal Operation and Fault Conditions

With the ignition ON, the BCM sends messages to the ABS module over the HS-CAN. If the ABS module does not receive these messages within a certain time frame (less than 1 second), the ABS module sets DTCs. For information on the messages sent to the ABS module by the BCM, [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Network Message Chart.

**DTC Fault Trigger Conditions**

<b>DTC</b>	<b>Description</b>	<b>Fault Trigger Conditions</b>
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	This <u>DTC</u> sets in continuous memory and on-demand if any one of the following messages is missing; ignition status, engine off status, collision warning system status, adaptive cruise control status or vehicle configuration information.

**PINPOINT TEST I: U0140:00**

<b>Test Step</b>	<b>Result / Action to Take</b>
<b>I1 CHECK THE COMMUNICATION NETWORK</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the network test.</li> <li><b>Does the <u>BCM</u> pass the network test?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">I2</a>.</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test I</a>.</p>
<b>I2 CHECK THE <u>ABS</u> MODULE <u>CMDTCs</u></b>	
<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>Clear the <u>DTCs</u>.</li> <li>Ignition OFF.</li> <li>Ignition ON.</li> <li>Repeat the <u>ABS</u> module self-test.</li> <li>Record the <u>ABS</u> module <u>DTCs</u>.</li> <li><b>Is <u>DTC</u> U0140:00 retrieved again?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">I3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>
<b>I3 REVIEW THE RECORDED <u>DTCs</u></b>	

<b>FROM THE <u>ABS</u> MODULE SELF-TEST</b>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a> . For <u>DTC U3003:17</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a> .</p> <p><b>No</b> GO to <a href="#">I4</a> .</p>
<b>I4 CHECK FOR <u>DTCs</u> IN THE <u>BCM</u></b>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 419-10, <a href="#">GO to Pinpoint Test H</a> . For <u>DTC U3003:17</u>, REFER to Section 419-10, <a href="#">GO to Pinpoint Test I</a> .</p> <p><b>No</b> GO to <a href="#">I5</a> .</p>
<b>I5 CHECK FOR <u>DTC U0140:00</u> SET IN OTHER MODULES</b>	<p><b>Yes</b> CHECK <u>OASIS</u> for any applicable <u>TSBs</u> . If a <u>TSB</u> exists for this concern, discontinue this test and follow <u>TSB</u> instructions. If no <u>TSBs</u> address this concern, INSTALL a new <u>BCM</u> . <a href="#">REFER to Section 419-10, Body Control Module (BCM) - With Intelligent Access</a> or <a href="#">REFER to Section 419-10, Body Control Module (BCM) - Without Intelligent Access</a> .</p> <p><b>No</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> . If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>

**U0151:00**

## Diagnostic Overview

**U0151:00**

## Normal Operation and Fault Conditions

With the ignition ON, the RCM sends the ABS module messages over a private HS-CAN. If the ABS module does not receive these messages within a certain time frame (less than 1 second), the ABS module sets DTCs.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	This <u>DTC</u> sets in continuous memory and on-demand if any one of the following messages is missing; yaw rate, lateral acceleration, longitudinal acceleration or roll rate.

### PINPOINT TEST K: U0151:00

Test Step	Result / Action to Take
<b>K1 CHECK THE COMMUNICATION NETWORK</b>	
<ul style="list-style-type: none"><li>Ignition ON.</li><li>Using a diagnostic scan tool, carry out the network test.</li><li><b>Does the <u>RCM</u> pass the network test?</b></li></ul>	<p><b>Yes</b> GO to <a href="#">K2</a>.</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test C</a> to diagnose no communication with the <u>BCM</u>.</p>
<b>K2 CHECK THE <u>ABS</u> MODULE <u>CMDTCs</u></b>	
<ul style="list-style-type: none"><li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li><li>Clear the <u>DTCs</u>.</li><li>Ignition OFF.</li><li>Ignition ON.</li><li>Repeat the <u>ABS</u> module self-test.</li><li>Record the <u>ABS</u> module <u>DTCs</u>.</li></ul>	<p><b>Yes</b> GO to <a href="#">K3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>

<ul style="list-style-type: none"> <li>• Is <b>DTC U0151:00</b> retrieved again?</li> </ul>	
<b>K3 REVIEW THE RECORDED DTCs FROM THE ABS MODULE SELF-TEST</b>	
<ul style="list-style-type: none"> <li>• Check the recorded DTCs from the ABS module self-test.</li> <li>• Is <b>DTC U3003:16</b> or <b>U3003:17</b> present?</li> </ul>	<p><b>Yes</b> For DTC U3003:16, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a> . For DTC U3003:17, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a> .</p> <p><b>No</b> GO to <a href="#">K4</a> .</p>
<b>K4 CHECK FOR DTCs IN THE RCM</b>	
<ul style="list-style-type: none"> <li>• Using a diagnostic scan tool, carry out the RCM self-test.</li> <li>• Is <b>DTC U3003:16</b> or <b>U3003:17</b> present?</li> </ul>	<p><b>Yes</b> REFER to Section 501-20B, <a href="#">GO to Pinpoint Test Y</a> .</p> <p><b>No</b> GO to <a href="#">K5</a> .</p>
<b>K5 CHECK FOR DTC U0151:00 SET IN OTHER MODULES</b>	
<ul style="list-style-type: none"> <li>• Using a diagnostic scan tool, carry out the self-test for all modules.</li> <li>• Retrieve and record the CMDTCs from all modules.</li> <li>• Is <b>DTC U0151:00</b> set in any other module?</li> </ul>	<p><b>Yes</b> CHECK <a href="#">OASIS</a> for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no TSBs address this concern, INSTALL a new RCM . <a href="#">REFER to Section 501-20B, Restraints Control Module (RCM)</a> .</p> <p><b>No</b> CHECK <a href="#">OASIS</a> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new ABS module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> . If no TSBs address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new ABS module and HCU . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>

## U3002:62

## Diagnostic Overview

### U3002:62

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

### Normal Operation and Fault Conditions

Diagnose any network communication DTCs prior to diagnosing U3002:62.

With the ignition ON, the ABS module and the PCM share VIN information over the HS-CAN.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U3002:62	Vehicle Identification Number: Signal Compare Failure	This DTC sets in continuous memory and on-demand if the <u>VIN</u> message sent by the <u>PCM</u> over the <u>HS-CAN</u> does not match the <u>VIN</u> stored in the <u>ABS</u> module.

### PINPOINT TEST L: U3002:62

Test Step	Result / Action to Take
<b>L1 VERIFY THE PCM VIN</b>	
<ul style="list-style-type: none"><li>Ignition ON.</li><li>Using a diagnostic scan tool, view the <u>VIN</u> in the <u>PCM</u>.</li><li>Compare the <u>VIN</u> in the <u>PCM</u> to the <u>VIN</u> plate on the vehicle.</li><li><b>Does <u>VIN</u> in the <u>PCM</u> match the <u>VIN</u> plate on the vehicle?</b></li></ul>	<p><b>Yes</b> GO to <a href="#">L2</a>.</p> <p><b>No</b> RECONFIGURE the <u>PCM</u> using As-Built data. FOLLOW the instructions on the diagnostic scan tool.</p>
<b>L2 VERIFY THE ABS MODULE PART</b>	

NUMBER	
<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, retrieve and record the <u>ABS</u> module part number from the log viewer.</li> <li>Check the part number recorded against the number listed in the parts catalog.</li> <li><b>Is the correct <u>ABS</u> module installed in the vehicle?</b></li> </ul>	<p><b>Yes</b>  RECONFIGURE the <u>ABS</u> module using As-Built data. FOLLOW the instructions on the diagnostic scan tool. CYCLE the ignition, REPEAT the <u>ABS</u> module self-test. If the <u>DTC</u> returns on a vehicle not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. RECONFIGURE the <u>ABS</u> module using As-Built data. If the <u>DTC</u> returns on a vehicle equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>. RECONFIGURE the <u>ABS</u> module using As-Built data.</p> <p><b>No</b>  For vehicles not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. RECONFIGURE the <u>ABS</u> module using As-Built data. For vehicles equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>. RECONFIGURE the <u>ABS</u> module using As-Built data.</p>

## The Traction Control System Cannot Be Disabled

### Diagnostic Overview

## The Traction Control System Cannot Be Disabled

Refer to Wiring Diagrams Cell [60](#) for schematic and connector information.

### Normal Operation and Fault Conditions

Traction control system status is relayed to the driver by the stability-traction control disabled indicator (sliding car OFF icon) in the IPC. When the driver deactivates the traction control, the IPC sends a message to the ABS module over the HS-CAN. The ABS module deactivates the traction control system and sends a message back to the IPC to illuminate the sliding car OFF icon. The traction control system remains deactivated until the driver changes the traction control state in the message center or until the ignition switch is cycled.

If equipped, MyKey® allows users to configure traction control to be either always on or selectable. If a MyKey® restricted key is in use with the AdvanceTrac® always on feature configured to "on", the traction control system cannot be disabled. An admin key must be used in order to enable and disable the traction control system.

## PINPOINT TEST M: The Traction Control System Cannot Be Disabled

Test Step	Result / Action to Take
<b>M1 CHECK FOR <u>IPC</u> DTCs</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the <u>IPC</u> self-test.</li> <li><b>Are any <u>DTCs</u> present in the <u>IPC</u> ?</b></li> </ul>	<p><b>Yes</b>  <a href="#">REFER to Section 413-01, Instrumentation, Message Center and Warning Chimes</a> .</p> <p><b>No</b>            GO to <a href="#">M2</a> .</p>
<b>M2 CHECK THE MESSAGE CENTER TRACTION CONTROL SELECTION</b>	
<ul style="list-style-type: none"> <li>Using the message center buttons, configure the traction control on and then off again. Refer to the Owner's Literature.</li> <li><b>Does the TRACTION CONTROL selection change when configured to on and off?</b></li> </ul>	<p><b>Yes</b>            GO to <a href="#">M3</a> .</p> <p><b>No</b>            REFER to Section 413-01, <a href="#">GO to Pinpoint Test AD</a> .</p>
<b>M3 CHECK THE STABILITY-TRACTION CONTROL DISABLED INDICATOR (SLIDING CAR OFF ICON)</b>	
<ul style="list-style-type: none"> <li>Using the message center buttons, configure the traction control on and then off again. Refer to the Owner's Literature.</li> <li><b>Does the sliding car OFF icon illuminate when the traction control is turned off?</b></li> </ul>	<p><b>Yes</b>            The system is operating correctly at this time. TEST the system for normal operation.</p> <p><b>No</b>            REFER to Section 413-01, <a href="#">GO to Pinpoint Test O</a> .</p>

### U3003:17

### Diagnostic Overview

### U3003:17

### Normal Operation and Fault Conditions

The ABS module, hydraulic pump and solenoid valves require an operating voltage that is between 10 and 17 volts. The ABS module receives this voltage from the BJB . The ABS module has a single ground circuit located in the engine compartment wiring harness. An overcharging condition in the charging system will result in the

ABS module setting a DTC . This DTC may also set in the ABS module due to battery charging or vehicle jump starting events.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	<p>This <u>DTC</u> sets in continuous memory and on-demand if the voltage supplied to the <u>ABS</u> module is above 17 volts with vehicle speed greater than 10 km/h (6.2 mph).</p> <p>This <u>DTC</u> may also set in the <u>ABS</u> module due to battery charging or vehicle jump starting events.</p>

### PINPOINT TEST P: U3003:17

Test Step	Result / Action to Take
<b>P1 CHECK FOR HIGH VOLTAGE <u>DTCs</u> SET IN OTHER MODULES</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, retrieve and record <b>all</b> <u>CMDTCs</u> .</li> <li><b>Is <u>DTC</u> B1317, B1318, B1676, U3003:16 or U3003:17 present in one or more modules AND are any charging system <u>DTCs</u> present in the <u>PCM</u> ?</b></li> </ul>	<p><b>Yes</b> REFER to Section 414-00, <a href="#">GO to Pinpoint Test A</a> to diagnose an overcharging condition.</p> <p><b>No</b> GO to <a href="#">P2</a> .</p>
<b>P2 CHECK THE BATTERY VOLTAGE</b>	
<ul style="list-style-type: none"> <li>Turn off all interior/exterior lights and accessories.</li> <li>Start and run the engine at approximately 1,500 RPM for 3 minutes while monitoring the battery voltage.</li> <li><b>Is the battery voltage between 13 and 15.2</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">P3</a> .</p> <p><b>No</b> REFER to Section 414-00, <a href="#">GO to Pinpoint Test A</a> to diagnose an overcharging condition.</p>

<b>volts ?</b>	
<b>P3 RECHECK THE <u>ABS</u> MODULE FOR <u>DTC U3003:17</u></b>	
<ul style="list-style-type: none"> <li>• Turn the engine off.</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• Clear the <u>ABS</u> module <u>DTCs</u>.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Repeat the <u>ABS</u> module self-test.</li> <li>• <b>Is <u>DTC U3003:17</u> still present?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">P4</a>.</p> <p><b>No</b> The system is operating normally at this time. The <u>DTC</u> may have been set previously during battery charging or while jump starting the vehicle.</p>
<b>P4 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect and inspect <u>ABS</u> module C135.</li> <li>• Repair: <ul style="list-style-type: none"> <li>• corrosion (install new connector or terminal - clean module pins)</li> <li>• damaged or bent pins - install new terminals/pins</li> <li>• pushed-out pins - install new pins as necessary</li> </ul> </li> <li>• Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>• Operate the system and determine if the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b> 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.</p>

**C101A:1C, C101A:2A, C101A:2F, C101A:62**

## **Diagnostic Overview**

**C101A:1C, C101A:2A, C101A:2F, C101A:62**

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

**Normal Operation and Fault Conditions**

The brake booster vacuum pressure sensor receives a sensor supply voltage of 5 volts from the ABS module. The sensor is also grounded through the ABS module. The sensor uses the pressure differential between the atmosphere and the brake booster vacuum chamber to produce a return voltage signal to the ABS module that is between 0.2 volt and 4.9 volts. The ABS module uses other sensor inputs such as wheel speed, brake pedal and stability sensors to determine if the vehicle is stopping and at what rate of deceleration. This information is compared against the vacuum pressure sensor to determine the validity of the sensor signal and the working condition of the sensor itself.

**DTC Fault Trigger Conditions**

<b>DTC</b>	<b>Description</b>	<b>Fault Trigger Conditions</b>
C101A:1C	Vacuum Pressure Sensor: Circuit Voltage Out of Range	<p>This <u>DTC</u> sets in continuous memory and on-demand if the signal returning from the vacuum pressure sensor is outside of the normal operating range.</p> <p>This can be due to a short to battery, a short to ground, an open in the signal return circuit, an internal failure of the sensor or an internal failure of the <u>ABS</u> module.</p> <p>Also, when the sensor fails internally, the diagnostics integrated in the sensor drives the output signal to either the maximum (4.9 volts) or minimum (0.2 volt) voltage. An internal failure is set if the output signal is within the upper or lower voltage range longer than the specified minimum fault duration of 100 ms.</p>
C101A:2A	Vacuum Pressure Sensor: Signal Stuck In Range	<p>This <u>DTC</u> sets in continuous memory and on-demand if, after 3 brake pedal applications, the signal returning from the vacuum pressure sensor did not have a very significant change or did not change at all.</p> <p>This can be due to a short to battery, a short to ground, an open in one or more of the sensor circuits or a mechanical failure of the brake booster.</p>










C101A:2F	Vacuum Pressure Sensor: Signal Erratic	This <u>DTC</u> sets in continuous memory and on-demand if the signal returning from the vacuum pressure sensor both increases and decreases during the same brake pedal application. This is usually caused by an internal failure of the sensor.
C101A:62	Vacuum Pressure Sensor: Signal Compare Failure	This <u>DTC</u> sets in continuous memory and on-demand if the pressure difference between the vacuum chambers in the brake booster is not at least -20 kPa (-3 psi) for more than 2 minutes with the engine running. This is usually caused by a mechanical failure of the brake booster resulting in a vacuum leak.

### Visual Inspection and Diagnostic Pre-checks

- Inspect the brake booster for vacuum leaks.
- Inspect the brake booster for any obvious signs of damage.
- Inspect the brake booster vacuum sensor harness and connector of any obvious signs of damage.
- Make sure the brake booster vacuum sensor electrical connector is free from any corrosion or other contaminants.

### PINPOINT TEST Q: C101A:1C, C101A:2A, C101A:2F, C101A:62

Test Step	Result / Action to Take
<b>Q1 CHECK THE <u>DTCs</u> FROM THE <u>ABS</u> MODULE</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is <u>DTC</u> C1B14:11, C1B14:12 or U3000:47 present?</b></li> </ul>	<p><b>Yes</b> REFER to Section 206-09, <a href="#">GO to Pinpoint Test AE</a>.</p> <p><b>No</b> If <u>DTC</u> C101A:2A or 62 is present, GO to <a href="#">Q2</a>. If <u>DTC</u> C101A:1C or 2F is present, GO to <a href="#">Q3</a>. For all other <u>DTCs</u>, REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a>.</p>
<b>Q2 CHECK THE BRAKE BOOSTER AND VACUUM HOSES FOR LEAKS</b>	
<ul style="list-style-type: none"> <li>• Inspect the vacuum hoses, brake booster and brake booster seals for leaks or evidence of leaks.</li> </ul>	<p><b>Yes</b> REPAIR or INSTALL new components as necessary.</p>

<ul style="list-style-type: none"><li>• <b>Are any leaks or evidence of leaks found?</b></li></ul>	<b>No</b> GO to <a href="#">Q3</a> .												
<b>Q3 CHECK THE VACUUM SENSOR WIRING FOR A SHORT TO VOLTAGE</b>													
<ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Disconnect <u>ABS</u> module C135.</li><li>• Disconnect Brake Booster Vacuum Sensor electrical connector.</li><li>• Ignition ON.</li><li>• Measure:</li></ul> <table border="1"><thead><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr></thead><tbody><tr><td>C135-26</td><td></td><td>Ground--</td></tr><tr><td>C135-27</td><td></td><td>Ground--</td></tr><tr><td>C135-30</td><td></td><td>Ground--</td></tr></tbody></table> <ul style="list-style-type: none"><li>• <b>Is any voltage present?</b></li></ul>	Positive Lead	Measurement / Action	Negative Lead	C135-26		Ground--	C135-27		Ground--	C135-30		Ground--	<b>Yes</b> REPAIR the affected circuit.  <b>No</b> GO to <a href="#">Q4</a> .
Positive Lead	Measurement / Action	Negative Lead											
C135-26		Ground--											
C135-27		Ground--											
C135-30		Ground--											
<b>Q4 CHECK THE VACUUM SENSOR WIRING FOR A SHORT TO GROUND</b>													
<ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Measure:</li></ul> <table border="1"><thead><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr></thead><tbody><tr><td>C135-26</td><td><math>\Omega</math></td><td>Ground--</td></tr><tr><td>C135-27</td><td><math>\Omega</math></td><td>Ground--</td></tr><tr><td>C135-30</td><td><math>\Omega</math></td><td>Ground--</td></tr></tbody></table> <ul style="list-style-type: none"><li>• <b>Are the resistances greater than 10,000 ohms?</b></li></ul>	Positive Lead	Measurement / Action	Negative Lead	C135-26	$\Omega$	Ground--	C135-27	$\Omega$	Ground--	C135-30	$\Omega$	Ground--	<b>Yes</b> GO to <a href="#">Q5</a> .  <b>No</b> REPAIR the circuit.
Positive Lead	Measurement / Action	Negative Lead											
C135-26	$\Omega$	Ground--											
C135-27	$\Omega$	Ground--											
C135-30	$\Omega$	Ground--											
<b>Q5 CHECK THE VACUUM SENSOR WIRING FOR AN OPEN</b>													
<ul style="list-style-type: none"><li>• Measure:</li></ul> <table border="1"><thead><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr></thead></table>	Positive Lead	Measurement / Action	Negative Lead	<b>Yes</b> GO to <a href="#">Q6</a> .  <b>No</b> REPAIR the affected circuit									
Positive Lead	Measurement / Action	Negative Lead											

C135-26	$\Omega$	C149-3
C135-27	$\Omega$	C149-2
C135-30	$\Omega$	C149-1

- **Are the resistances less than 3 ohms?**

#### Q6 CHECK THE VACUUM SENSOR WIRING FOR A SHORT TOGETHER

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C149-1	$\Omega$	C149-2
C149-1	$\Omega$	C149-3
C149-2	$\Omega$	C149-3

- **Are the resistances greater than 10,000 ohms?**

#### Yes

INSTALL a new brake booster vacuum sensor. [REFER to Section 206-07, Brake Booster Vacuum Sensor](#) . DRIVE the vehicle at speeds greater than 10 km/h (6 mph) for at least 4 minutes and CARRY OUT at least 3 stops. REPEAT the ABS module self-test. If DTC C101A:1C, C101A:2A, C101A:2F or C101A:62 returns, GO to [Q7](#) .

#### No

REPAIR the affected circuit.

#### Q7 CHECK FOR CORRECT ABS MODULE OPERATION

- Ignition OFF.
- Disconnect and inspect the ABS module C135.
- Repair:
  - corrosion (install new connector or terminal - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Connect the ABS module C135. Make sure it seats and latches correctly.
- Operate the system and determine if 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new ABS module. REFER to [Anti-Lock Brake System \(ABS\) Module](#) . If no TSBs address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new ABS module and HCU . REFER to [Hydraulic Control Unit \(HCU\)](#) .

#### 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.

## U0131:00

### Diagnostic Overview

## U0131:00

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

### Normal Operation and Fault Conditions

On vehicles equipped with active park assist, with the ignition ON, the SCCM sends messages to the ABS module over the HS-CAN.

On vehicles not equipped with active park assist, with the ignition ON, the PSCM sends messages to the ABS module over the HS-CAN.

If these messages are missing for 5 seconds, the ABS module sets DTCs.

For information on the messages sent to the ABS module from the PSCM and SCCM, [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Network Message Chart.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0131:00	Lost Communication With Power Steering Control Module: No Sub Type Information	<p>On vehicles equipped with active park assist, this <u>DTC</u> sets in continuous memory and on-demand if any one of the following <u>SCCM</u> messages is missing; steering wheel angle and steering wheel rotation count.</p> <p>On vehicles not equipped with active park assist, this <u>DTC</u> sets in continuous memory and on-demand if any one of the following <u>PSCM</u> messages is missing; steering wheel angle and steering wheel rotation count.</p>

### PINPOINT TEST S: U0131:00

Test Step	Result / Action to Take
<b>S1 CHECK THE COMMUNICATION NETWORK</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the network test.</li> <li><b>Does the <u>PSCM</u> (vehicles without active park assist) or <u>SCCM</u> (vehicles with active park assist) pass the network test?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">S2</a>.</p> <p><b>No</b> For vehicles not equipped with active park assist, REFER to Section 418-00, <a href="#">GO to Pinpoint Test AC</a>. For vehicles equipped with active park assist, REFER to Section 418-00, <a href="#">GO to Pinpoint Test G</a>.</p>
<b>S2 CHECK THE <u>ABS</u> CMDTCs</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>Clear the <u>DTCs</u>.</li> <li>Ignition OFF.</li> <li>Ignition ON.</li> <li>Repeat the <u>ABS</u> module self-test.</li> <li>Record the <u>ABS</u> module <u>DTCs</u>.</li> <li><b>Is <u>DTC U0131:00</u> retrieved again?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">S3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>
<b>S3 REVIEW THE RECORDED <u>DTCs</u> FROM THE <u>ABS</u> SELF-TEST</b>	
<ul style="list-style-type: none"> <li>Check the recorded <u>DTCs</u> from the <u>ABS</u> self-test.</li> <li><b>Is <u>DTC U3003:16</u> or <u>U3003:17</u> present?</b></li> </ul>	<p><b>Yes</b> For DTC U3003:16, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a>. For <u>DTC U3003:17</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a>.</p> <p><b>No</b> For vehicles not equipped with active park assist, GO to <a href="#">S4</a>. For vehicles equipped with active park assist, GO to <a href="#">S5</a>.</p>
<b>S4 CHECK FOR <u>DTCs</u> FROM THE <u>PSCM</u></b>	

<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, carry out the <u>PSCM</u> self-test.</li> <li><b>Is <u>DTC U3003:16</u> or <u>17</u> present?</b></li> </ul>	<p><b>Yes</b> <a href="#">REFER to Section 211-00, Steering System</a> .</p> <p><b>No</b> GO to <a href="#">S6</a> .</p>
<b>S5 CHECK FOR <u>DTCs</u> FROM THE <u>SCCM</u></b>	
<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, carry out the <u>SCCM</u> self-test.</li> <li><b>Is <u>DTC C0051:16</u> or <u>17</u> present?</b></li> </ul>	<p><b>Yes</b> REFER to Section 211-05, <a href="#">GO to Pinpoint Test L</a> .</p> <p><b>No</b> GO to <a href="#">S6</a> .</p>
<b>S6 CHECK FOR <u>DTC U0131:00</u> SET IN OTHER MODULES</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the self-test for all modules.</li> <li>Retrieve the <u>CMDTCs</u> from all modules.</li> <li><b>Is <u>DTC U0131:00</u> set in any other modules?</b></li> </ul>	<p><b>Yes</b> 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 and the vehicle is not equipped with active park assist, INSTALL a new <u>PSCM</u> . <a href="#">REFER to Section 211-00, Steering Gear</a> (the module and steering gear are serviced as an assembly). If no <u>TSBs</u> address this concern and the vehicle is equipped with active park assist, INSTALL a new <u>SCCM</u> . <a href="#">REFER to Section 211-05, Steering Column Control Module (SCCM)</a> .</p> <p><b>No</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a> . If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u> . REFER to <a href="#">Hydraulic Control Unit (HCU)</a> .</p>

**U0138:00****Diagnostic Overview****U0138:00**

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

## Normal Operation and Fault Conditions

With the ignition ON, the ATCM sends the ABS module messages over the HS-CAN. If these messages are missing for 5 seconds, the ABS module sets DTCs. For information on the messages sent to the ABS module from the ATCM, [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Network Message Chart.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U0138:00	Lost Communication With All Terrain Control Module: No Sub Type Information	This <u>DTC</u> sets in continuous memory and on-demand if the "terrain mode actual" message is missing.

### PINPOINT TEST T: U0138:00

Test Step	Result / Action to Take
<b>T1 CHECK THE COMMUNICATION NETWORK</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the network test.</li> <li><b>Does the <u>ATCM</u> pass the network test?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">T2</a>.</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test AA</a>.</p>
<b>T2 CHECK THE <u>ABS</u> CMDTCs</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>Clear the <u>DTCs</u>.</li> <li>Ignition OFF.</li> <li>Ignition ON.</li> <li>Repeat the <u>ABS</u></li> </ul>	<p><b>Yes</b> GO to <a href="#">T3</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.</p>

<ul style="list-style-type: none"> <li>module self-test.</li> <li>Record the <u>ABS</u> module DTCs.</li> <li><b>Is <u>DTC U0138:00</u> retrieved again?</b></li> </ul>	
<b>T3 REVIEW THE RECORDED <u>DTCs</u> FROM THE <u>ABS</u> SELF-TEST</b>	
<ul style="list-style-type: none"> <li>Check the recorded DTCs from the <u>ABS</u> self-test.</li> <li><b>Is <u>DTC U3003:16</u> or <u>U3003:17</u> present?</b></li> </ul>	<p><b>Yes</b> For <u>DTC U3003:16</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a>. For <u>DTC U3003:17</u>, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a>.</p> <p><b>No</b> GO to <a href="#">T4</a>.</p>
<b>T4 CHECK FOR <u>DTCs</u> IN THE <u>ATCM</u></b>	
<ul style="list-style-type: none"> <li>Using a diagnostic scan tool, carry out the <u>ATCM</u> self-test.</li> <li><b>Is <u>DTC B11D9:16</u> or <u>B11D9:17</u> present?</b></li> </ul>	<p><b>Yes</b> REFER to Section 308-07A, <a href="#">GO to Pinpoint Test F</a>.</p> <p><b>No</b> GO to <a href="#">T5</a>.</p>
<b>T5 CHECK FOR <u>DTC U0138:00</u> SET IN OTHER MODULES</b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the self-test for all modules.</li> <li>Retrieve the <u>CM DTCs</u> from all modules.</li> <li><b>Is <u>DTC U0138:00</u> set in any other modules?</b></li> </ul>	<p><b>Yes</b> 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, INSTALL a new <u>ATCM</u>. <a href="#">REFER to Section 308-07A, All Terrain Control Module (ATCM)</a>.</p> <p><b>No</b> 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 and the vehicle is not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. If no <u>TSBs</u> address this concern and the vehicle is equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p>

**C0020:13, C0020:71****Diagnostic Overview****C0020:13, C0020:71**

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

**Normal Operation and Fault Conditions**

The ABS module uses an internal solid state switch to operate the hydraulic pump motor. The ABS module tests the hydraulic pump motor by activating it for 30 milliseconds. While the pump motor is being activated, the ABS module monitors the voltage drop across the hydraulic pump motor solid state switch and the amount of current the hydraulic pump motor draws through the solid state switch. If the voltage drop is too high or if the hydraulic pump motor is drawing too much current, the ABS module sets a DTC . After 30 milliseconds have passed, the ABS module stops applying voltage to the pump motor and observes the voltage that the spinning hydraulic pump motor is generating. The voltage generated by the motor indicates how fast the motor is spinning. Voltage that is too low indicates the motor is not spinning freely and a DTC sets.


**DTC Fault Trigger Conditions**

<b>DTC</b>	<b>Description</b>	<b>Fault Trigger Conditions</b>
C0020:13	ABS Pump Motor Control: Circuit Open	This <u>DTC</u> sets in continuous memory and on-demand if the voltage supplied to the <u>ABS</u> module is less than 10 volts, if there is an open or high resistance on the hydraulic pump motor circuit between the <u>ABS</u> module and the <u>HCU</u> , or if the <u>ABS</u> module is faulted internally.
C0020:71	ABS Pump Motor Control: Actuator Stuck	This <u>DTC</u> sets in continuous memory and on-demand if the <u>ABS</u> module detects the hydraulic pump motor is not rotating when it is commanded to run.

**PINPOINT TEST V: C0020:13, C0020:71**

<b>Test Step</b>	<b>Result / Action to Take</b>
<b>V1 CHECK THE <u>ABS</u> MODULE PUMP MOTOR (PMP_MOTOR) ACTIVE COMMAND</b>	

<ul style="list-style-type: none"><li>• Ignition ON.</li><li>• Using a diagnostic scan tool, toggle the PMP_MOTOR active command ON and listen for the ABS pump motor noise.</li><li>• <b>Does the ABS pump motor run for approximately 2 seconds?</b></li></ul>	<p><b>Yes</b> TOGGLE the PMP_MOTOR active command OFF. GO to <a href="#">V2</a>.</p> <p><b>No</b> TOGGLE the PMP_MOTOR active command OFF. GO to <a href="#">V3</a>.</p>						
<p><b>V2 CHECK FOR FAULT REPEATABILITY</b></p> <ul style="list-style-type: none"><li>• Using a diagnostic scan tool, clear the ABS module DTCs .</li><li>• Drive the vehicle at speeds greater than 20 km/h (12 mph).</li><li>• Bring the vehicle to a safe stop.</li><li>• Using a diagnostic scan tool, carry out the ABS module self-test.</li><li>• <b>Are DTCs C0020:13 or 71 retrieved?</b></li></ul>	<p><b>Yes</b> GO to <a href="#">V3</a>.</p> <p><b>No</b> For all other DTCs , REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a> . If no DTCs are present, the system is operating correctly at this time.</p>						
<p><b>V3 CHECK THE ABS MODULE GROUND EYELET AT THE CHASSIS</b></p> <ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Remove the bolt retaining the ABS module ground to the vehicle.</li><li>• Clean the body mating surface and ground eyelets.</li><li>• Position the ground eyelets and install the bolt.</li><li>• Ignition ON.</li><li>• Using a diagnostic scan tool, clear the ABS module DTCs .</li><li>• Drive the vehicle at speeds greater than 20 km/h (12 mph).</li><li>• Bring the vehicle to a safe stop.</li><li>• Using a diagnostic scan tool, carry out the ABS module self-test.</li><li>• <b>Are DTCs C0020:13 or C0020:71 retrieved?</b></li></ul>	<p><b>Yes</b> GO to <a href="#">V4</a>.</p> <p><b>No</b> If no DTCs are present, the concern was most likely caused by a loose or corroded connector. For all other DTCs , REFER to <a href="#">Anti-Lock Brake System (ABS) and Stability Control</a> .</p>						
<p><b>V4 CHECK THE PUMP MOTOR VOLTAGE SUPPLY TO THE ABS MODULE</b></p> <ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Disconnect ABS module C135.</li><li>• Measure:</li></ul> <table border="1"><thead><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td></tr></tbody></table>	Positive Lead	Measurement / Action	Negative Lead				<p><b>Yes</b> GO to <a href="#">V5</a>.</p> <p><b>No</b> VERIFY that BJB fuse 5 (50A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring</p>
Positive Lead	Measurement / Action	Negative Lead					

C135-1		Ground--	Diagrams manual to identify the cause of the circuit short.						
<ul style="list-style-type: none"><li>• <b>Is the voltage greater than 11 volts?</b></li></ul>									
<b>V5 CHECK THE <u>ABS</u> MODULE GROUND CIRCUIT FOR AN OPEN</b>									
<ul style="list-style-type: none"><li>• Disconnect the battery negative cable. <a href="#">REFER to Section 414-01, Battery Disconnect</a>.</li><li>• Measure:</li></ul> <table><tr><td><b>Positive Lead</b></td><td><b>Measurement / Action</b></td><td><b>Negative Lead</b></td></tr><tr><td>C135-16</td><td><math>\Omega</math></td><td>Ground--</td></tr></table> <ul style="list-style-type: none"><li>• <b>Is the resistance less than 3 ohms?</b></li></ul>			<b>Positive Lead</b>	<b>Measurement / Action</b>	<b>Negative Lead</b>	C135-16	$\Omega$	Ground--	<p><b>Yes</b> GO to <a href="#">V6</a>.</p> <p><b>No</b> REPAIR the circuit.</p>
<b>Positive Lead</b>	<b>Measurement / Action</b>	<b>Negative Lead</b>							
C135-16	$\Omega$	Ground--							
<b>V6 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b>									
<ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Inspect <u>ABS</u> module C135.</li><li>• Repair:<ul style="list-style-type: none"><li>• corrosion (install new connector or terminal - clean module pins)</li><li>• damaged or bent pins - install new terminals/pins</li><li>• pushed-out pins - install new pins as necessary</li></ul></li><li>• Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li><li>• Connect the battery negative cable. <a href="#">REFER to Section 414-01, Battery Disconnect</a>.</li><li>• Operate the system and determine if the concern is still present.</li><li>• <b>Is the concern still present?</b></li></ul>			<p><b>Yes</b> 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. For vehicles equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>. For vehicles not equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. DRIVE the vehicle at speeds greater than 20 km/h (12 mph). REPEAT the <u>ABS</u> module self-test. If the <u>DTC</u> returns, INSTALL a new <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b> The system is operating correctly at this time. The concern may</p>						

have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues.

## Stability Control Sensor Signal Failure DTCs

### Diagnostic Overview

## Stability Control Sensor Signal Failure DTCs

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

### Normal Operation and Fault Conditions

The RCM measures vehicle yaw rate, roll rate, lateral acceleration and longitudinal acceleration and sends the information to the ABS module over a private HS-CAN. This private HS-CAN is used only for communication between the RCM and the ABS module. The yaw rate sensor, lateral and longitudinal accelerometers are contained in the RCM.







### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C0061:28	Lateral Acceleration Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	This <u>DTC</u> sets in continuous memory and on-demand if the lateral acceleration sensor signal is outside of the specified range when the vehicle is standing still or moving.
C0061:64	Lateral Acceleration Sensor: Signal Plausibility Failure	This <u>DTC</u> sets in continuous memory and on-demand if the lateral acceleration sensor signal does not match the other stability sensor signals.
C0062:28	Longitudinal Acceleration Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	This <u>DTC</u> sets in continuous memory and on-demand if the longitudinal acceleration sensor signal is outside of the specified range.
C0062:64	Longitudinal Acceleration Sensor: Signal Plausibility Failure	This <u>DTC</u> sets in continuous memory and on-demand if the longitudinal acceleration sensor signal does not match the other stability sensor signals.
C0062:76	Longitudinal Acceleration Sensor:	This <u>DTC</u> sets in continuous memory and on-demand if the acceleration and deceleration of

	Wrong Mounting Position	the longitudinal acceleration sensor are the opposite of the other <u>ABS</u> module sensor inputs.
C0063:28	Yaw Rate Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	This <u>DTC</u> sets in continuous memory and on-demand if the yaw rate sensor is indicating movement when the vehicle is standing still.
C0063:64	Yaw Rate Sensor: Signal Plausibility Failure	This <u>DTC</u> sets in continuous memory and on-demand if the yaw rate sensor signal does not match the other stability sensor signals.
C0064:28	Roll Rate Sensor: Signal Bias Level Out of Range/Zero Adjustment Failure	This <u>DTC</u> sets in continuous memory and on-demand if the roll rate sensor is outside the specified range.
C0064:64	Roll Rate Sensor: Signal Plausibility Failure	A roll rate reference signal is calculated by the <u>ABS</u> module from the wheel speeds, the steering wheel angle, the yaw rate, the longitudinal and the lateral acceleration signals. The <u>ABS</u> module uses this calculated value to verify the roll rate signal from the <u>RCM</u> . This <u>DTC</u> sets in continuous memory and on-demand if the roll rate signal from the <u>RCM</u> exceeds the parameters of the calculated value.
U0151:88	Lost Communication With Restraints Control Module: Bus Off	This <u>DTC</u> sets in continuous memory and on-demand if the expected <u>RCM</u> messages such as yaw rate sensor, lateral and longitudinal accelerometers are missing for more than 5 seconds.

### PINPOINT TEST W: Stability Control Sensor Signal Failure DTCs

Test Step	Result / Action to Take
<b>W1 CHECK FOR A <u>HS-CAN</u> CONCERN WITH THE <u>RCM</u></b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the network test.</li> <li><b>Does the <u>RCM</u> pass the network test?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">W2</a>.</p> <p><b>No</b> REFER to Section 418-00, <a href="#">GO to Pinpoint Test C</a>.</p>
<b>W2 CHECK THE <u>RCM</u> FOR <u>DTCs</u></b>	

<ul style="list-style-type: none"><li>Using a diagnostic scan tool, carry out the <u>RCM</u> self-test.</li><li><b>Are any <u>DTCs</u> present in the <u>RCM</u> ?</b></li></ul>	<p><b>Yes</b> DIAGNOSE all <u>RCM</u> <u>DTCs</u> before diagnosing the <u>ABS</u> module. <a href="#">REFER to Section 501-20B, Airbag and Safety Belt Pretensioner SRS</a> .</p> <p><b>No</b> GO to <a href="#">W3</a> .</p>									
<p><b>W3 CHECK FOR <u>ABS</u> MODULE <u>DTC</u> U0151:00</b></p> <ul style="list-style-type: none"><li>Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li><li><b>Is <u>DTC</u> U0151:00 present?</b></li></ul>	<p><b>Yes</b> REFER to Section 206-09, <a href="#">GO to Pinpoint Test K</a> .</p> <p><b>No</b> GO to <a href="#">W4</a> .</p>									
<p><b>W4 VERIFY THE <u>RCM</u> PART NUMBER</b></p> <ul style="list-style-type: none"><li>Using a diagnostic scan tool, retrieve and record the <u>RCM</u> part number.</li><li>Check the part number recorded against the number listed in the parts catalog.</li><li><b>Does the part number in the <u>RCM</u> match the part number listed in the parts catalog?</b></li></ul>	<p><b>Yes</b> GO to <a href="#">W5</a> .</p> <p><b>No</b> INSTALL the correct <u>RCM</u> . <a href="#">REFER to Section 501-20B, Restraints Control Module (RCM)</a> .</p>									
<p><b>W5 CHECK THE PRIVATE <u>HS-CAN</u> CIRCUITS FOR A SHORT TO VOLTAGE</b></p> <ul style="list-style-type: none"><li>Depower the <u>SRS</u> . <a href="#">REFER to Section 501-20B, Supplemental Restraint System (SRS) Depowering and Repowering</a> .</li><li>Disconnect <u>RCM</u> C310B.</li><li>Disconnect <u>ABS</u> module C135.</li><li>Repower the <u>SRS</u> . <b>Do not</b> prove out the <u>SRS</u> at this time. <a href="#">REFER to Section 501-20B, Supplemental Restraint System (SRS) Depowering and Repowering</a> .</li><li>Ignition ON.</li><li>Measure:</li></ul>	<p><b>Yes</b> REPAIR the affected circuit.</p> <p><b>No</b> GO to <a href="#">W6</a> .</p>									
<table><tr><td><b>Positive Lead</b></td><td><b>Measurement / Action</b></td><td><b>Negative Lead</b></td></tr><tr><td>C135-18</td><td></td><td>Ground--</td></tr><tr><td>C135-19</td><td></td><td>Ground--</td></tr></table>		<b>Positive Lead</b>	<b>Measurement / Action</b>	<b>Negative Lead</b>	C135-18		Ground--	C135-19		Ground--
<b>Positive Lead</b>	<b>Measurement / Action</b>	<b>Negative Lead</b>								
C135-18		Ground--								
C135-19		Ground--								

<ul style="list-style-type: none"><li>• Is any voltage present?</li></ul>										
<b>W6 CHECK THE PRIVATE <u>HS-CAN</u> CIRCUITS FOR A SHORT TO GROUND</b>										
<ul style="list-style-type: none"><li>• Ignition OFF.</li><li>• Measure:</li></ul> <table><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr><tr><td>C135-18</td><td>Ω</td><td>Ground--</td></tr><tr><td>C135-19</td><td>Ω</td><td>Ground--</td></tr></table> <ul style="list-style-type: none"><li>• Are the resistances greater than 10,000 ohms?</li></ul>	Positive Lead	Measurement / Action	Negative Lead	C135-18	Ω	Ground--	C135-19	Ω	Ground--	<b>Yes</b> GO to <a href="#">W7</a> .  <b>No</b> REPAIR the affected circuit.
Positive Lead	Measurement / Action	Negative Lead								
C135-18	Ω	Ground--								
C135-19	Ω	Ground--								
<b>W7 CHECK THE PRIVATE <u>HS-CAN</u> CIRCUITS FOR A SHORT TOGETHER</b>										
<ul style="list-style-type: none"><li>• Measure:</li></ul> <table><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr><tr><td>C135-18</td><td>Ω</td><td>C135-19</td></tr></table> <ul style="list-style-type: none"><li>• Is the resistance greater than 10,000 ohms?</li></ul>	Positive Lead	Measurement / Action	Negative Lead	C135-18	Ω	C135-19	<b>Yes</b> GO to <a href="#">W8</a> .  <b>No</b> REPAIR the affected circuit.			
Positive Lead	Measurement / Action	Negative Lead								
C135-18	Ω	C135-19								
<b>W8 CHECK THE PRIVATE <u>HS-CAN</u> CIRCUITS FOR AN OPEN</b>										
<ul style="list-style-type: none"><li>• Measure:</li></ul> <table><tr><th>Positive Lead</th><th>Measurement / Action</th><th>Negative Lead</th></tr><tr><td>C135-18</td><td>Ω</td><td>C310B-20</td></tr><tr><td>C135-19</td><td>Ω</td><td>C310B-19</td></tr></table> <ul style="list-style-type: none"><li>• Are the resistances less than 3 ohms?</li></ul>	Positive Lead	Measurement / Action	Negative Lead	C135-18	Ω	C310B-20	C135-19	Ω	C310B-19	<b>Yes</b> GO to <a href="#">W9</a> .  <b>No</b> REPAIR the affected circuit.
Positive Lead	Measurement / Action	Negative Lead								
C135-18	Ω	C310B-20								
C135-19	Ω	C310B-19								
<b>W9 CHECK FOR CORRECT <u>RCM</u> OPERATION</b>										

<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect and inspect all <u>RCM</u> electrical connectors.</li> <li>• Repair: <ul style="list-style-type: none"> <li>• corrosion (install new connector or terminal - clean module pins)</li> <li>• damaged or bent pins - install new terminals/pins</li> <li>• pushed-out pins - install new pins as necessary</li> </ul> </li> <li>• Connect all <u>RCM</u> electrical connectors. Make sure they seat and latch correctly.</li> <li>• Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>• Operate the system and determine if the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> 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, INSTALL a new <u>RCM</u> . <a href="#">REFER to Section 501-20B, Restraints Control Module (RCM)</a> . CLEAR the <u>DTC</u> . REPEAT the <u>ABS</u> module self-test. If any one or more of the <u>DTCs</u> return, GO to <a href="#">W10</a> .</p> <p><b>No</b> 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.</p>
<p><b>W10 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b></p>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect and inspect <u>ABS</u> module C135.</li> <li>• Repair: <ul style="list-style-type: none"> <li>• corrosion (install new connector or terminal - clean module pins)</li> <li>• damaged or bent pins - install new terminals/pins</li> <li>• pushed-out pins - install new pins as necessary</li> </ul> </li> <li>• Connect the <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>• Operate the system and determine if the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>	<p><b>Yes</b> 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. On vehicles not equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module. <a href="#">REFER to Anti-Lock Brake System (ABS) Module</a> . On vehicles equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module and <u>HCU</u> . <a href="#">REFER to Hydraulic Control Unit (HCU)</a> .</p> <p><b>No</b> The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root</p>

cause of any connector or pin issues.
---------------------------------------

**C1B14:11, C1B14:12, U3000:47****Diagnostic Overview****C1B14:11, C1B14:12, U3000:47**

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

**Normal Operation and Fault Conditions**

The brake booster vacuum sensor measures the amount of vacuum in the brake booster as compared to the atmosphere. This information is sent to the ABS module and is used to determine if additional braking assistance is required. A vacuum leak, a circuit failure in the sensor wiring, a brake booster with a mechanical failure or an internal failure of the vacuum sensor or ABS module results in a DTC being set in the ABS module. [REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Brake Booster Vacuum Sensor.

**DTC Fault Trigger Conditions**




DTC	Description	Fault Trigger Conditions
C1B14:11	Sensor Supply Voltage A: Circuit Short to Ground	The <u>ABS</u> module supplies the brake booster vacuum sensor with a 5 volt operating voltage. The module monitors the voltage supply as it is generated and then again as it is sent out to the sensor. If the voltage varies by more than 100 mV for less than 1 second, this <u>DTC</u> is set in the <u>ABS</u> module. This failure can be caused by a short to ground, a damaged <u>ABS</u> module or a fluctuating voltage supply to the <u>ABS</u> module.
C1B14:12	Sensor Supply Voltage A: Circuit Short to Battery	The <u>ABS</u> module supplies the brake booster vacuum sensor with a 5 volt operating voltage. The module monitors the voltage supply as it is generated and then again as it is sent out to the sensor. If the voltage varies by more than 100 mV for less than 1 second, this <u>DTC</u> is set in the <u>ABS</u> module. This failure can be caused by a short to voltage, a damaged <u>ABS</u> module or a fluctuating voltage supply to the <u>ABS</u> module.
U3000:47	Control Module: Watchdog Safety Feature	The <u>ABS</u> module continually tests its own microprocessor as long as the ignition is ON. If the microprocessor fails this test, this <u>DTC</u> is set. This failure can be caused by high frequency interference,

	fluctuations in the voltage supply to the <u>ABS</u> module or an internal failure of the <u>ABS</u> module.
--	--

## PINPOINT TEST AE: C1B14:11, C1B14:12, U3000:47

Test Step	Result / Action to Take
<b>AE1 CHECK FOR <u>ABS</u> MODULE SYSTEM VOLTAGE <u>DTCs</u></b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Using a diagnostic scan tool, carry out the ABS module self-test.</li> <li><b>Is <u>DTC U3003:16</u> or <u>U3003:17</u> present?</b></li> </ul>	<p><b>Yes</b> For U3003:16, REFER to Section 206-09, <a href="#">GO to Pinpoint Test A</a>. For U3003:17, REFER to Section 206-09, <a href="#">GO to Pinpoint Test P</a>.</p> <p><b>No</b> GO to <a href="#">AE2</a>.</p>
<b>AE2 CHECK THE <u>ABS</u> MODULE SUPPLY VOLTAGE (VPWR_ABS) <u>PID</u></b>	
<ul style="list-style-type: none"> <li>Ignition ON.</li> <li>Measure and record the voltage at the battery.</li> <li>Using a diagnostic scan tool, monitor the VPWR_ABS <u>PID</u>.</li> <li><b>Is the <u>PID</u> display within 0.2 volt of the recorded battery voltage?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AE4</a>.</p> <p><b>No</b> GO to <a href="#">AE3</a>.</p>
<b>AE3 CHECK THE <u>ABS</u> MODULE VOLTAGE SUPPLY</b>	

- Ignition OFF.
- Disconnect ABS module C135.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C135-1		Ground--
C135-8		Ground--
C135-32		Ground--

- **Is each voltage within 0.2 volt of the recorded battery voltage?**

**Yes**GO to [AE4](#).**No**

VERIFY BJB fuses 5 (50A), 43 (40A) and 92 (10A) are OK. If not OK, REFER to the Wiring Diagrams manual to identify the cause of the circuit short. If OK, REPAIR the affected circuit for high resistance or an open.

#### **AE4 CHECK THE ABS MODULE GROUND CIRCUIT FOR AN OPEN**

- Ignition OFF.
- Disconnect the battery negative cable. [REFER to Section 414-01, Battery Disconnect](#).
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C135-16	$\Omega$	Ground--

- **Is the resistance less than 3 ohms?**

**Yes**GO to [AE5](#).**No**

REPAIR the circuit.

#### **AE5 CHECK FOR CORRECT ABS MODULE OPERATION**

- Inspect the ABS module C135 (if not previously disconnected).
- Repair:
  - corrosion (install new connector or terminal - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Connect the ABS module C135. Make sure it seats and latches correctly.
- Connect the battery negative cable.

**Yes**

CHECK OASIS for any applicable TSBs. If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. On vehicles not equipped with adaptive cruise control, if no TSBs address this concern, INSTALL a new ABS module. REFER to [Anti-Lock Brake System \(ABS\) Module](#). On vehicles equipped with adaptive cruise control, if no TSBs

[REFER to Section 414-01, Battery Disconnect](#).

- Operate the system and determine if the concern is still present.
- **Is the concern still present?**

address this concern, **INSTALL** a new ABS module and HCU. **REFER** to [Hydraulic Control Unit \(HCU\)](#).

**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.

## Wheel Speed Sensor Electrical Fault DTCs - Front

### Diagnostic Overview

## Wheel Speed Sensor Electrical Fault DTCs - Front

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

### Normal Operation and Fault Conditions

[REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Wheel Speed Sensor.

When the ignition is set to ON, the ABS module carries out a self-test by sending a reference voltage through the wheel speed sensors and their circuitry.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C0031:01	Left Front Wheel Speed Sensor: General Electrical Failure	These <u>DTCs</u> set in continuous memory and on-demand if any wheel speed sensor signal current is below 4.5 mA or above 20 mA for longer than 140 milliseconds, or if either sensor circuit is shorted to ground or battery voltage.
C0031:19	Left Front Wheel Speed Sensor: Circuit Current Above Threshold	
C0034:01	Right Front Wheel Speed Sensor: General Electrical Failure	

C0034:19	Right Front Wheel Speed Sensor: Circuit Current Above Threshold
----------	---

## Visual Inspection and Diagnostic Pre-checks

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

## PINPOINT TEST AJ: Wheel Speed Sensor Electrical Fault DTCs - Front

Test Step	Result / Action to Take
<b>AJ1 CHECK FOR FAULT REPEATABILITY</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, clear all <u>ABS</u> module <u>DTCs</u>.</li> <li>• Test drive the vehicle above 20 km/h (12.4 mph) and attempt to carry out at least 1 <u>ABS</u> stop.</li> <li>• Bring the vehicle to a safe stop.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is the <u>DTC</u> still present?</b></li> </ul>	<p><b>Yes</b> If the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester is available, GO to <a href="#">AJ2</a>. If the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester is not available, GO to <a href="#">AJ4</a>.</p> <p><b>No</b> The system is operating correctly at this time. INSPECT both front wheel speed sensor electrical connectors and the <u>ABS</u> module electrical connector. REPAIR or CLEAN the connector as necessary. ADDRESS the root cause of any connector or pin issues.</p>
<b>AJ2 CHECK THE <u>ABS</u> MODULE OUTPUT USING THE ROTUNDA <u>ABS</u> ACTIVE WHEEL SPEED SENSOR TESTER</b>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect suspect wheel speed sensor electrical connector.</li> <li>• Connect the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester to the wheel speed sensor connectors.</li> </ul>	<p><b>Yes</b> GO to <a href="#">AJ3</a>.</p> <p><b>No</b> GO to <a href="#">AJ5</a>.</p>

- Ignition ON.
- Select the correct system polarity on the Rotunda ABS Active Wheel Speed Sensor Tester and turn the power switch to the ON position.
- **Is the tester output LED illuminated?**

**AJ3 CHECK THE WHEEL SPEED SENSOR OUTPUT WITH THE ROTUNDA ABS ACTIVE WHEEL SPEED SENSOR TESTER**

- Raise the suspect wheel until it can spin freely. [REFER to Section 100-02, Jacking and Lifting](#), Lifting Points.
- While monitoring the Rotunda ABS 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. INSPECT all wheel speed sensor electrical connectors and the ABS module electrical connectors. REPAIR or CLEAN the connector as necessary. ADDRESS the root cause of any connector or pin issues.

**No**

INSTALL a new wheel speed sensor. REFER to [Wheel Speed Sensor — Front](#).

**AJ4 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO BATTERY VOLTAGE**

- Ignition OFF.
- Disconnect ABS module C135.
- Disconnect wheel speed sensor C150.
- Disconnect wheel speed sensor C160.
- Ignition ON.
- For the LF wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-45		Ground--
C135-46		Ground--



- For the RF wheel speed sensor, measure:

**Yes**

REPAIR the affected circuit.

**No**

GO to [AJ5](#).

Positive Lead	Measurement / Action	Negative Lead
C135-33		Ground--
C135-34		Ground--

- **Is any voltage present?**

#### **AJ5 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR AN OPEN**

- Ignition OFF.
- For the LF wheel speed sensor, measure: **Yes** GO to [AJ6](#).

Positive Lead	Measurement / Action	Negative Lead
C135-45	$\Omega$	C150-1
C135-46	$\Omega$	C150-2

- For the RF wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-33	$\Omega$	C160-2
C135-34	$\Omega$	C160-1

- **Are the resistances less than 3 ohms?**

**No**  
REPAIR the affected circuit.

#### **AJ6 CHECK FOR SHORTED WHEEL SPEED SENSOR CIRCUITS**

- For the LF wheel speed sensor, measure: **Yes** GO to [AJ7](#).

Positive Lead	Measurement / Action	Negative Lead
C150-1	$\Omega$	C150-2

- For the RF wheel speed sensor, measure:

**No**  
REPAIR the affected circuit.

Positive Lead	Measurement / Action	Negative Lead
C160-1	$\Omega$	C160-2

- Is the resistance greater 10,000 ohms?

### AJ7 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO GROUND

- For the LF wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-45	$\Omega$	Ground--
C135-46	$\Omega$	Ground--

- For the RF wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-33	$\Omega$	Ground--
C135-34	$\Omega$	Ground--

- Are the resistances greater than 10,000 ohms?

**Yes**

GO to [AJ8](#).

**No**

REPAIR the affected circuit.

### AJ8 CHECK FOR CORRECT ABS MODULE OPERATION

- Inspect ABS module C135.
- Repair:
  - corrosion (install new connector or terminal - clean module pins)
  - damaged or bent pins - install new terminals/pins
  - pushed-out pins - install new pins as necessary
- Connect ABS module C135. Make sure it seats and latches correctly.
- Connect wheel speed sensor C150 and C160. Make sure the electrical they seat and latch correctly.

**Yes**

CHECK OASIS for any applicable TSBs. If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. On vehicles not equipped with adaptive cruise control, if no TSBs address this concern, INSTALL a new ABS module. REFER to [Anti-Lock Brake System \(ABS\) Module](#). On vehicles equipped with adaptive cruise control, if no TSBs address

- Operate the system and determine if the concern is still present.
- **Is the concern still present?**

this concern, **INSTALL** a new ABS module and HCU. REFER to [Hydraulic Control Unit \(HCU\)](#).

**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.

## Wheel Speed Sensor Electrical Fault DTCs - Rear

### Diagnostic Overview

### Wheel Speed Sensor Electrical Fault DTCs - Rear

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

### Normal Operation and Fault Conditions

[REFER to Section 206-09, Anti-Lock Brake System \(ABS\) and Stability Control](#), Wheel Speed Sensor.

When the ignition is set to ON, the ABS module carries out a self-test by sending a reference voltage through the wheel speed sensors and their circuitry.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
C0037:01	Left Rear Wheel Speed Sensor: General Electrical Failure	These <u>DTCs</u> set in continuous memory and on-demand if any wheel speed sensor signal current is below 4.5 mA or above 20 mA for longer than 140 milliseconds, or if either sensor circuit is shorted to ground or battery voltage.
C0037:19	Left Rear Wheel Speed Sensor: Circuit Current Above Threshold	
C003A:01	Right Rear Wheel Speed Sensor: General Electrical Failure	

C003A:19	Right Rear Wheel Speed Sensor: Circuit Current Above Threshold	
C0037:95	Left Rear Wheel Speed Sensor: Incorrect Assembly	These <u>DTCs</u> set in continuous memory and on-demand if there is an internal failure of the wheel speed sensor or if either sensor circuit is shorted to ground, shorted to battery voltage or if either circuit is open.
C003A:95	Right Rear Wheel Speed Sensor: Incorrect Assembly	Vehicles equipped with active park assist use bi-directional wheel speed sensors in the rear positions, vehicles not equipped with active park assist use standard, active wheel speed sensors in the rear positions. These <u>DTCs</u> also set in continuous memory and on-demand if the wrong style of wheel speed sensor is installed on the vehicle.

### Visual Inspection and Diagnostic Pre-checks



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

### PINPOINT TEST AK: Wheel Speed Sensor Electrical Fault DTCs - Rear



Test Step	Result / Action to Take
<b>AK1 CHECK FOR FAULT REPEATABILITY</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, clear all <u>ABS</u> module <u>DTCs</u>.</li> <li>• Test drive the vehicle above 20 km/h (12.4 mph) and attempt to carry out at least 1 <u>ABS</u> stop.</li> <li>• Bring the vehicle to a safe stop.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is the <u>DTC</u> still present?</b></li> </ul>	<p><b>Yes</b> If the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester is available, GO to <a href="#">AK2</a>. If the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester is not available, GO to <a href="#">AK4</a>.</p> <p><b>No</b> The system is operating correctly at this time. INSPECT both front wheel speed sensor electrical connectors and the <u>ABS</u> module</p>

	electrical connector. REPAIR or CLEAN the connector as necessary. ADDRESS the root cause of any connector or pin issues.
<b>AK2 CHECK THE <u>ABS</u> MODULE OUTPUT USING THE ROTUNDA <u>ABS</u> ACTIVE WHEEL SPEED SENSOR TESTER</b>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect suspect wheel speed sensor electrical connector.</li> <li>• Connect the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester to the wheel speed sensor connectors.</li> <li>• Ignition ON.</li> <li>• Select the correct system polarity on the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester and turn the power switch to the ON position.</li> <li>• <b>Is the tester output <u>LED</u> illuminated?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AK3</a>.</p> <p><b>No</b> GO to <a href="#">AK5</a>.</p>
<b>AK3 CHECK THE WHEEL SPEED SENSOR OUTPUT WITH THE ROTUNDA <u>ABS</u> ACTIVE WHEEL SPEED SENSOR TESTER</b>	
<ul style="list-style-type: none"> <li>• Raise the suspect wheel until it can spin freely. <a href="#">REFER to Section 100-02, Jacking and Lifting</a>, Lifting Points.</li> <li>• While monitoring the Rotunda <u>ABS</u> Active Wheel Speed Sensor Tester, slowly spin the suspect wheel.</li> <li>• <b>Do the sensor output <u>LEDs</u> illuminate and flash and is the current overload <u>LED</u> not illuminated?</b></li> </ul>	<p><b>Yes</b> The system is operating correctly at this time. INSPECT all wheel speed sensor electrical connectors and the <u>ABS</u> module electrical connectors. REPAIR or CLEAN the connector as necessary. ADDRESS the root cause of any connector or pin issues.</p> <p><b>No</b> INSTALL a new wheel speed sensor. REFER to <a href="#">Wheel Speed Sensor — Rear</a>.</p>
<b>AK4 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO BATTERY VOLTAGE</b>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect <u>ABS</u> module C135.</li> <li>• Disconnect wheel speed sensor C440.</li> <li>• Disconnect wheel speed sensor C426.</li> </ul>	<p><b>Yes</b> REPAIR the affected circuit.</p> <p><b>No</b></p>

- Ignition ON.
- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-36		Ground--
C135-37		Ground--

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-42		Ground--
C135-43		Ground--

- **Is any voltage present?**

For vehicles not equipped with active park assist, GO to [AK5](#).  
For vehicles equipped with active park assist, GO to [AK7](#).

#### AK5 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR AN OPEN

- Ignition OFF.
- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-36	$\Omega$	C440-2
C135-37	$\Omega$	C440-1

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-42	$\Omega$	C426-1
C135-43	$\Omega$	C426-2

- **Are the resistances less than 3**

**Yes**  
GO to [AK6](#).

**No**  
REPAIR the affected circuit.

**ohms?****AK6 CHECK FOR SHORTED WHEEL SPEED SENSOR CIRCUITS**

- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C440-1	$\Omega$	C440-2

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C426-1	$\Omega$	C426-2

- Is the resistance greater 10,000 ohms?**

**Yes**GO to [AK9](#).**No**

REPAIR the affected circuit.

**AK7 CHECK THE BI-DIRECTIONAL WHEEL SPEED SENSOR CIRCUITS FOR AN OPEN**

- Ignition OFF.
- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-36	$\Omega$	C4261-1
C135-37	$\Omega$	C4261-2

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-42	$\Omega$	C4260-2
C135-43	$\Omega$	C4260-1

**Yes**GO to [AK8](#).**No**

REPAIR the affected circuit.

- Are the resistances less than 3 ohms?

**AK8 CHECK FOR SHORTED BI-DIRECTIONAL WHEEL SPEED SENSOR CIRCUITS**

- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C4261-2	$\Omega$	C4261-1

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C4260-2	$\Omega$	C4260-1

- Is the resistance greater 10,000 ohms?

**Yes**  
GO to [AK9](#).

**No**  
REPAIR the affected circuit.

**AK9 CHECK THE WHEEL SPEED SENSOR CIRCUITS FOR A SHORT TO GROUND**

- For the LR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-36	$\Omega$	Ground--
C135-37	$\Omega$	Ground--

- For the RR wheel speed sensor, measure:

Positive Lead	Measurement / Action	Negative Lead
C135-42	$\Omega$	Ground--

**Yes**  
GO to [AK10](#).

**No**  
REPAIR the affected circuit.

C135-43	$\Omega$	Ground--
<ul style="list-style-type: none"> <li>• <b>Are the resistances greater than 10,000 ohms?</b></li> </ul>		
<b>AK10 CHECK FOR CORRECT <u>ABS</u> MODULE OPERATION</b>		
<ul style="list-style-type: none"> <li>• Inspect <u>ABS</u> module C135.</li> <li>• Repair:             <ul style="list-style-type: none"> <li>• corrosion (install new connector or terminal - clean module pins)</li> <li>• damaged or bent pins - install new terminals/pins</li> <li>• pushed-out pins - install new pins as necessary</li> </ul> </li> <li>• Connect <u>ABS</u> module C135. Make sure it seats and latches correctly.</li> <li>• Connect wheel speed sensor C440 and C426. Make sure they seat and latch correctly.</li> <li>• Operate the system and determine if the concern is still present.</li> <li>• <b>Is the concern still present?</b></li> </ul>		
<p><b>Yes</b>            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. On vehicles not equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module. REFER to <a href="#">Anti-Lock Brake System (ABS) Module</a>. On vehicles equipped with adaptive cruise control, if no <u>TSBs</u> address this concern, INSTALL a new <u>ABS</u> module and <u>HCU</u>. REFER to <a href="#">Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b>            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.</p>		

## U3000:41

### Diagnostic Overview

## U3000:41

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

### Normal Operation and Fault Conditions

When the IVD Initialization procedure is carried out the ABS module calculates and stores an offset value for the stability sensors. The ABS module also recalculates and stores this stability sensor offset value when the ignition is set to OFF. This offset value is used by the ABS module for correct operation of the vehicle stability

control systems; ESC, RSC® and Curve Control.

### DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
U3000:41	Control Module: General Checksum Failure	When the ignition is set to ON, the <u>ABS</u> module reads the stored sensor calibration values and calculates a new offset value. If this offset value does not match what was previously stored in memory, the <u>ABS</u> module sets a <u>DTC</u> .

### Possible Causes

- Wiring, terminals or connectors
- Low vehicle battery voltage
- Incorrect or incomplete PMI
- Incorrect or incomplete IVD Initialization
- ABS module
- RCM

### PINPOINT TEST AL: U3000:41

Test Step	Result / Action to Take
<b>AL1 CHECK FOR <u>ABS</u> MODULE <u>DTC</u> U3003:16</b>	
<ul style="list-style-type: none"> <li>• Ignition ON.</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• Clear the <u>DTCs</u>.</li> <li>• Ignition OFF.</li> <li>• Ignition ON.</li> <li>• Repeat the <u>ABS</u> module self-test.</li> <li>• Record the <u>ABS</u> module <u>DTCs</u>.</li> <li>• <b>Is <u>DTC</u> U3003:16 present?</b></li> </ul>	<p><b>Yes</b> <a href="#">GO to Pinpoint Test A</a>.</p> <p><b>No</b> GO to <a href="#">AL2</a>.</p>
<b>AL2 CHECK THE BATTERY TERMINALS</b>	

<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Inspect the battery positive and negative terminals for corrosion and loose connections.</li> <li>• <b>Are both battery terminals tightened to specifications and free from any corrosion?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AL3</a> .</p> <p><b>No</b> CLEAN and TIGHTEN the battery terminals as necessary. REFER to <a href="#">Section 414-01</a> .</p>
<p><b>AL3 CHECK THE <u>ABS</u> MODULE CONNECTOR</b></p>	
<ul style="list-style-type: none"> <li>• Ignition OFF.</li> <li>• Disconnect: <u>ABS</u> module C135.</li> <li>• Using a good light source, inspect each connector terminal for any corrosion.</li> <li>• Inspect the connector for any pushed-out terminals.</li> <li>• Using a suitable mating terminal, check each connector terminal for deformed or enlarged contacts by comparing the mating terminal's fit between each of the following pins: <ul style="list-style-type: none"> <li>▪ C135-1</li> <li>▪ C135-8</li> <li>▪ C135-16</li> <li>▪ C135-32</li> </ul> </li> <li>• <b>Is the connector free of terminal corrosion, pushed-out terminals and spread terminals?</b></li> </ul>	<p><b>Yes</b> GO to <a href="#">AL4</a> .</p> <p><b>No</b> REPAIR the connector.</p> <p>Refer to Wiring Diagrams Cell <a href="#">5</a> for schematic and connector information.</p>
<p><b>AL4 PROGRAM AND INITIALIZE THE VEHICLE STABILITY CONTROL SYSTEM</b></p>	
<ul style="list-style-type: none"> <li>• Connect: <u>ABS</u> module C135.</li> <li>• Ignition ON.</li> <li>• <b>NOTE:</b> The following steps must be carried out in the order listed or the <u>ABS</u> module may become locked and unresponsive to the diagnostic scan tool. If the module becomes locked, symptom being the inability to clear any <u>DTCs</u> , then quit the current diagnostic scan tool session, begin a new session and repeat the steps below.</li> <li>• Using a diagnostic scan tool, carry out <u>PMI</u> on the <u>ABS</u> module using as-built data.</li> <li>• Using a diagnostic scan tool, carry out <u>PMI</u> on the <u>RCM</u> using as-built data.</li> <li>• Using a diagnostic scan tool, carry out</li> </ul>	<p><b>Yes</b> GO to <a href="#">AL5</a> .</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to an incomplete <u>PMI</u> or an incomplete IVD Initialization.</p>

<p>the IVD Initialization procedure.</p> <ul style="list-style-type: none"> <li>• Using a diagnostic scan tool, clear all <u>ABS</u> module <u>DTCs</u>.</li> <li>• Test drive the vehicle at speeds greater than 20 km/h (12 mph).</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is <u>DTC</u> U3000:41 retrieved again?</b></li> </ul>	
<p><b>ALS REPROGRAM AND REINITIALIZE THE VEHICLE STABILITY CONTROL SYSTEM</b></p>	
<ul style="list-style-type: none"> <li>• <b>NOTE:</b> The following steps must be carried out in the order listed or the <u>ABS</u> module may become locked and unresponsive to the diagnostic scan tool. If the module becomes locked, symptom being the inability to clear any <u>DTCs</u>, then quit the current diagnostic scan tool session, begin a new session and repeat the steps below.</li> <li>• Using a diagnostic scan tool, carry out <u>PMI</u> on the <u>ABS</u> module using as-built data.</li> <li>• Using a diagnostic scan tool, carry out <u>PMI</u> on the <u>RCM</u> using as-built data.</li> <li>• Using a diagnostic scan tool, carry out the IVD Initialization procedure.</li> <li>• Using a diagnostic scan tool, clear all <u>ABS</u> module <u>DTCs</u>.</li> <li>• Test drive the vehicle at speeds greater than 20 km/h (12 mph).</li> <li>• Using a diagnostic scan tool, carry out the <u>ABS</u> module self-test.</li> <li>• <b>Is <u>DTC</u> U3000:41 retrieved again?</b></li> </ul>	<p><b>Yes</b> For vehicles not equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module. <a href="#">Anti-Lock Brake System (ABS) Module</a>. For vehicles equipped with adaptive cruise control, INSTALL a new <u>ABS</u> module and <u>HCU</u>. <a href="#">Hydraulic Control Unit (HCU)</a>.</p> <p><b>No</b> The system is operating correctly at this time. The <u>DTC</u> may have been set due to an incomplete <u>PMI</u> or an incomplete IVD Initialization.</p>

