

Pinpoint Test P: DTCs C1280, C1282, C1516, C1963, C1975, C2770, U0151 and U0452

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

Normal Operation

The ABS module uses information received from several sensors (wheel speed sensors, steering wheel rotation sensor, stability/traction control system sensors, etc.) to determine if vehicle stability, traction or roll warrants ESC or RSC® interaction. If an event is going to occur, the ABS module adjusts the brake torque at specific wheels and the PCM reduces engine torque to make the vehicle more stable. Once the ABS module has determined that the stability event has been corrected, it returns the brake and engine torque to normal and continues to monitor the vehicle. DTCs set in the ignition cycle can only be cleared by cycling the ignition off and on once the fault has been corrected. The Restraints Control Module (RCM) measures the yaw rate and vehicle acceleration, then sends the signal through a secondary, dedicated Controller Area Network (CAN) to the ABS module. The ABS module uses this information for AdvanceTrac® and RSC® system operation. The ABS module also compares this information to information it receives from other sensors (brake pedal input, steering wheel) to determine how valid the information is and to determine if an instability event is about to occur.

The RCM and the ABS module communicate along circuits VCA23 (BU/WH) and VCA24 (GN/OG). An open circuit or a short to power or ground on any one of these circuits causes the ABS module to set a DTC. Also, if the RCM is not mounted in the correct position, with the electrical connector facing the driver-side of the vehicle, the ABS module also sets DTCs.

DTC Description	Fault Trigger Condition
<ul style="list-style-type: none"> ● C1280 — Yaw Rate Sensor Signal Fault ● C1282 — Lateral Accelerometer Signal Fault ● C1516 — Roll Rate Sensor Signal Fault ● C2770 — Longitudinal Acceleration Sensor Signal Fault 	<p>If the ABS module receives a message from the <u>RCM</u> that is out of the normal operating range or one that does not agree with other sensor information, the appropriate signal fault DTC sets.</p>
<ul style="list-style-type: none"> ● C1963 — Stability Control Inhibit Warning ● C1975 — IVD Plausibility Failure 	<p>If conditions or DTCs exist that prevent the AdvanceTrac® and <u>RSC®</u> systems from operating, DTCs C1963 and/or C1975 sets. This DTC is usually set due to the steering wheel rotation sensor or the <u>RCM</u> being damaged or installed incorrectly. If DTCs are present from the <u>RCM</u> or <u>PSCM</u>, diagnose these DTCs first.</p>
<ul style="list-style-type: none"> ● U0151 — Lost Communication with Restraints Control Module (RCM) ● U0452 — Invalid Data Received from <u>RCM</u> 	<p>The <u>RCM</u> uses a dedicated communication bus to send information to the ABS module. If, during normal operation, the ABS module does not receive any information from the <u>RCM</u> for more than 250 milliseconds, DTC U0151 or U0452 sets. U0151 monitors both the <u>HS-CAN</u> and the dedicated <u>CAN</u> circuits. If the ABS module does not receive the <u>RCM</u> serial number, over the <u>HS-CAN</u>, DTC U0151 sets. It also sets if the sensor data is not received over the dedicated <u>CAN</u> from the <u>RCM</u>. These DTCs can also be caused by another module software update. CLEAR all module DTCs and carry out another self-test to recheck the system.</p>

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^a Interactive Vehicle Dynamics

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- RCM
- ABS module

PINPOINT TEST P: DTCs C1280, C1282, C1516, C1963, C1975, C2770, U0151 and U0452

 **WARNING:** Do not handle, move or change the original horizontal mounting position of the restraints control module (RCM) while the RCM is connected and the ignition switch is ON. Failure to follow this instruction may result in the accidental deployment of the Safety Canopy and cause serious personal injury or death.

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

assemblies, which increases the risk of serious personal injury or death.



WARNING: Never disassemble or tamper with seat belt deployable components, including pretensioners, load limiters and inflators. Never back probe deployable device electrical connectors. Tampering or back probing may cause an accidental deployment and result in personal injury or death.

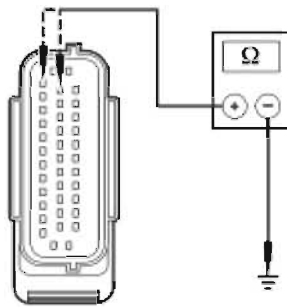
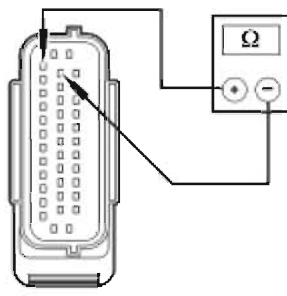
NOTICE: Use the Flex Probe Kit for all test connections to prevent damage to the wiring terminals. Do not use standard multi-meter probes.

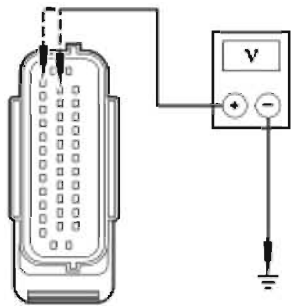
NOTE: Supplemental Restraint System (SRS) components should only be disconnected or reconnected when instructed to do so within a pinpoint test step. Failure to follow this instruction may result in incorrect diagnosis of the SRS.

NOTE: The SRS must be fully operational and free of faults before releasing the vehicle to the customer.

Test Step	Result / Action to Take
P1 CHECK FOR A <u>HS-CAN</u> COMMUNICATION CONCERN WITH THE <u>RCM</u> OR <u>PSCM</u>	
<ul style="list-style-type: none"> ● Connect the scan tool. ● Ignition ON. ● NOTE: The Network Test does not test the dedicated <u>CAN</u> communications between the ABS module and <u>RCM</u>. ● Using a scan tool, carry out a Network Test. ● Does the <u>RCM</u> and <u>PSCM</u> pass the Network Test? 	<p>Yes GO to P2.</p> <p>No REFER to Section 418-00 to diagnose the High Speed Controller Area Network (HS-CAN) bus.</p>
P2 CHECK FOR <u>RCM</u> AND <u>PSCM</u> DTCs	
<ul style="list-style-type: none"> ● Enter the following diagnostic mode on the scan tool: Self Test — <u>RCM</u>. ● Enter the following diagnostic mode on the scan tool: Self Test — <u>PSCM</u>. ● Are any <u>RCM</u> or <u>PSCM</u> DTCs retrieved on-demand self-test? 	<p>Yes For <u>RCM</u> DTCs, REFER to Section 501-20B.</p> <p>For <u>PSCM</u> DTCs, REFER to Section 211-00A.</p> <p>No If only one of the following ABS module DTCs C1280, C1282, C1516, C2770 was retrieved, GO to P3. If more than one ABS module DTC C1280, C1282, C1516, C2770 was retrieved, GO to P7. For DTCs U0151 and U0452, GO to P7. For all other DTCs, GO to P3.</p>
P3 CHECK THE ABS MODULE YAW RATE (YAW_RATE_2) PID	
<ul style="list-style-type: none"> ● Enter the following diagnostic mode on the scan tool: Data Logger — ABS Module. ● NOTE: The vehicle must be on level ground and at a complete standstill. Any vehicle movement results in false values for this test. ● Monitor the YAW_RATE_2 PID. ● Is the YAW_RATE_2 PID value between -3.5 and 3.5? 	<p>Yes GO to P4.</p> <p>No GO to P12.</p>

<p>P4 CHECK THE ABS MODULE LATERAL ACCELERATION (LAT_ACCL_2) PID</p> <ul style="list-style-type: none"> • NOTE: The vehicle must be on level ground and at a complete standstill. Any vehicle movement results in false values for this test. • Monitor the LAT_ACCL_2 PID. • Is the LAT_ACCL_2 PID value between -0.125g and 0.125g? 	<p>Yes GO to P5.</p> <p>No GO to P12.</p>									
<p>P5 CHECK THE ABS MODULE LONGITUDINAL ACCELERATION (LONG_ACCL) PID</p> <ul style="list-style-type: none"> • NOTE: The vehicle must be on level ground and at a complete standstill. Any vehicle movement results in false values for this test. • Monitor the LONG_ACCL PID. • Is the LONG_ACCL PID value between -0.15g and 0.15g? 	<p>Yes GO to P6.</p> <p>No GO to P12.</p>									
<p>P6 CHECK THE ABS MODULE ROLL RATE (ROLLRAT) PID</p> <p>NOTE: The vehicle must be on level ground and at a complete standstill. Any vehicle movement results in false values for this test.</p> <ul style="list-style-type: none"> • Monitor the ROLLRAT PID. • Is the ROLLRAT PID value between -3.5 and 3.5? 	<p>Yes GO to P7.</p> <p>No GO to P12.</p>									
<p>P7 CHECK THE DEDICATED CAN CIRCUITS FOR AN OPEN</p> <ul style="list-style-type: none"> • Ignition OFF. • Depower the <u>SRS</u>. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. • Disconnect: ABS Module C135. • Disconnect: <u>RCM</u> C310A and C310B. • Measure the resistance between the ABS module C135, harness side and the <u>RCM</u> C310B, harness side as indicated in the following chart: <table border="1"> <thead> <tr> <th>ABS Module</th> <th>Circuit</th> <th>RCM</th> </tr> </thead> <tbody> <tr> <td>C135-37</td> <td>VCA23 (BU/WH)</td> <td>C310B-20</td> </tr> <tr> <td>C135-24</td> <td>VCA24 (GN/OG)</td> <td>C310B-19</td> </tr> </tbody> </table> <div> <p>The diagram shows the ABS module C135 (part number N0101363) and the RCM C310B. The ABS module has terminals 38, 13, 25, and 1. The RCM has terminals 10, 40, 1, and 31. A resistance measurement symbol (Ω) with plus and minus signs is shown between the modules, indicating where to measure resistance.</p> </div> <ul style="list-style-type: none"> • Are the resistances less than 5 ohms? 	ABS Module	Circuit	RCM	C135-37	VCA23 (BU/WH)	C310B-20	C135-24	VCA24 (GN/OG)	C310B-19	<p>Yes GO to P8.</p> <p>No REPAIR the affected circuit(s). REPOWER the <u>SRS</u>. REFER to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. CLEAR all CMDTCs. PERFORM a road test. REPEAT the self-test.</p>
ABS Module	Circuit	RCM								
C135-37	VCA23 (BU/WH)	C310B-20								
C135-24	VCA24 (GN/OG)	C310B-19								

<p>P8 CHECK THE DEDICATED <u>CAN</u> CIRCUITS FOR A SHORT TO GROUND</p> <ul style="list-style-type: none"> • Measure the resistance between ground and: <ul style="list-style-type: none"> ■ ABS module C135-24, circuit VCA24 (GN/OG), harness side. ■ ABS module C135-37, circuit VCA23 (BU/WH), harness side.  <p>N0100992</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? 	<p>Yes GO to P9.</p> <p>No REPAIR the affected circuit(s). REPOWER the SRS. REFER to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. CLEAR all <u>CMDTCs</u>. PERFORM a road test. REPEAT the self test.</p>
<p>P9 CHECK THE DEDICATED <u>CAN</u> CIRCUITS FOR A SHORT TOGETHER</p> <ul style="list-style-type: none"> • Measure the resistance between ABS module C135-24, circuit VCA24 (GN/OG), harness side and ABS module C135-37, circuit VCA23 (BU/WH), harness side.  <p>N0100993</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? 	<p>Yes GO to P10.</p> <p>No REPAIR the affected circuit(s). REPOWER the SRS. REFER to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. CLEAR all <u>CMDTCs</u>. PERFORM a road test. REPEAT the self test.</p>
<p>P10 CHECK THE DEDICATED <u>CAN</u> CIRCUITS FOR A SHORT TO VOLTAGE</p> <ul style="list-style-type: none"> • Repower the SRS. Do not prove out the SRS at this time. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. • Ignition ON. • Measure the voltage between ground and: <ul style="list-style-type: none"> ■ ABS module C135-24, circuit VCA24 (GN/OG), harness side. ■ ABS module C135-37, circuit VCA23 (BU/WH), harness side. 	<p>Yes REPAIR the affected circuit(s). CLEAR all <u>CMDTCs</u>. PERFORM a road test. REPEAT the self test.</p> <p>No GO to P11.</p>



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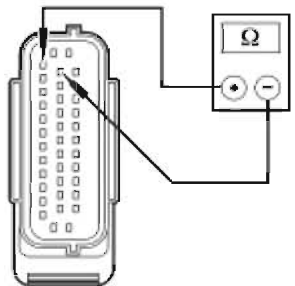
- Is any voltage present?

P11 CHECK RCM TERMINATING RESISTOR

- Ignition OFF.
- Depower the SRS. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in [Section 501-20B](#).
- Prior to reconnecting any previously disconnected SRS component:
 - inspect connector(s) (including any in-line connectors) for pushed-out, loose or spread terminals and loose or frayed wire connections at terminals.
 - inspect wire harness for any damage, pinched, cut or pierced wires.
 - inspect RCM C310A and C310B Connector Position Assurance (CPA) lever/lock for correct operation. Refer to RCM in [Section 501-20B](#).
 - repair any concerns found.

Refer to Wiring Diagrams Cell [5](#), Connector Repair Procedures for schematic and connector information.

- Connect: RCM C310A and C310B .
- Measure the resistance between ABS module C135-37, circuit VCA23 (BU/WH), harness side and C135-24, circuit VCA24 (GN/OG), harness side.



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- Is the resistance between 108 and 132 ohms?

P12 CHECK THE RCM INSTALLATION AND MOUNTING SURFACE

- Ignition OFF.
- If not previously directed to do so, depower the Supplemental Restraint System (SRS). Refer to

Yes
GO to [P12](#).

No
INSTALL a new RCM. REFER to [Section 501-20B](#). CLEAR all CMDTCs. PERFORM a road test. REPEAT the self test. If the concern is still present, GO to [P14](#). If other DTCs are present, REFER to the appropriate DTC chart.

Yes
GO to [P13](#).

<p>Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B.</p> <ul style="list-style-type: none"> Inspect the Restraints Control Module (RCM) installation and make sure that the fasteners are fully seated and tightened correctly. Refer to RCM in Section 501-20B. Inspect the mounting surface for damage, corrosion or foreign material. Is the RCM installed correctly and is the mounting surface clean and free from damage? 	<p>No REPAIR or INSTALL new as necessary. REPOWER the SRS. REFER to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. CLEAR all CMDTCs. PERFORM a road test. REPEAT the self test.</p>
<p>P13 CHECK FOR AN INTERMITTENT FAULT</p>	
<ul style="list-style-type: none"> Disconnect: RCM C310A and C310B . Disconnect: ABS module C135 . <ul style="list-style-type: none"> inspect connector(s) (including any in-line connectors) for corrosion, loose or spread terminals and loose or frayed wire connections at terminals. inspect wire harness for any damage, pinched, cut or pierced wires. repair any concerns found. <p>Refer to Wiring Diagrams Cell 5, Connector Repair Procedures for schematic and connector information.</p> <ul style="list-style-type: none"> Connect: All Previously Disconnected Component (s)/Connector(s) . Repower the SRS. Do not prove out the SRS at this time. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B . Perform a road test. Ignition ON. Enter the following diagnostic mode on the scan tool: Self Test — ABS Module . Is the concern still present? 	<p>Yes INSTALL a new RCM. REFER to Section 501-20B. CLEAR all CMDTCs. PERFORM a road test. REPEAT the self test. If the concern is still present, GO to P14. If other DTCs are present, REFER to the appropriate DTC chart.</p> <p>No The fault is not present and cannot be recreated at this time. Do not install any new SRS components at this time. SRS components should only be installed when directed to do so in the pinpoint test.</p>
<p>P14 CHECK THE ABS MODULE FOR CORRECT OPERATION</p>	
<ul style="list-style-type: none"> Depower the SRS. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in Section 501-20B. Prior to reconnecting any previously disconnected SRS component: <ul style="list-style-type: none"> inspect connector(s) (including any in-line connectors) for pushed-out, loose or spread terminals and loose or frayed wire connections at terminals. inspect wire harness for any damage, pinched, cut or pierced wires. inspect RCM C310A and C310B CPA lever/lock for correct operation. Refer to RCM in Section 501-20B . inspect ABS module C135 for dirt, corrosion, water intrusion, pushed-out, loose or spread terminals and loose or frayed wire connections at terminals. repair any concerns found. 	<p>Yes INSTALL a new ABS module. REFER to Anti-Lock Brake System (ABS) Module in this section.</p> <p>No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.</p>

Refer to Wiring Diagrams Cell [5](#), Connector Repair Procedures for schematic and connector information.

- Connect: All Previously Disconnected Component (s)/Connector(s) .
- Repower the SRS. **Do not** prove out the SRS at this time. Refer to Supplemental Restraint System (SRS) Depowering and Repowering in [Section 501-20B](#) .
- Perform a road test.
- Ignition ON.
- Enter the following diagnostic mode on the scan tool:
Self Test — ABS Module .
- **Is the concern still present?**