Antitheft and Alarm Systems: Testing and Inspection
Anti-Theft - Perimeter

Principles of Operation
PRINCIPLES OF OPERATION

The perimeter anti-theft feature provides an audible and visual alarm when unauthorized access to the vehicle is detected. When an intrusion is detected by any door ajar, liftgate ajar, hood or luggage compartment switches, it sends a signal to the smart junction box (SJB). When the SJB receives a signal indicating intrusion into the vehicle, the SJB supplies a signal to the horn control relay and the parking lamps relay. The relays close, supplying the voltage which activates the horn and the parking lamps. The perimeter anti-theft feature does not arm until **20 seconds** elapse after locking the vehicle. The perimeter anti-theft device disarms only when:

- unlock is pressed on the remote keyless entry (RKE) transmitter.
- the RKE keypad code is entered.
- the driver door lock cylinder is turned to unlock.
- the ignition switch position changes to RUN or START.

Inspection and Verification
INSPECTION AND VERIFICATION

1. Verify the customer concern.

Visual Inspection Chart

Mechanical	Electrical
• Driver door disarm switch • Hood switch • Horn • Door ajar switch(es) • Liftgate ajar switch • Luggage compartment lid switch	• Battery junction box (BJB) fuse(s): — 1 (80A) — 29 (80A) • Loose or corroded connections • Smart junction box (SJB) • Circuitry

Visual Inspection Chart

2. Visually inspect for obvious signs of mechanical or electrical damage.
3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, connect the diagnostic tool to the data link connector (DLC) and select the vehicle to be tested from the diagnostic tool menu. If the diagnostic tool does not communicate with the vehicle:
   - check that the program card is correctly installed.
   - check the connections to the vehicle.
   - check the ignition switch position.

5. If the diagnostic tool still does not communicate with the vehicle, refer to the diagnostic tool operating manual.
6. Carry out the diagnostic tool data link test. If the diagnostic tool responds with:
   - CAN circuits fault; all electronic control units no response/not equipped, refer to Information Bus (Module Communications Network).
   - No response/not equipped for SJB, refer to Body Control Systems (Multifunction Electronic Control Module).
   - System passed, retrieve and record the continuous diagnostic trouble codes (DTCs), erase the continuous DTCs, and carry out self-test diagnostics for the smart junction box.

7. If the DTCs retrieved are related to the concern, go to the Smart Junction Box (SJB) Diagnostic Trouble Code (DTC) Index. See: Trouble Code Diagnostic Charts
8. If no DTCs related to the concern are retrieved, GO to Symptom Chart. See: Diagnosis By Symptom

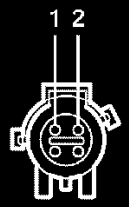
DIAGNOSIS AND TESTING (Continued)

Smart Junction Box (SJB) Diagnostic Trouble Code (DTC) Index

DTC	Description	Source	Action
B1520	Hood Switch Circuit Open	SJB	GO to Pinpoint Test C.
B2116	Door Driver Reset Switch Stuck Failure	SJB	GO to Pinpoint Test A.
All other DTCs	—	SJB	Refer to Body Control Systems.

B1520-B2116

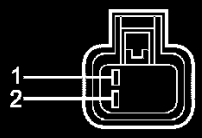
Driver Door Disarm Switch C509



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	1313 (LB/BK) driver door disarm signal circuit	12 volts, 5 ohms or less between the smart junction box (SJB) and the driver door disarm switch. Greater than 10,000 ohms to ground.
2	1205 (BK) ground	5 ohms or less between the driver door disarm switch and ground.

Driver Door Disarm Switch C509

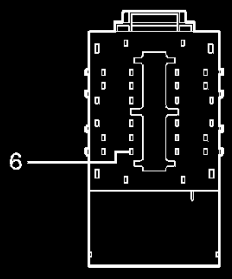
Hood Switch C127



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
1	1711 (VT/OG) hood ajar signal circuit	5 ohms or less between the smart junction box (SJB) and the hood switch. Greater than 10,000 ohms to ground.
2	1205 (BK) ground	5 ohms or less between the hood switch and ground.

Hood Switch C127

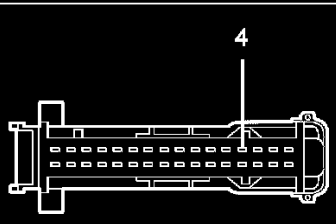
Smart Junction Box (SJB) C2280a



Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
6	1711 (VT/OG) hood signal circuit	5 ohms or less between the SJB and the hood switch. Greater than 10,000 ohms to ground.

Smart Junction Box (SJB) C2280a

Smart Junction Box (SJB) C2280c



N0009720

Smart Junction Box (SJB) C2280c (Part 1)

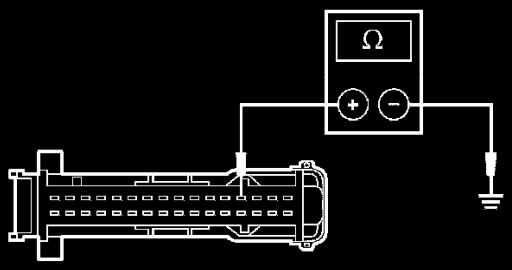
Pin Number(s)	Circuit Designation/Description	Normal Condition/Measurement
4	1313 (LB/BK) driver door disarm signal circuit	12 volts, 5 ohms or less between the SJB and the driver door disarm switch. Greater than 10,000 ohms to ground.

Smart Junction Box (SJB) C2280c (Part 2)

Test A: The Alarm System Does Not Disarm - Using The Driver Door Disarm Switch

PINPOINT TEST A: THE ALARM SYSTEM DOES NOT DISARM - USING THE DRIVER DOOR DISARM SWITCH

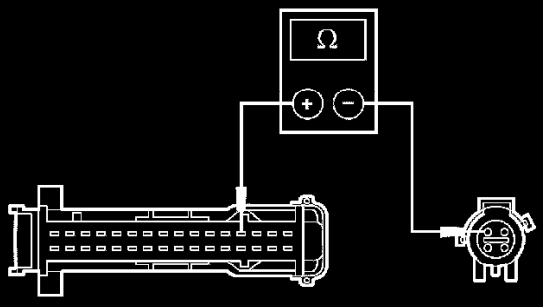
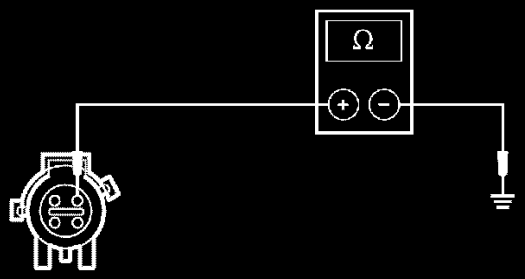
PINPOINT TEST A: THE ALARM SYSTEM DOES NOT DISARM — USING THE DRIVER DOOR DISARM SWITCH

Test Step		Result / Action to Take
A1	CHECK THE SMART JUNCTION BOX (SJB) DTCs	
	• Use the recorded results from the SJB self-test. • **Is DTC B2116 retrieved?**	**Yes** GO to Pinpoint Test C. **No** GO to **A2**.
A2	CHECK THE DRIVER DOOR DISARM SWITCH OPERATION	
	• Key in OFF position. • Disconnect: Smart Junction Box (SJB) C2280c. • Insert the key in the driver door lock cylinder. • Turn the key cylinder to UNLOCK. • Measure the resistance between the SJB C2280c-4, circuit 1313 (LB/BK), harness side and ground.	
	 N0009721	
	• **Is the resistance less than 5 ohms?**	**Yes** GO to **A5**. **No** GO to **A3**.
A3	CHECK CIRCUIT 1313 (LB/BK) FOR AN OPEN	
	• Disconnect: Driver Door Disarm Switch C509.	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST A: THE ALARM SYSTEM DOES NOT DISARM — USING THE DRIVER DOOR DISARM SWITCH (Continued)

Test Step		Result / Action to Take
A3	CHECK CIRCUIT 1313 (LB/BK) FOR AN OPEN (Continued)	
	• Measure the resistance between the SJB C2280c-4, circuit 1313 (LB/BK), harness side and the driver door disarm switch C509-1, circuit 1313 (LB/BK).  N0009722 • **Are the resistances less than 5 ohms?**	**Yes** GO to **A4**. **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
A4	CHECK CIRCUIT 1205 (BK) FOR AN OPEN TO THE DRIVER DOOR DISARM SWITCH	
	• Connect: SJB C2280c. • Measure the resistance between the driver door disarm switch C509-2, circuit 1205 (BK), harness side and ground.  A0096363 • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver door disarm switch. CLEAR the DTCs. REPEAT the self-test. section. **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
A5	CHECK FOR CORRECT SJB OPERATION	

	• Disconnect all the SJB connectors.
	• Check for:
	  • corrosion
	  • pushed-out pins
	• Connect all the SJB connectors and make sure they seat correctly.
	• Operate the system and verify the concern is still present.
	• **Is the concern still present?**
		Yes
		INSTALL a new SJB. TEST the system for normal operation.
		No
		The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

A3-A5

Normal Operation

The smart junction box (SJB) monitors the driver door disarm switch on circuit 1313 (LB/BK). The disarm signal occurs when the driver door lock key cylinder is turned to unlock causing the driver door disarm switch to complete the circuit through circuit 1205 (BK). This signals the SJB to cancel the alarm function.

Possible Causes

- circuit 1313 (LB/BK) open or short to ground
- circuit 1205 (BK) open
- driver door disarm switch
- SJB

Test B: The Alarm System Does Not Arm/Disarm

PINPOINT TEST B: THE ALARM SYSTEM DOES NOT ARM/DISARM

PINPOINT TEST B: THE ALARM SYSTEM DOES NOT ARM/DISARM		
	Test Step	Result / Action to Take
B1	CHECK THE DOOR LOCK/UNLOCK OPERATION FROM THE SWITCH	
	• Lock and unlock the doors using the door lock control switch. • **Do all the doors lock and unlock correctly?**	**Yes** GO to **B2**. **No** REPAIR the door locks.
B2	CHECK THE RKE TRANSMITTER FUNCTION	
	• Lock and unlock the doors using the RKE transmitter. • **Do all the doors lock and unlock using the RKE transmitter?**	**Yes** GO to **B3**. **No** REPAIR the RKE transmitter function.
B3	CHECK THE RKE KEYPAD FUNCTION	
	• Lock and unlock the doors using the RKE keypad. • **Do all the doors lock and unlock using the RKE keypad?**	**Yes** GO to **B4** **No** REPAIR the RKE keypad function.
B4	CHECK FOR CORRECT SMART JUNCTION BOX (SJB) OPERATION	

	• Disconnect all the SJB connections.
	• Check for:
	  • corrosion
	  • pushed-out pins
	• Connect all the SJB connectors and make sure they seat correctly.
	• Make sure all other system connectors are fully seated.
	• Operate the system and verify the concern is still present.
	• **Is the concern still present?**
		Yes
		INSTALL a new SJB. TEST the system for normal operation.
		No
		The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

B1-B4

Normal Operation

The smart junction box (SJB) arms the alarm when a lock signal is received from the remote keyless entry (RKE) transmitter, the RKE keypad, or the door lock control switch (with the door open).

The SJB disarms the alarm when an unlock signal is received from the RKE transmitter or the RKE keypad.

Possible Causes

- RKE transmitter
- RKE keypad
- door lock control switch
- SJB

Test C: The Alarm System Does Not Operate Correctly

PINPOINT TEST C: THE ALARM SYSTEM DOES NOT OPERATE CORRECTLY

PINPOINT TEST C: THE ALARM SYSTEM DOES NOT OPERATE CORRECTLY

Test Step		Result / Action to Take
C1	CHECK THE RECORDED SMART JUNCTION BOX (SJB) DTCs	
	• Check the recorded results from the SJB self-test. • **Is DTC B2116 retrieved?**	**Yes** GO to **C8**. **No** GO to **C2**.
C2	CHECK IF ALL THE DOORS AND THE LUGGAGE COMPARTMENT LID/LIFTGATE ARE CLOSED	
	• Key in ON position. Close all the doors. • **Are any ajar indicators illuminated?**	**Yes** REFER to Lighting and Horns to diagnose the door ajar indicator(s). **No** GO to **C3**.
C3	CHECK THE HORN	
	• Activate the horn using the horn switch. • **Does the horn operate correctly?**	**Yes** GO to **C4**. **No** REFER to Horns to diagnose the horn.
C4	CHECK THE PARKING LAMPS	
	• Activate the parking lamps using the headlamp switch. • **Do the parking lamps operate correctly?**	**Yes** GO to **C5**. **No** REFER to Lighting and Horns to diagnose the parking lamps.
C5	CHECK THE HOOD SWITCH FOR A CONCERN	
	• Disconnect: Hood Switch C127. • Trigger the SJB PID HOOD_AJAR_SW. • **Does PID continue to indicate hood ajar?**	**Yes** GO to **C6**. **No** REPAIR circuit 1711 (VT/OG) for a short to ground. CLEAR the DTCs. REPEAT the self-test.
C6	CHECK CIRCUIT 1711 (VT/OG) FOR AN OPEN	
	• Disconnect: SJB C2280a.	

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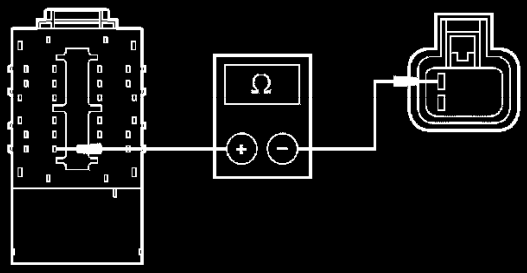
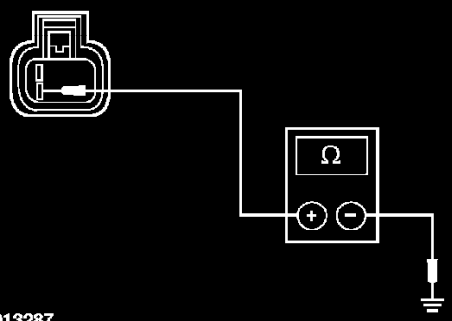
DIAGNOSIS AND TESTING (Continued)

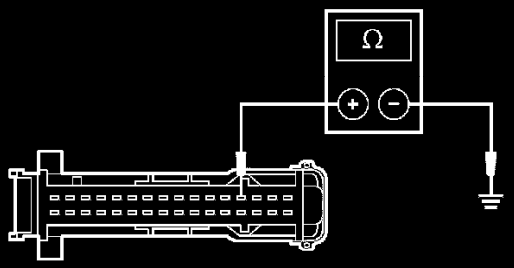
PINPOINT TEST C: THE ALARM SYSTEM DOES NOT OPERATE CORRECTLY (Continued)

Test Step	Result / Action to Take
C6 **CHECK CIRCUIT 1711 (VT/OG) FOR AN OPEN (Continued)**	
• Check the resistance between the hood switch C127-1, circuit 1711 (VT/OG), harness side, and the SJB C2280a-6, circuit 1711 (VT/OG), harness side.  N0009727 • **Is the resistance less than 5 ohms?**	**Yes** GO to **C7**. **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
C7 **CHECK CIRCUIT 1205 (BK) FOR AN OPEN TO THE HOOD SWITCH**	
• Measure the resistance between the hood switch C127-2, circuit 1205 (BK), harness side and ground.  A0013287 • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new hood switch. CLEAR the DTCs. REPEAT the self-test **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.
C8 **CHECK THE DRIVER DOOR DISARM SWITCH**	
• Disconnect: Driver Door Disarm Switch C509. • Clear the DTCs. Repeat the self-test. • **Is DTC B2116 still present?**	**Yes** GO to **C9**. **No** INSTALL a new driver door disarm switch. CLEAR the DTCs. REPEAT the self-test.
C9 **CHECK CIRCUIT 1313 (LB/BK) FOR A SHORT TO GROUND**	
• Disconnect: SJB C2280c.	

(Continued)

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST C: THE ALARM SYSTEM DOES NOT OPERATE CORRECTLY (Continued)

Test Step		Result / Action to Take
C9	CHECK CIRCUIT 1313 (LB/BK) FOR A SHORT TO GROUND (Continued)	
	• Measure the resistance between the SJB C2280c-4, circuit 1313 (LB/BK), harness side and ground.  N0009721 • **Is the resistance less than 5 ohms?**	**Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test. **No** GO to **C10**.
C10	CHECK FOR CORRECT SJB OPERATION	

	• Disconnect all the SJB connectors.
	• Check for:
	  • corrosion
	  • pushed-out pins
	• Connect all the SJB connectors and make sure they seat correctly.
	• Operate the system and verify the concern is still present.
	• **Is the concern still present?**
		Yes
		INSTALL a new SJB.TEST the system for normal operation.
		No
		The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

C9-C10

Normal Operation

The smart junction box (SJB) monitors the hood switch on circuit 1711 (VT/OG). When an unauthorized intrusion to the engine compartment occurs, the hood switch removes the ground from circuit 1205 (BK). The SJB activates the vehicle alarm.

The SJB monitors the luggage compartment lid switch on circuit 700 (WH/VT). When an unauthorized intrusion to the luggage compartment occurs, the luggage compartment lid switch completes the circuit to 1205 (BK). The SJB receives a ground signal on circuit 700 (WH/VT) and activates the vehicle alarm.

The SJB monitors the door ajar switches on circuits 1312 (LG/BK) LH front door, 1314 (YE/LG) RH front door, 1742 (VT/OG) LH rear door, and 1754 (RD) RH rear door. When an unauthorized intrusion to the passenger compartment occurs, the door ajar switch completes the circuit to 1205 (BK). The SJB receives a ground signal and activates the vehicle alarm.

The SJB monitors the driver door disarm switch on circuit 1313 (LB/BK). When the driver door lock cylinder is turned to the unlock position, the vehicle alarm is disarmed.

When the SJB activates the vehicle alarm, the horn is sounded, and the parking lamps are flashed.

Possible Causes

- circuit 1711 (VT/OG) open or short to ground
- circuit 700 (WH/VT) open or short to ground
- circuit 1313 (LB/BK) open or short to ground
- circuit 1205 (BK) open
- hood switch
- door ajar switch(es)
- luggage compartment lid switch
- liftgate ajar switch
- SJB

Symptom Chart

Condition	Possible Sources	Action
• No communication with the smart junction box (SJB)	• Battery junction box (BJB) fuse(s): — 1 (80A) — 29 (80A) • Circuitry • SJB	• REFER to Body Control Systems (Multifunction Electronic Control Module).
• The alarm system does not disarm — using the driver door disarm switch	• Driver door disarm switch • Circuitry • Smart junction box (SJB)	• GO to Pinpoint Test A.
• The alarm system does not arm/disarm	• RKE transmitter • RKE keypad • Smart junction box (SJB)	• GO to Pinpoint Test B.
• The alarm system does not operate correctly	• Circuitry • Hood switch • Luggage compartment lid switch • Liftgate ajar switch • Door ajar switch(es) • Smart junction box (SJB)	• GO to Pinpoint Test C.

Symptom Chart