Vehicle Dynamic Suspension

Refer to Wiring Diagrams Cell 41 , Rear Air Suspension for schematic and connector information.

Special Tool(s)

 ST1137-A	73 Digital Multimeter or equivalent 105-R0051
 ST1619-A	Super Star II Tester or equivalent 007-0041-B

Principles of Operation

WARNING: Do not remove an air spring under any circumstances when there is pressure in the air spring. Do not remove any components supporting an air spring without either exhausting the air or providing support for the air spring to prevent vehicle damage or personal injury.

WARNING: Disconnecting an air line that is connected to the air compressor can cause personal injury or damage to components as high pressure air is vented uncontrolled.

WARNING: Before repairing or installing any air suspension component(s), turn off the air suspension switch or disconnect the battery ground cable to prevent vehicle damage or personal injury.

WARNING: Do not attempt to install or inflate any air spring that has become unfolded to prevent vehicle damage or personal injury.

WARNING: Failure to observe the following procedures may result in a sudden failure of the suspension system.

WARNING: Any air spring which is unfolded must be refolded prior to being installed in a vehicle.

WARNING: The air spring refolding procedure should not be used for an air spring which has never supported the vehicle's weight while in the correctly folded position.

WARNING: Vehicles with an incorrectly folded air spring(s) found after the vehicle has been driven, must have a new air spring installed.

WARNING: Do not attempt to inflate any air spring which has collapsed while deflated from the rebound hanging position to the jounce stop.

WARNING: When installing a new air spring, care must be taken to not apply a load to the suspension until the air springs have been inflated using the air spring fill procedure.

WARNING: After inflating an air spring in the hanging position, it must be inspected for proper shape.

NOTE: The scan tool may be used in place of the Super Star II Tester.

The air suspension system is designed to improve ride handling and general vehicle driving performance.

Air Suspension Control Module

A microprocessor controls the air suspension system. The microprocessor and its supporting hardware are contained in the air suspension control module. The air suspension control module responds to signals from various sensors in the vehicle to maintain the programmed ride height while the vehicle is either moving or stopped. The air suspension control module accomplishes this by opening and closing solenoid valves to control the amount of air in the air spring(s). The air suspension control module turns on the compressor by applying voltage through the compressor relay to inflate the air spring(s) and raise the vehicle. The air suspension control module opens the vent solenoid to lower the vehicle by releasing air from the air spring(s)in response to signal inputs from the air suspension height sensor(s).

Air Suspension Switch

CAUTION: The air suspension switch must be turned to the OFF position when the vehicle is hoisted, jacked, towed, jump started, or raised off the ground, to avoid unnecessary operation of the system and possible damage to the air suspension system components.

The air suspension switch provides a signal to the air suspension control module in the ON position to activate the system to maintain the programmed vehicle height.

Air Compressor

NOTE: The compressor contains a thermal overload circuit breaker. The circuit breaker automatically resets after a cool down period and after being if tripped by excessive compressor motor heat.

The air compressor assembly consists of the compressor pump, electric motor and vent solenoid (must be installed as an assembly).

Air Suspension Height Sensor

The air suspension height sensor sends signals to the air suspension control module. There are three possible conditions that the air suspension control module interprets from the signals of the air suspension height sensors. The conditions are trim height, below trim height, or above trim height.

Solenoid Valve, Air Spring

WARNING: Never rotate an air spring solenoid valve to the release slot in the air spring end cap fitting until all pressurized air has escaped from the air spring to prevent vehicle damage or personal injury.

The air spring solenoid valve allows air to enter and exit the rear air springs during height adjustment operations. The air spring solenoid valve is electrically operated and controlled by the air suspension control module.

Steering Sensor

The steering sensor provides the steering rate and position to the air suspension control module to avoid overcompensation of the air suspension during turns.

Inspection and Verification

1. Verify the customer's concern by operating the vehicle to duplicate the condition.

2. Visually inspect for obvious signs of mechanical and electrical damage. Refer to the following chart:

Visual Inspection Chart

Mechanical	Electrical

• Restricted suspension movement
• Excessive vehicle load
• Cut, severed, or crimped air line(s)
• Damaged air spring(s)
• Height sensor damage
• Height sensor mounted incorrectly, disconnected, or damaged
	• Central junction box (CJB):
	  ▪ Fuse 5 (15A)
	• Battery junction box (BJB):
	  ▪ Fuse 8 (30A)
	• Loose or corroded connectors
	• Air suspension switch OFF

3. If the inspection reveals obvious concerns that can be readily identified, repair as required.

4. If the concern(s) remains after the inspection, run the Auto Test. If any DTCs are retrieved, refer to Air Suspension Control Module Diagnostic Trouble Code (DTC) Index.

5. If no DTCs are retrieved, GO to Symptom Chart for further diagnostics.

6. If no communication with the air suspension control module, Go To Pinpoint Test A .

Using the Super Star II

The air suspension control module is diagnosed using Super Star II Tester 418-F045 (007-0041B) or equivalent.

The test connector used to communicate with the air suspension control module is located on the RH side of the luggage compartment.

When the tester is connected, the engine is started and the HOLD/TEST button is latched down, the air suspension control module will respond sending a code 10 to the Super Star II Tester which represents "Diagnostics mode entered." If diagnostic trouble code (DTC) 10 is not displayed, Go To Pinpoint Test A .

Air Suspension Control Module Diagnostic Trouble Code (DTC) Index

Diagnostic Trouble Code (DTC) Index

DTC	Description	Source	Action
10	Diagnostic auto test in progress	Air suspension control module	—
11	Vehicle system passes	Air suspension control module	—
12	Auto test passed	Air suspension control module	CARRY OUT manual inputs. • Refer to Auto Test Diagnostics in this section.
13	Auto test failed	Air suspension control module	CARRY OUT manual inputs. • Refer to Auto Test Diagnostics in this section.
15	No drive cycle errors detected	Air suspension control module	—
16	EVO diagnostic trouble code	Air suspension control module	REFER to Section 211-00 .
17	EVO diagnostic trouble code	Air suspension control module	REFER to Section 211-00 .

18	EVO diagnostic trouble code	Air suspension control module	REFER to Section 211-00 .
23	Vent Rear Function Test	Air suspension control module	GO to Function Tests.
26	Compress Rear Function Test	Air suspension control module	GO to Function Tests.
31	Air Compressor Relay Toggle Function Test	Air suspension control module	GO to Function Tests.
32	Vent Solenoid Toggle Function Test	Air suspension control module	GO to Function Tests.
33	Air Spring Solenoid Function Test	Air suspension control module	GO to Function Tests.
35	Drive cycle error codes erased OK	Air suspension control module	—
39	Compressor relay control circuit short to power	Air suspension control module	Go To Pinpoint Test D .
40	Compressor relay control circuit short to ground	Air suspension control module	Go To Pinpoint Test E .
42	Air spring solenoid circuit short to ground	Air suspension control module	Go To Pinpoint Test F .
43	Air spring solenoid circuit short to power	Air suspension control module	Go To Pinpoint Test G .
44	Vent solenoid circuit short to power	Air suspension control module	Go To Pinpoint Test H .
45	Vent solenoid circuit failure	Air suspension control module	Go To Pinpoint Test I .
46	Air suspension height sensor supply circuit failure	Air suspension control module	Go To Pinpoint Test J .
51	Unable to detect lowering of rear	Air suspension control module	Go To Pinpoint Test K .
54	Unable to detect raising of rear	Air suspension control module	Go To Pinpoint Test L .
55	Unable to detect vehicle speed greater than 24 km/h (15 mph)	Air suspension control module	Go To Pinpoint Test M .
60	Air suspension switch short to power	Air suspension control module	Go To Pinpoint Test N .
61	Air suspension switch circuit failure	Air suspension control module	Go To Pinpoint Test O .
68	Air suspension height sensor circuit failure	Air suspension control module	Go To Pinpoint Test P .
70	ECU defective	Air suspension control module	INSTALL a new air suspension control module. For additional information, REFER to Module—Air Suspension Control . REPEAT the Auto Test.
71	Air suspension height sensor circuit open	Air suspension control module	Go To Pinpoint Test Q .
72	Did not detect four open or closed door signals	Air suspension control module	Go To Pinpoint Test R .
74	EVO diagnostic trouble code	Air suspension control module	REFER to Section 211-00 .
80	Battery voltage high or low	Air suspension control module	Go To Pinpoint Test S .

Symptom Chart

Symptom Chart

NOTE: Refer to the Wiring Diagrams for connector numbers stated in the Pinpoint Tests.

Condition	Possible Sources	Action
• No communication with the air suspension control module	• CJB Fuse 5 (15A). • BJB Fuse 8 (30A). • Circuitry. • Air suspension control module.	• Go To Pinpoint Test A .
• Unable to enter auto test	• Air suspension control module. • Circuitry.	• Go To Pinpoint Test B .
• Rear air suspension does not respond to load changes	• Circuitry. • Air compressor. • Air compressor inlet tube. • Air compressor drier. • Air suspension height sensor. • Air suspension control module.	• Go To Pinpoint Test C .
• Rear rides low/high	• Circuitry. • Air spring solenoid. • Air suspension height sensor. • Air suspension control module.	• Go To Pinpoint Test C .
• Poor ride quality	• Circuitry. • Air springs.	• Go To Pinpoint Test C .
• Air suspension warning indicator ON	• Air suspension switch OFF. • Air suspension control module. • Circuitry. • Instrument cluster (conventional cluster) or lamp warning module (electronic cluster).	• Place the air suspension switch in the ON position. • GO to Auto Test. • REFER to Section 413-01A (conventional cluster) or REFER to Section 413-01B (electronic cluster), or REFER to Section 413-01C (natural gas cluster).

Functional Tests

CAUTION: Function Test is run only if diagnosis does not identify concern. Excessive use of the Function Test could overheat the compressor or damage system electronics.

Function tests are run at the end of the Auto Test procedure and are used as an aid to diagnose the system. The only way to enter the Function Test is by first running the Auto Test. During the Function Test, the air suspension control module will attempt to cycle the components as follows:

DTC 23: Vent Rear — During this test, the air suspension control module will attempt to open the vent solenoid as long as the Super Star II Tester button is depressed. The rear of the vehicle will lower.

NOTE: DTC 26 is normally used to inflate the rear air springs after installation. The extended use of this test can cause the auto-resetting circuit breaker in the compressor to open. If this happens, allow the compressor to cool down for 15 minutes. Then, restart the diagnostic procedures.

DTC 26: Compress Rear — During this test, the air suspension control module will attempt to energize the air compressor and open the air spring solenoid as long as the Super Star II Tester button is depressed. The rear of the vehicle will rise.

DTC 31: Air Compressor Relay Toggle — During this test, the air suspension control module will attempt to cycle the compressor relay ON for one second and OFF for one second repeatedly. This cycle will repeat for as long as the Super Star II Tester is depressed. The compressor will be heard cycling ON and OFF if this test is successful.

DTC 32: Vent Solenoid Toggle — During this test, the vent solenoid is opened for one second, then closed for one second. This cycle will repeat for as long as the Super Star II Tester button is depressed. The vent solenoid in the air compressor will be heard cycling ON and OFF if this test is successful.

DTC 33: Air Spring Solenoid Toggle — During this test, both air spring solenoids will be opened for one second, then closed for one second repeatedly. This cycle will repeat for as long as the Super Star II Tester button is depressed. The air suspension control module cannot turn one air spring solenoid ON without having the other air spring solenoid turn ON. The circuitry inside the air suspension control module has the air spring solenoids tied together. To verify that both air spring solenoids operate, raise the vehicle on a hoist. Do not turn the air suspension switch OFF. Remain in Function Test DTC 33. Then, touch each air spring solenoid to verify that it is cycling ON and OFF.

PINPOINT TEST FT: Function Tests

CONDITIONS	DETAILS/RESULTS/ACTIONS
FT1 CHECK FOR DTCS	
	1 Carry out the Auto Test. • **Are any DTCs displayed?** → **Yes** GO to FT2 . → **No** REPEAT the Auto Test. If the Auto Test cannot be entered, Go To Pinpoint Test A .
FT2 CHECK FOR FUNCTION TEST DTCS	
	1 Release Super Star II Tester button to the HOLD (up) position. 2 Wait at least 20 seconds. 3 **NOTE:** The Super Star II Tester will indicate a Function Test DTC from the lowest to the highest number Function Test DTC. Each DTC will be displayed for about 15 seconds. After all the Function Test DTCs are displayed, they will be repeated as long as the Super Star II Tester button is in TEST (down) position. Depress Super Star II Tester button to the TEST (down) position. • **Are Function Test DTCs displayed?** → **Yes** GO to FT3 . → **No** RELEASE Super Star II Tester button to HOLD (up) position. Wait 20 seconds and depress button to TEST (down) position. If Function Test DTCs are still not displayed, REPEAT Auto Test.
FT3 CARRY OUT FUNCTION TESTS	
	1 Carry out all Function Test DTCs.

	2 **NOTE:** Waiting longer than four seconds will cause the next Function Test DTC to be entered. Within four seconds after the desired Function Test DTC is displayed, release Super Star II Tester button to HOLD (up) position. • **Are all Function Tests successful?** → **Yes** System is OK. REPEAT the Auto Test. → **No** GO to Air Suspension Control Module Diagnostic Trouble Code (DTC) Index.

Auto Test Diagnostics

At the beginning of the automatic portion of the test, the air suspension control module checks for damaged air suspension control module (DTC 70), for unstable battery voltage (DTC 80), then for shorted or open conditions that would create DTC 39 through DTC 46, and DTC 68 through DTC 71. If shorts or opens are detected, the automatic portion of the test is ended and a DTC 13 (auto test failed) will be displayed on the Super Star II Tester. If no shorts or opens are detected, the automatic portion of the test continues. The air suspension control module attempts to raise and lower the vehicle to verify that all three air suspension height sensor states (trim, high, low) can be reached. A properly functioning vehicle will be at trim height at the end of the Auto Test. If all three states are not reached, the Auto Test will end and again a DTC 13 will be displayed. A DTC 12 will be displayed at the end of the Auto Test only if everything checked to this point is functional.

After DTC 12 (or DTC 13) is displayed, the air suspension control module is ready to check for manual inputs. The manual inputs check the steering sensor and door courtesy lamp switch circuits. During the manual test, the air suspension control module continually monitors the door and steering sensor circuits for activity. To pass the manual test, the air suspension control module must detect that four doors have been opened and closed, and the steering wheel has been turned at least one quarter turn in each direction. After the manual test, the Super Star II Tester button must be toggled or the air suspension control module will continue to monitor the manual input tests indefinitely. Either a DTC 11 (air suspension OK) or other DTCs will be displayed at this time.

After the auto and manual input tests, the DTCs will be displayed automatically. Each DTC detected will be displayed for about 15 seconds. The code display will continue until all DTCs have been displayed. The display will repeat the DTC until Super Star II Tester button is released (up). Document all DTCs, then release the depressed Super Star II Tester button. Do not disconnect or turn OFF the Super Star II Tester. The Super Star II Tester is ready to enter the Function Test if a DTC 11 has been displayed.

Pinpoint Tests

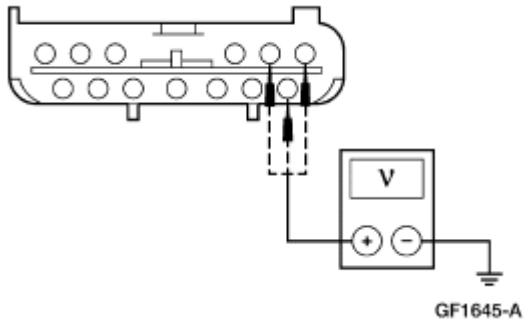
PINPOINT TEST A: NO COMMUNICATION WITH THE AIR SUSPENSION CONTROL MODULE

CONDITIONS	DETAILS/RESULTS/ACTIONS
A1 CHECK CIRCUIT 1053 (LB/PK) AND CIRCUIT 298 (VT/OG) FOR AN OPEN	
1  2	

Air Suspension Control Module C2131b

3

4



4 Measure the voltage between air suspension control module C2131b, harness side and ground as follows:

Air Suspension Control Module C2131b	Circuit
Pin 16	298 (VT/OG)
Pin 1	1053 (LB/PK)
Pin 15	1053 (LB/PK)

- **Are the voltages greater than 10 volts?**

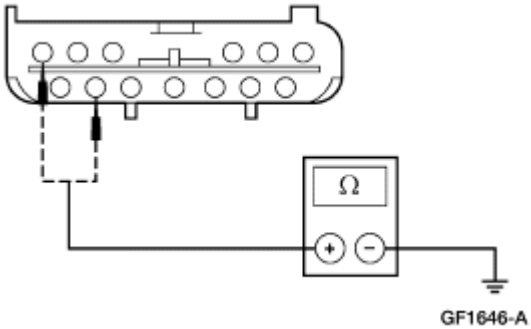
→ **Yes**
GO to A2 .

→ **No**
REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test.

A2 CHECK CIRCUIT 57 (BK) AND CIRCUIT 676 (PK/OG) FOR AN OPEN

1

2



2 Measure the resistance between air suspension control module C2131b Pin 6, Circuit 57 (BK), harness side and ground; and between air suspension control module C2131b Pin 20, Circuit 676 (PK/OG), harness side and ground.

- **Are the resistances less than 5 ohms?**

→ **Yes**
GO to A3 .

→ **No**
REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test.

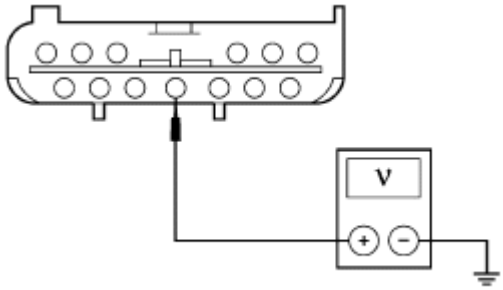
A3 CHECK CIRCUIT 419 (DG/LG) FOR VOLTAGE AT THE AIR SUSPENSION CONTROL MODULE

1

Air Suspension Control Module C2131a

2

3



3 Measure the voltage between air suspension control module C2131a Pin 11, Circuit 419 (DG/LG), harness side and ground.

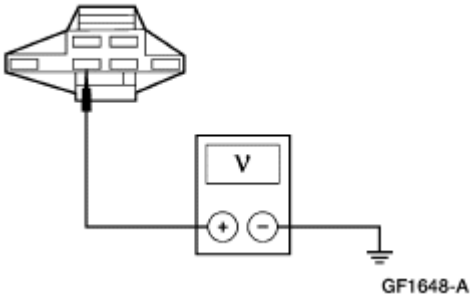
- **Is the voltage greater than 10 volts?**

→ **Yes**
GO to A4 .

→ **No**
REFER to Section 413-01A (conventional cluster) or REFER to Section 413-01B (electronic cluster), or REFER to Section 413-01C (natural gas cluster).

A4 CHECK CIRCUIT 419 (DG/LG) FOR VOLTAGE AT THE AIR SUSPENSION TEST CONNECTOR

1



1 Measure the voltage between air suspension test connector C4146 Pin 4, Circuit 419 (DG/LG), harness side and ground.

- **Is the voltage greater than 10 volts?**

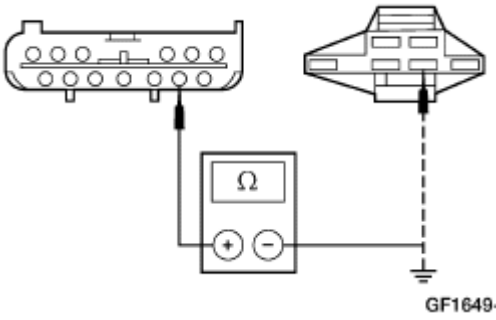
→ **Yes**
GO to A5 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

A5 CHECK CIRCUIT 844 (GY/RD)

1

1 Measure the resistance between air suspension control module C2131a Pin 9, Circuit 844



(GY/RD), harness side and air suspension test connector C4146 Pin 5, Circuit 844 (GY/RD), harness side; and between air suspension control module C2131a Pin 9, Circuit 844 (GY/RD), harness side and ground.

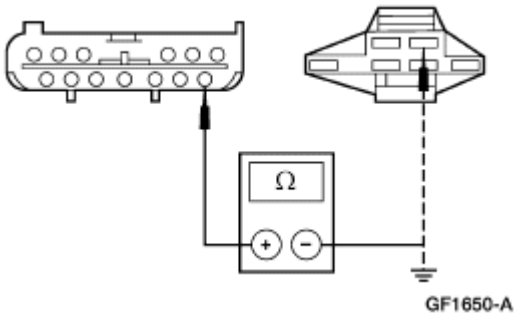
- **Is the resistance less than 5 ohms between air suspension control module and air suspension test connector; and greater than 10,000 ohms between air suspension control module and ground?**

→ **Yes**
GO to A6 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

A6 CHECK CIRCUIT 432 (BK/PK)

1



1 Measure the resistance between air suspension control module C2131a Pin 8, Circuit 432 (BK/PK), harness side and air suspension test connector C4146 Pin 2, Circuit 432 (BK/PK), harness side; and between air suspension control module C2131a Pin 9, Circuit 432 (BK/PK), harness side and ground.

- **Is the resistance less than 5 ohms between air suspension control module and air suspension test connector; and greater than 10,000 ohms between air suspension control module and ground?**

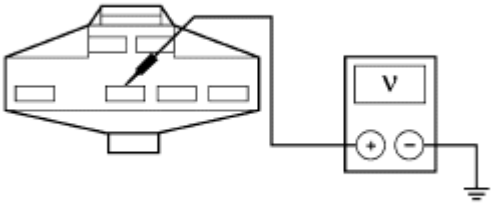
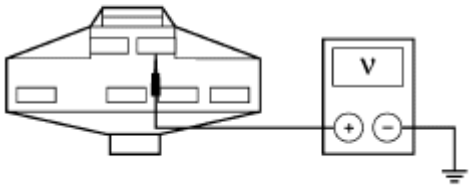
→ **Yes**
GO to A7 .

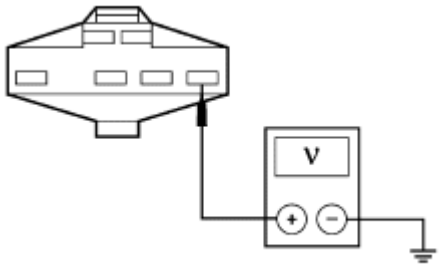
→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

A7 CHECK CIRCUIT 419 (DG/LG) FOR SHORT TO POWER

1

2 Disconnect the instrument cluster C2220a (conventional cluster) or C220a (electronic cluster).

3  4  GF0654-A	4 Measure the voltage between air suspension diagnostic connector C4146 Pin 4, Circuit 419 (DG/LG), harness side and ground. • **Is any voltage indicated?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** RECONNECT instrument cluster. GO to A8 .
A8 CHECK CIRCUIT 432 (BK/PK) FOR SHORT TO POWER	
1  GF0655-A	1 Measure the voltage between air suspension diagnostic connector C4146 Pin 2, Circuit 432 (BK/PK), harness side and ground. • **Is any voltage indicated?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to A9 .
A9 CHECK CIRCUIT 844 (GY/RD) FOR SHORT TO POWER	
1	1 Measure the voltage between air suspension diagnostic connector C4146 Pin 2, Circuit 844 (GY/RD), harness side and ground.



GF1857-A

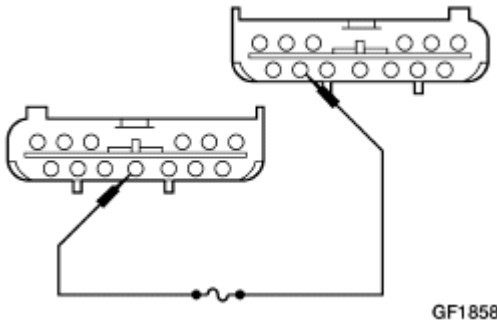
- **Is any voltage indicated?**

→ **Yes**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to A10 .

A10 CHECK AIR SUSPENSION WARNING INDICATOR WIRING

1



GF1858-A

1 Connect a fused (10A) jumper wire between air suspension control module C2131b Pin 6, Circuit 57 (BK), harness side and air suspension control module C2131a Pin 11, Circuit 419 (DG/LG), harness side.

2 Check for air suspension warning indicator illumination.

- **Does the air suspension warning indicator illuminate?**

→ **Yes**
DISCONNECT the jumper. RECONNECT the air suspension control module. GO to A11 .

→ **No**
CHECK the indicator bulb. INSTALL a new bulb as necessary. If OK, REPAIR the instrument cluster. CLEAR the DTCs. REPEAT the Auto Test.

A11 CHECK AIR SUSPENSION WARNING INDICATOR

1

2 Place the air suspension switch in the ON position.

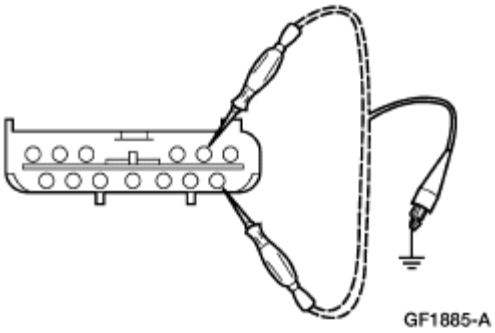
3 Place the air suspension switch in the OFF position.

4

	• **Does the indicator illuminate?** → **Yes** REPEAT the Auto Test. RETEST the system for normal operation. If unable to enter Auto Test, INSTALL a new control module; REFER to Module—Air Suspension Control . REPEAT the Auto Test. RETEST the system for normal operation. → **No** INSTALL a new control module; REFER to Module—Air Suspension Control . CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST B: UNABLE TO ENTER AUTO TEST

CONDITIONS	DETAILS/RESULTS/ACTIONS
B1 CHECK COMMUNICATION TO THE AIR SUSPENSION CONTROL MODULE	
	1 Check communication between the Super Star II Tester and the air suspension control module. • **Does the Super Star II Tester communicate?** → **Yes** GO to B2 . → **No** Go To Pinpoint Test A .
B2 CHECK CIRCUIT 298 (VT/OG) AND CIRCUIT 1053 (LB/PK) FOR VOLTAGE	
1  2  Air Suspension Control Module C2131b 3  4	4 Connect a test light between air suspension control module C2131b Pin 16, Circuit 298 (VT/OG), harness side and ground; and between air suspension control module C2131b Pin 1, Circuit 1053 (LB/PK), harness side and ground.

 GF1885-A	• **Is the test light brightly illuminated on both circuits?** → **Yes** INSTALL a new air suspension control module; REFER to Module—Air Suspension Control . CLEAR the DTCs. REPEAT the Auto Test. → **No** REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test.

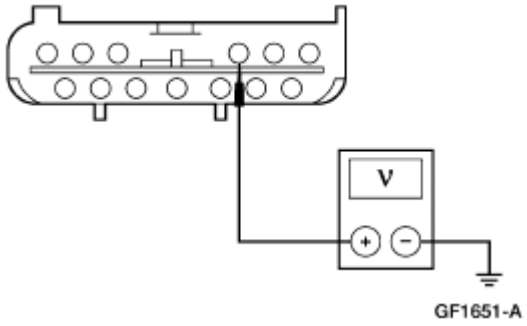
PINPOINT TEST C: AUTO TEST

CONDITIONS	DETAILS/RESULTS/ACTIONS
C1 CHECK FOR DTCS	
2  5 	1 Place the Super Star II Tester in the EEC/MCU and FAST settings. 3 Place the air suspension switch in the OFF position and then in the ON position. 4 **NOTE:** The Super Star II Tester must be in the HOLD position before connecting the diagnostic connector. Connect the Super Star II Tester to the air suspension control module C4146. 6 Wait at least two seconds before depressing the Super Star II Tester to the TEST position. 7 Wait at least 20 seconds for the DTCs to be displayed. • **Are any DTCs displayed?** → **Yes** GO to C2 . → **No** Go To Pinpoint Test C .
C2 CHECK FOR DTC 10	

	1 Check the Super Star II Tester for DTC 10. • **Is DTC 10 displayed?** → **Yes** System is in Auto Test mode. GO to C4 . → **No** GO to C3 .
C3 CHECK FOR DTC 15, 55, OR 80	
	1 Check the Super Star II Tester for DTC 15, 55, or 80. • **Is DTC 15, 55, or 80 displayed?** → **Yes** If DTC 15 or 55 is retrieved, REPAIR Circuit 298 (PK/OG). CLEAR the DTCs. REPEAT the self-test. If DTC 80 is retrieved, GO to Pinpoint Test S . → **No** Go To Pinpoint Test A .
C4 CHECK FOR DTC	
	1 Wait two minutes after DTC 10 is displayed. 2 **NOTE:** When the Auto Test is complete a DTC 12 (Auto Test passed) or a DTC 13 (Auto Test failed) will be displayed. After the Auto Test is complete, the manual input test can be started. Carry out the manual inputs test by opening and closing all four doors and turning the steering wheel 1/4 turn in both directions. 3 Release the Super Star II Tester TEST button to HOLD position. 4 **NOTE:** Within 20 seconds of depressing the Super Star II Tester to the TEST position, DTCs will start to be retrieved. Wait two seconds and depress the Super Star II Tester to the TEST position. • **Is DTC 11 displayed?** → **Yes** If a condition still exists, GO to Symptom Chart . If a condition does not exist, system is OK. → **No** GO to Air Suspension Control Module Diagnostic Trouble Code (DTC) Index.

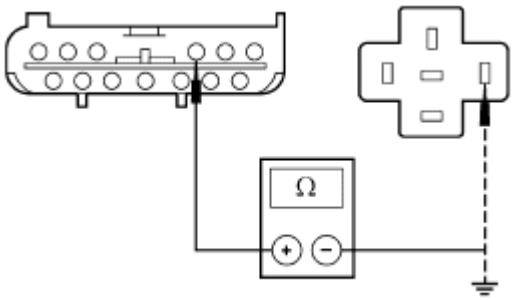
PINPOINT TEST D: DTC 39, COMPRESSOR RELAY CONTROL CIRCUIT SHORT TO POWER

CONDITIONS	DETAILS/RESULTS/ACTIONS
D1 CHECK CIRCUIT 420 (DB/YE) FOR SHORT TO POWER	
1 	

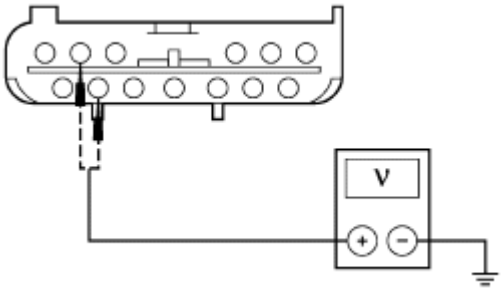
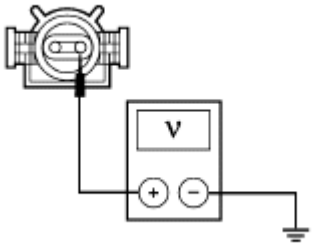
2  Air Suspension Control Module C2131a 3  Air Compressor Relay 4  5  	5 Measure the voltage between air suspension control module C2131a Pin 23, Circuit 420 (DB/YE), harness side and ground. • **Is voltage present?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to D2 .
D2 CHECK THE AIR COMPRESSOR RELAY	
	1 Carry out the air compressor relay component test; refer to Wiring Diagrams Cell 149, Component Test. • **Is the air compressor relay OK?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air compressor relay. CLEAR the DTCs. REPEAT the Auto Test.

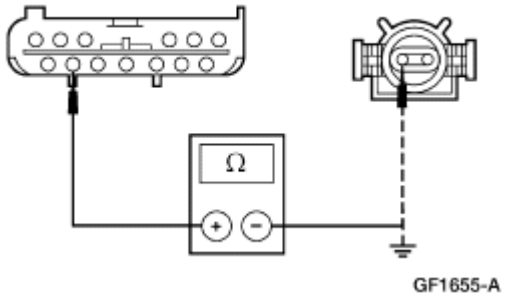
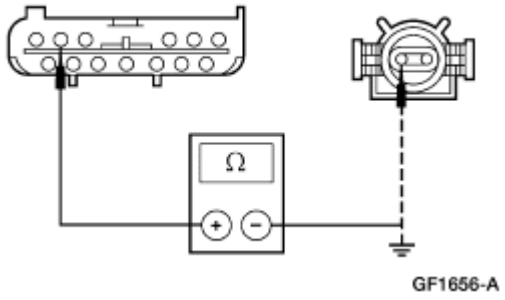
PINPOINT TEST E: DTC 40, COMPRESSOR RELAY CONTROL CIRCUIT FAILURE

CONDITIONS	DETAILS/RESULTS/ACTIONS
E1 CHECK CIRCUIT 420 (DB/YE)	

1  2  Air Suspension Control Module C2131a 3  Air Compressor Relay 4  GF1652-A	4 Measure the resistance between air suspension control module C2131a Pin 23, Circuit 420 (DB/YE), harness side and air compressor relay Pin 85, Circuit 420 (DB/YE), harness side; and between air suspension control module C2131a Pin 23, Circuit 420 (DB/YE), harness side and ground. • **Is the resistance less than 5 ohms between the air suspension control module and air compressor relay; and greater than 10,000 ohms between the air suspension control module and ground?** → **Yes** GO to E2 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
E2 CHECK THE AIR COMPRESSOR RELAY	
	1 Carry out the air compressor relay component test; refer to Wiring Diagrams Cell 149, Component Test. • **Is the air compressor relay OK?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air compressor relay. CLEAR the DTCs. REPEAT the Auto Test.

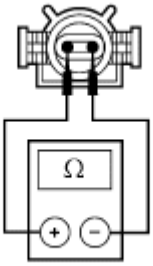
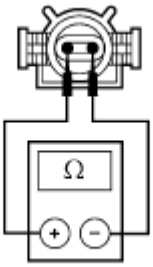
PINPOINT TEST F: DTC 42, AIR SPRING SOLENOID CIRCUIT SHORT TO GROUND

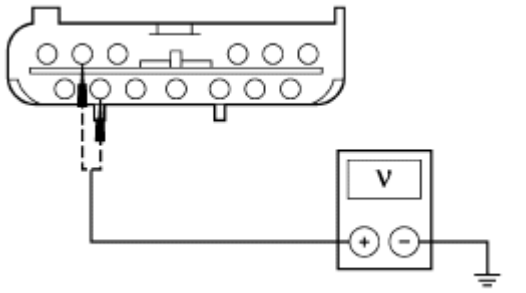
CONDITIONS	DETAILS/RESULTS/ACTIONS
F1 CHECK THE AIR SPRING SOLENOID CIRCUITRY	
1  2  Air Suspension Control Module C2131a 3  GF1653-A	3 Measure the voltage between air suspension control module C2131a Pin 13, Circuit 1114 (BN/PK), harness side and ground; and between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and ground. • **Are the voltages greater than 10 volts?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** GO to F2 .
F2 CHECK CIRCUIT 1053 (LB/PK) FOR AN OPEN	
1  LH Air Spring Solenoid C4044 2  RH Air Spring Solenoid C4045 3  GF1654-A	3 Measure the voltage between LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side and ground; and between RH air spring solenoid C4045, Circuit 1053 (LB/PK), harness side and ground.

	• **Are the voltages greater than 10 volts?** → **Yes** GO to F3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
F3 CHECK CIRCUIT 1114 (BN/PK)	
1  GF1655-A	1 Measure the resistance between air suspension control module C2131a Pin 13, Circuit 1114 (BN/PK), harness side and air spring solenoid C4044, Circuit 1114 (BN/PK), harness side; and between air suspension control module C2131a Pin 13, Circuit 1114 (BN/PK), harness side and ground. • **Is the resistance less than 5 ohms between the air suspension control module and air spring solenoid; and greater than 10,000 ohms between the air suspension control module and ground?** → **Yes** GO to F4 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
F4 CHECK CIRCUIT 1115 (TN/WH)	
1  GF1656-A	1 Measure the resistance between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and air spring solenoid C4044, Circuit 1115 (TN/WH), harness side; and between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and ground. • **Is the resistance less than 5 ohms between the air suspension control module and air spring solenoid; and greater than 10,000 ohms between the air suspension control module and ground?** → **Yes** INSTALL a new air spring solenoid in question. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.

	→ **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

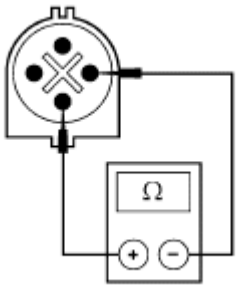
PINPOINT TEST G: DTC 43, AIR SPRING SOLENOID CIRCUIT SHORT TO POWER

CONDITIONS	DETAILS/RESULTS/ACTIONS
G1 CHECK THE RH AIR SPRING SOLENOID	
1  RH Air Spring Solenoid C4045 2  GF1657-A	2 Measure the resistance between RH air spring solenoid pins (component side). • **Is the resistance between 15 and 18 ohms?** → **Yes** GO to G2 . → **No** INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.
G2 CHECK THE LH AIR SPRING SOLENOID	
1  LH Air Spring Solenoid C4044 2  GF1657-A	2 Measure the resistance between LH air spring solenoid pins (component side). • **Is the resistance between 15 and 18 ohms?**

	→ **Yes** GO to G3 . → **No** INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.
G3 CHECK CIRCUIT 1115 (TN/WH) AND CIRCUIT 1114 (BN/PK)	
1  2  GF1653-A	2 Measure the voltage between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and ground; and between air suspension control module C2131a Pin 13, Circuit 1114 (BN/PK), harness side and ground. • **Is voltage present?** → **Yes** REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test. → **No** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

PINPOINT TEST H: DTC 44, VENT SOLENOID CIRCUIT SHORT TO POWER

CONDITIONS	DETAILS/RESULTS/ACTIONS
H1 CHECK THE VENT SOLENOID	
1  2  Air Compressor C1179 3	3 Measure the resistance between air compressor pin 1 (component side), and air compressor pin 4 (component side).



GF1658-A

- **Is the resistance between 25 and 35 ohms?**

→ **Yes**
GO to H2 .

→ **No**
INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test.

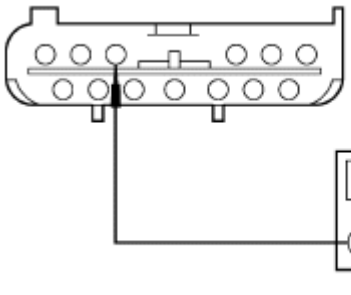
H2 CHECK CIRCUIT 421 (PK) FOR SHORT TO POWER

1

Air Suspension Control Module C2131a

2

3



GF1659-A

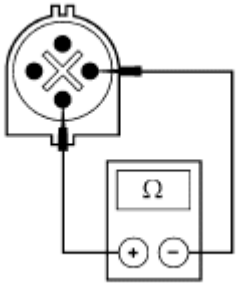
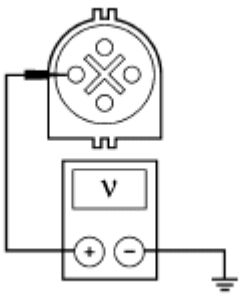
3 Measure the voltage between air suspension control module C2131a Pin 24, Circuit 421 (PK), harness side and ground.

- **Is voltage present?**

→ **Yes**
INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

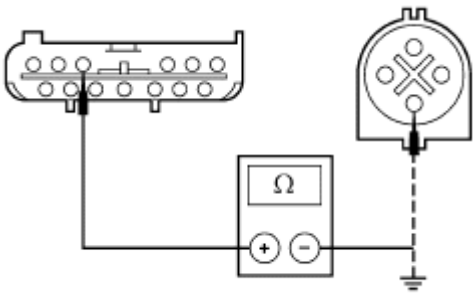
→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST I: DTC 45, VENT SOLENOID CIRCUIT FAILURE

CONDITIONS	DETAILS/RESULTS/ACTIONS
I1 CHECK THE VENT SOLENOID	
1  2  Air Compressor C1179 3  GF1658-A	3 Measure the resistance between air compressor pin 1 (component side) and air compressor pin 4 (component side). • **Is the resistance between 25 and 35 ohms?** → **Yes** GO to I2 . → **No** INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test.
I2 CHECK CIRCUIT 1053 (LB/PK) FOR AN OPEN	
1  GF1660-A	1 Measure the voltage between air compressor C1179 Pin 4, Circuit 1053 (LB/PK), harness side and ground. • **Is the voltage greater than 10 volts?** → **Yes** GO to I3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
I3 CHECK CIRCUIT 421 (PK)	
1	

Air Suspension Control Module C2131a

2



2 Measure the resistance between air suspension control module C2131a Pin 24, Circuit 421 (PK), harness side and air compressor C1179 Pin 1, Circuit 421 (PK), harness side; and between air suspension control module C2131a Pin 24, Circuit 421 (PK), harness side and ground.

- **Is the resistance less than 5 ohms between the air suspension control module and air compressor; and greater than 10,000 ohms between the air suspension control module and ground?**

→ **Yes**
INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST J: DTC 46, AIR SUSPENSION HEIGHT SENSOR SUPPLY CIRCUIT FAILURE

CONDITIONS	DETAILS/RESULTS/ACTIONS
J1 CHECK CIRCUIT 418 (DG/YE) FOR SHORT TO POWER	

1

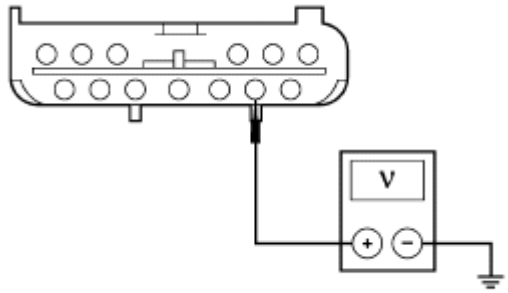
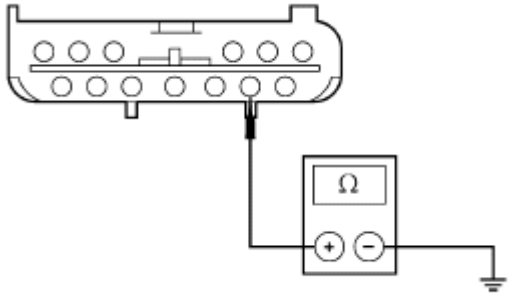
2

Air Suspension Control Module C2131b

3

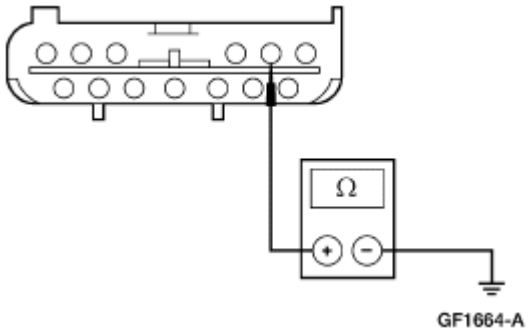
Air Suspension Switch C4087

4

5  GF1662-A	5 Measure the voltage between air suspension control module C2131b Pin 2, Circuit 418 (DG/YE), harness side and ground. • **Is voltage present?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to J2 .
J2 CHECK CIRCUIT 418 (DG/YE) FOR SHORT TO GROUND	
1  2  GF1663-A	2 Measure the resistance between air suspension control module C2131b Pin 2, Circuit 418 (DG/YE), harness side and ground. • **Is the resistance greater than 10,000 ohms?** → **Yes** GO to J3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
J3 CHECK CIRCUIT 429 (PK/LG)	
1  Air Suspension Control Module C2131a 2	

Air Suspension Height Sensor C4043

3



3 Measure the resistance between air suspension control module C2131a Pin 22, Circuit 429 (PK/LG), harness side and air suspension height sensor C4043 Pin 3, 429 (PK/LG), harness side; and between air suspension control module C2131a Pin 22, Circuit 429 (PK/LG), harness side and ground.

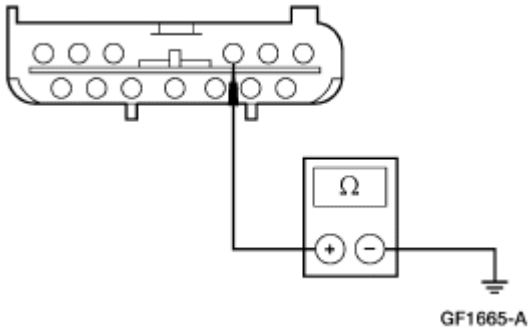
- **Is the resistance less than 5 ohms between the air suspension control module and air suspension height sensor; and greater than 10,000 ohms between the air suspension control module and ground?**

→ **Yes**
GO to J4 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

J4 CHECK CIRCUIT 427 (PK/BK) FOR SHORT TO GROUND

1



1 Measure the resistance between air suspension control module C2131b Pin 17, Circuit 427 (PK/BK), harness side and ground.

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

→ **Yes**
GO to J5 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

J5 CHECK THE AIR SUSPENSION HEIGHT SENSOR

1 Install a known good air suspension height sensor.

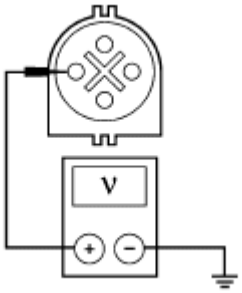
2 Reconnect the air suspension height sensor C4043, air suspension control module, and air suspension switch C4087.

3 Retrieve and document DTCs.

	• **Is DTC 46 retrieved?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air suspension height sensor. REFER to Height Sensor—Air Suspension . CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST K: DTC 51, UNABLE TO DETECT LOWERING OF REAR

CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: Repair all other DTCs first.	
K1 CARRY OUT FUNCTION TEST DTC 32	
NOTE: This test must be done in a quiet environment.	
	1 **NOTE:** During Function Test DTC 32, the vent solenoid located in the air compressor should cycle ON and OFF repeatedly (one second ON, and one second OFF). As the vent solenoid cycles a clicking noise can be heard at the air compressor. Carry out Function Test DTC 32. • **Does the solenoid valve cycle?** → **Yes** GO to K5 . → **No** GO to K2 .
K2 CHECK CIRCUIT 1053 (LB/PK) FOR AN OPEN	
1  2  Air Compressor C1179 3	3 Measure the voltage between air compressor C1179 Pin 4, Circuit 1053 (LB/PK), harness side and ground.



GF1660-A

- **Is the voltage greater than 10 volts?**

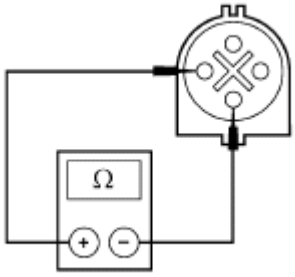
→ **Yes**
GO to K3 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

K3 CHECK THE AIR SUSPENSION CONTROL MODULE OUTPUT

1

2



GF1666-A

2 Measure the voltage air compressor C1179 Pin 4, Circuit 1053 (LB/PK), harness and air compressor C1179 Pin 1, Circuit 421 (PK), while running Function Test DTC 32.

- **Does the voltage cycle between zero and 10 volts?**

→ **Yes**
INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to K4 .

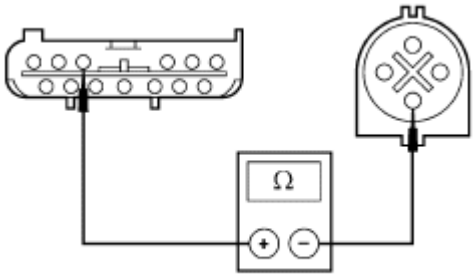
K4 CHECK CIRCUIT 421 (PK) FOR AN OPEN

1

Air Suspension Control Module C2131a

2

2 Measure the resistance between air suspension control module C2131a Pin 24, Circuit 421 (PK), harness side and air compressor C1179 Pin 1, Circuit 421 (PK), harness side.



GF1667-A

- **Is the resistance less than 5 ohms?**

→ **Yes**
INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

K5 CHECK THE AIR SPRING SOLENOIDS

1 Carry out the Function Test DTC 33.

2 Raise and support the vehicle with the air suspension system ON. For additional information, refer to Section 100-02 .

3 **NOTE:** A clicking vibration should be felt if the air spring solenoid is functioning properly.

Check each air spring solenoid for cycling ON and OFF.

- **Are both air spring solenoids cycling properly?**

→ **Yes**
GO to K9 .

→ **No**
GO to K6 .

K6 CHECK THE AIR SUSPENSION CONTROL MODULE OUTPUT

1

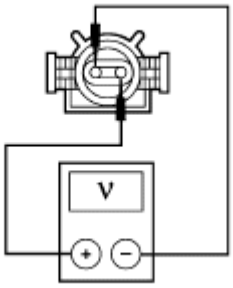
LH Air Spring Solenoid C4044

2

RH Air Spring Solenoid C4045

3

3 Measure the voltage between LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side and LH air spring solenoid C4044, Circuit 1114 (BR/PK), harness side; and between RH air



GF1668-A

spring solenoid C4045, Circuit 1053 (LB/PK), harness side and LH air spring solenoid C4045, Circuit 1115 (TN/WH), harness side, while running Function Test DTC 33.

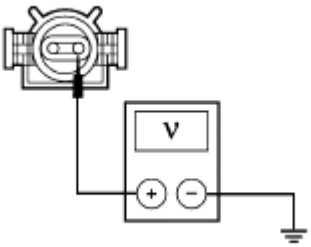
- **Does the voltage cycle between zero and 10 volts?**

→ **Yes**
INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to K7 .

K7 CHECK CIRCUIT 1053 (LB/PK) FOR AN OPEN

1



GF1654-A

1 Measure the voltage between LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side and ground; and between RH air spring solenoid C4045, Circuit 1053 (LB/PK), harness side and ground.

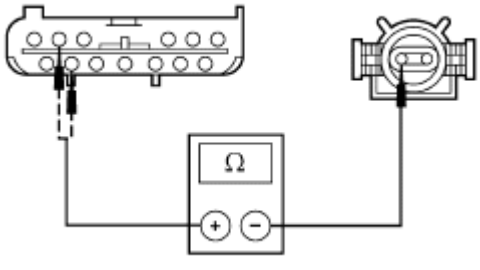
- **Are the voltages greater than 10 volts?**

→ **Yes**
GO to K8 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

K8 CHECK CIRCUIT 1114 (BR/PK) AND CIRCUIT 1115 (TN/WH) FOR AN OPEN

1



GF1669-A

1 Measure the voltage between air suspension control module C2131a Pin 13, Circuit 1114 (BR/PK), and LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side; and between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and RH air spring solenoid C4045, Circuit 1053 (LB/PK), harness side and ground.

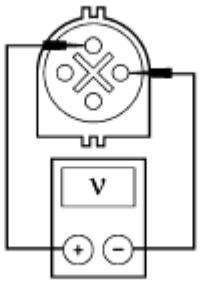
- **Are the resistances less than 5 ohms?**

	→ **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test.
K9 CHECK THE AIR SUSPENSION HEIGHT SENSOR FOR PROPER ATTACHMENT	
	1 Check the air suspension height sensor at the upper and lower ball studs for correct attachment. • **Is the air suspension height sensor attached correctly?** → **Yes** GO to K10 . → **No** REPAIR or INSTALL a new air suspension height sensor as necessary. CLEAR the DTCs. REPEAT the Auto Test.
K10 CHECK THE AIR FLOW THROUGH THE AIR SPRING SOLENOIDS	
CAUTION: Rear of the vehicle must be supported by frame. If rear is supported by the rear axle, rear of vehicle will lower during this test.	
	1 Disconnect the air lines from the air spring solenoids. 2 **NOTE:** The air springs must be filled with some air in order to carry out this test. Carry out Function Test DTC 33 to cycle the air spring solenoids. • **Does the air flow from both air springs when the solenoids are cycled open?** → **Yes** RECONNECT the air lines to the air springs. GO to K11 . → **No** INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.
K11 CHECK THE AIR LINES	
CAUTION: Rear of the vehicle must be supported by frame. If rear is supported by the rear axle, rear of vehicle will lower during this test.	
	1 Disconnect the air lines from the air compressor drier. 2 **NOTE:** The air springs must be filled with some air in order to carry out this test. Carry out Function Test DTC 33 to cycle the air spring solenoids.

	• **Does air flow from the air lines?** → **Yes** GO to K12 . → **No** REPAIR the air lines. CLEAR the DTCs. REPEAT the Auto Test.
K12 CHECK THE AIR COMPRESSOR DRIER	
CAUTION: Rear of the vehicle must be supported by frame. If rear is supported by the rear axle, rear of vehicle will lower during this test.	
	1 Disconnect the air compressor drier. 2 Connect the air line to the air compressor drier. 3 **NOTE:** The air springs must be filled with some air in order to carry out this test. Carry out Function Test DTC 33 to cycle the air spring solenoids. • **Does little or no air flow from the air compressor drier?** → **Yes** INSTALL a new air compressor drier. REFER to Drier—Air Compressor . CLEAR the DTCs. REPEAT the Auto Test. → **No** INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test.

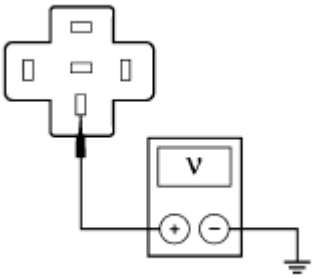
PINPOINT TEST L: DTC 54, UNABLE TO DETECT RAISING OF REAR

CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: REPAIR all other DTCs first.	
L1 CARRY OUT THE AIR COMPRESSOR FUNCTION TEST	
	1 **NOTE:** The air compressor should cycle ON and OFF repeatedly (one second ON and one second OFF) during this test. Carry out Function Test DTC 31. • **Does the air compressor cycle ON and OFF?** → **Yes** GO to L6 . → **No** GO to L2 .
L2 CHECK THE AIR COMPRESSOR RELAY	
	1 Carry out the air compressor relay component

	test; refer to Wiring Diagrams Cell 149, Component Test. • **Is the air compressor relay OK?** → **Yes** GO to L3 . → **No** INSTALL a new air compressor relay. CLEAR the DTCs. REPEAT the Auto Test.
L3 CHECK VOLTAGE TO THE AIR COMPRESSOR	
1  2  Air Compressor C1179 3  4  GF1670-A	4 Measure the voltage between air compressor C1179 Pin 3, Circuit 538 (GY/RD), harness side and air compressor C1179 Pin 2, Circuit 57 (BK), harness side, while running Function Test DTC 31. • **Does the voltage cycle between zero and 10 volts?** → **Yes** RECONNECT the air compressor C1179. Wait 15 minutes for the air compressor internal circuit breaker to cool down and close. The circuit breaker may have opened due to excessive run-time during diagnosis. After 15 minutes, run the Function Test DTC 31. If the air compressor does not start to cycle ON and OFF after 15 minutes, INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to L4 .
L4 CHECK CIRCUIT 1053 (LB/BK) FOR AN OPEN	
1	

Air Compressor Relay

2



GF1671-A

2 Measure the voltage between air compressor relay Pin 30, Circuit 1053 (LB/PK), harness side and ground.

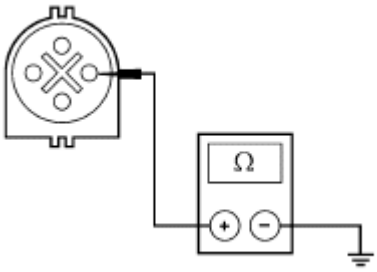
- **Is the voltage greater than 10 volts?**

→ **Yes**
GO to L5 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

L5 CHECK CIRCUIT 57 (BK) FOR AN OPEN

1



GF1672-A

1 Measure the resistance between air compressor C1179 Pin 2, Circuit 57 (BK), harness side and ground.

- **Is the resistance less than 5 ohms?**

→ **Yes**
REPAIR Circuit 538 (GY/RD). CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
REPAIR Circuit 57 (BK). CLEAR the DTCs. REPEAT the Auto Test.

L6 CHECK THE AIR SPRING SOLENOIDS

1 Raise and support the vehicle with the air suspension switch in the ON position. For additional information, refer to Section 100-02 .

2 Check both air springs while performing Function Test DTC 33.

- **Are both air spring solenoids cycling?**

→ **Yes**
GO to L10 .

→ **No**
GO to L7 .

L7 CHECK THE AIR SUSPENSION CONTROL MODULE OUTPUT

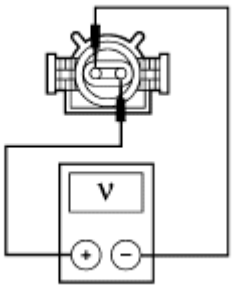
1

LH Air Spring Solenoid C4044

2

RH Air Spring Solenoid C4045

3



GF1668-A

3 Measure the voltage between LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side and LH air spring solenoid C4044, Circuit 1114 (BR/PK), harness side; and between RH air spring solenoid C4045, Circuit 1053 (LB/PK), harness side and LH air spring solenoid C4045, Circuit 1115 (TN/WH), harness side, while running Function Test DTC 33.

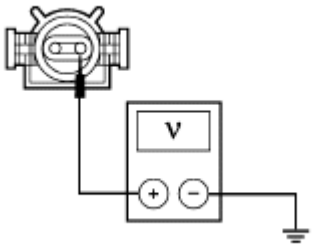
- **Does the voltage cycle between zero and 10 volts?**

→ **Yes**
INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to L8 .

L8 CHECK CIRCUIT 1053 (LB/PK)

1



GF1654-A

1 Measure the voltage between LH air spring solenoid C4044, Circuit 1053 (LB/PK), harness side and ground; and between RH air spring solenoid C4045, Circuit 1053 (LB/PK), harness side and ground.

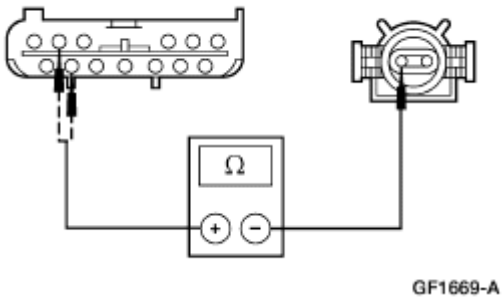
- **Are the voltages greater than 10 volts?**

→ **Yes**
GO to L9 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

L9 CHECK CIRCUIT 1114 (BR/PK) AND CIRCUIT 1115 (TN/WH) FOR AN OPEN

1



1 Measure the voltage between air suspension control module C2131a Pin 13, Circuit 1114 (BR/PK), and LH air spring solenoid C4044, Circuit 1114 (BR/PK), harness side; and between air suspension control module C2131a Pin 25, Circuit 1115 (TN/WH), harness side and RH air spring solenoid C4045, Circuit 1115 (TN/WH), harness side and ground.

- **Are the resistances less than 5 ohms?**

→ **Yes**
INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

→ **No**
REPAIR the circuit in question. CLEAR the DTCs. REPEAT the Auto Test.

L10 CHECK THE AIR SUSPENSION HEIGHT SENSOR FOR PROPER ATTACHMENT

1 Check the air suspension height sensor at the upper and lower ball studs for correct attachment.

- **Is the air suspension height sensor attached correctly?**

→ **Yes**
GO to L11 .

→ **No**
REPAIR or INSTALL a new air suspension height sensor as necessary. CLEAR the DTCs. REPEAT the Auto Test.

L11 CHECK THE AIR FLOW THROUGH THE AIR SPRING SOLENOIDS

CAUTION: Rear of the vehicle must be supported by frame. If rear is supported by the rear axle, rear of vehicle will lower during this test.

1 Check the air lines and air spring solenoid for leaks while carry out Function Test DTC 26.

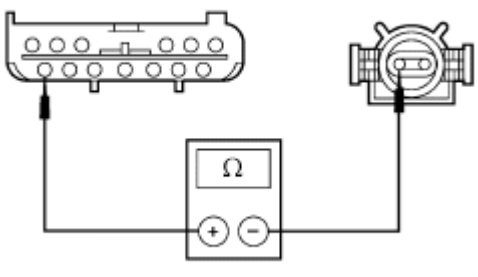
- **Are any leaks detected?**

→ **Yes**
REPAIR the air lines or INSTALL a new air spring solenoid. REFER to Solenoid Valve—Non-Functional . CLEAR the DTCs. REPEAT the Auto Test.

	→ **No** GO to L12 .
L12 CHECK THE AIR COMPRESSOR DRIER AIR FLOW	
CAUTION: Rear of the vehicle must be supported by frame. If rear is supported by the rear axle, rear of vehicle will lower during this test.	
	1 Disconnect the air lines from the air compressor drier. 2 Check the air flow from the air compressor drier while carrying out Function Test DTC 26. • **Does air flow from the air compressor drier?** → **Yes** RECONNECT the air lines. GO to L15 . → **No** GO to L13 .
L13 CHECK FOR A BLOCKED AIR COMPRESSOR INLET TUBE	
	1 Disconnect the air compressor inlet tube. 2 Check the air flow from the air compressor drier while carrying out Function Test DTC 26. • **Does air flow from the air compressor drier?** → **Yes** REPAIR the air compressor inlet tube. CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to L14 .
L14 CHECK THE AIR COMPRESSOR	
	1 Disconnect the air compressor drier. 2 Check the air flow from the air compressor while carrying out Function Test DTC 26. • **Does air flow from the air compressor?** → **Yes** INSTALL a new air compressor drier. REFER to Drier—Air Compressor . CLEAR the DTCs. REPEAT the Auto Test. → **No** INSTALL a new air compressor. REFER to Air Compressor . CLEAR the DTCs. REPEAT the Auto Test.
L15 CHECK FOR BLOCKED AIR LINES	
	1 Disconnect the air lines from both air spring solenoids. 2 Check air flow from both air lines while running Function Test DTC 26.

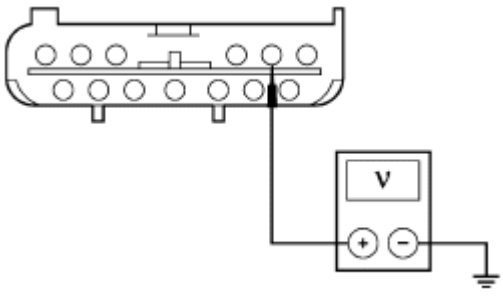
	• **Does air flow from both air lines?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** REPAIR the blocked air line. CLEAR the DTCs. REPEAT the Auto Test.

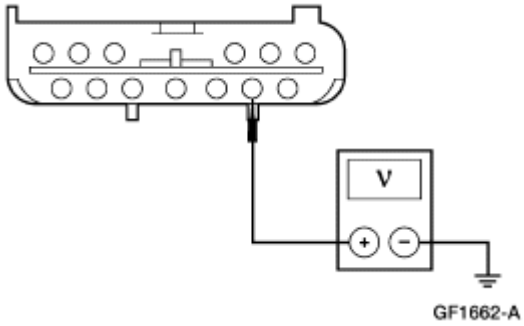
PINPOINT TEST M: DTC 55, UNABLE TO DETECT VEHICLE SPEED GREATER THAN 24 KM/H (15 MPH)

CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: Vehicle must be driven over 24 km/h (15 mph) before proceeding.	
M1 CHECK THE SPEEDOMETER	
	1 Check the speedometer for correct operation. • **Does the speedometer operate correctly?** → **Yes** GO to M2 . → **No** REFER to Section 413-01A (conventional cluster) or REFER to Section 413-01B (electronic cluster), or REFER to Section 413-01C (natural gas cluster).
M2 CHECK CIRCUIT 679 (GY/BK) FOR AN OPEN	
1  2  VSS C1088 3  Air Suspension Control Module C2131b 4  GF1673-A	4 Measure the resistance between air suspension control module C2131b Pin 7, Circuit 679 (GY/BK), harness side and VSS C1088, Circuit 679 (GY/BK), harness side.

	• **Is the resistance less than 5 ohms?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST N: DTC 60, AIR SUSPENSION SWITCH SHORT TO POWER

CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: Repair all other DTCs first.	
N1 CHECK CIRCUIT 429 (VT/LG) FOR SHORT TO POWER	
1  2  Air Suspension Switch C4087 3  Air Suspension Height Sensor C4043 4  Air Suspension Control Module C2131a 5  6  GF1674-A	6 Measure the voltage between air suspension control module C2131a Pin 22, Circuit 429 (VT/LG), harness side and ground. • **Is voltage present?**

	→ **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** GO to N2 .
N2 CHECK CIRCUIT 418 (DG/YE) FOR SHORT TO POWER	
1  Air Suspension Control Module C2131b 2  GF1662-A	2 Measure the voltage between air suspension control module C2131b Pin 2, Circuit 418 (DG/YE), harness side and ground. • **Is voltage present?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test. → **No** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test.

PINPOINT TEST O: DTC 61, AIR SUSPENSION SWITCH CIRCUIT FAILURE

CONDITIONS	DETAILS/RESULTS/ACTIONS
O1 CHECK THE AIR SUSPENSION SWITCH POSITION	
	1 Check the air suspension switch. • **Is the air suspension switch in the ON position?** → **Yes** GO to O2 . → **No** PLACE the air suspension switch in the ON position. CLEAR the DTCs. REPEAT the Auto Test.
O2 CHECK CIRCUIT 429 (VT/LG)	
1	

2

Air Suspension Switch C4087

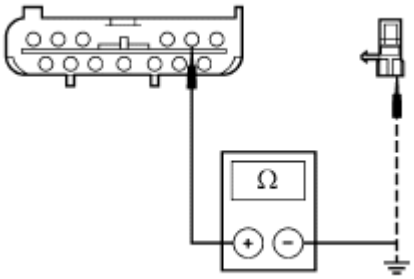
3

Air Suspension Height Sensor C4043

4

Air Suspension Control Module C2131a

5



GF1675-A

5 Measure the resistance between air suspension control module C2131a Pin 22, Circuit 429 (VT/LG), harness side and air suspension switch C4087, Circuit 429 (VT/LG), harness side; and between air suspension control module C2131a Pin 22, Circuit 429 (VT/LG), harness side and ground.

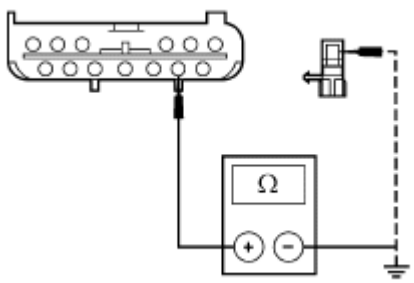
- **Is the resistance less than 5 ohms between air suspension control module and air suspension switch; and greater than 10,000 ohms between air suspension control module and ground?**

→ **Yes**
GO to O3 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

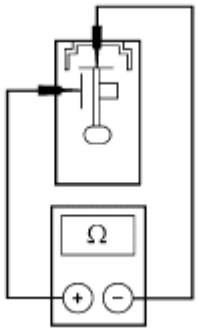
O3 CHECK CIRCUIT 418 (DG/YE)

1



GF1676-A

1 Measure the resistance between air suspension control module C2131b Pin 2, Circuit 418 (DG/YE), harness side and air suspension switch C4087, Circuit 418 (DG/YE), harness side; and between air suspension control module C2131b Pin 2, Circuit 418 (DG/YE), harness side and ground.

	• **Is the resistance less than 5 ohms between air suspension control module and air suspension switch; and greater than 10,000 ohms between air suspension control module and ground?** → **Yes** GO to O4 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
O4 CHECK THE AIR SUSPENSION SWITCH	
1  GF1677-A	1 Measure the resistance between air suspension switch pins (component side), while in the ON position. • **Is the resistance less than 5 ohms?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air suspension switch; REFER to Switch—Air Suspension . CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST P: DTC 68, AIR SUSPENSION HEIGHT SENSOR CIRCUIT FAILURE

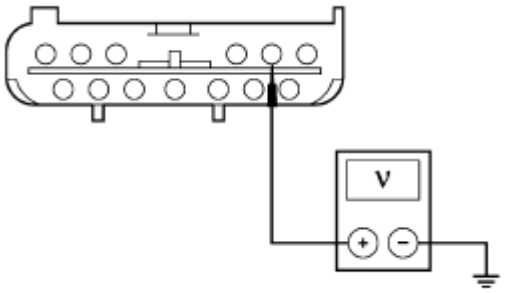
CONDITIONS	DETAILS/RESULTS/ACTIONS
P1 CHECK CIRCUIT 429 (VT/LG) FOR SHORT TO POWER	
1  2  Air Suspension Switch C4087 3  Air Suspension Height Sensor C4043	

4

Air Suspension Control Module C2131a

5

6



GF1674-A

6 Measure the voltage between air suspension control module C2131a Pin 22, Circuit 429 (VT/LG), harness side and ground.

- **Is voltage present?**

→ **Yes**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to P2 .

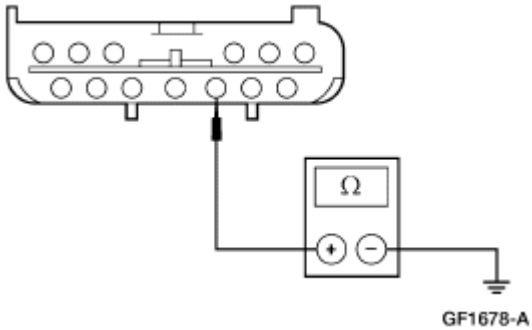
P2 CHECK CIRCUIT 428 (OG/BK) FOR SHORT TO GROUND

1

2

Air Suspension Control Module C2131b

3



GF1678-A

3 Measure the resistance between air suspension control module C2131b Pin 3, Circuit 428 (OG/BK), harness side and ground.

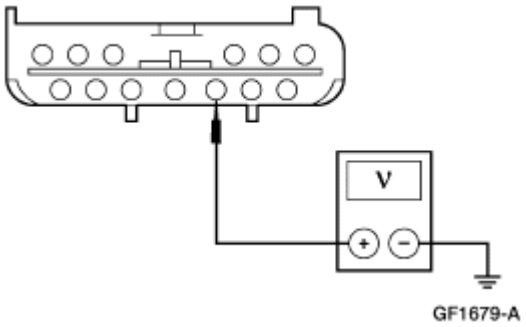
- **Is the resistance greater than 10,000 ohms?**

→ **Yes**

	GO to P3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
P3 CHECK THE AIR SUSPENSION HEIGHT SENSOR	
	1 Install a known good air suspension height sensor. 2 Reconnect the air suspension height sensor C4043, air suspension control module, and air suspension switch C4087. 3 Retrieve and document DTCs. • **Is DTC 68 retrieved?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air suspension height sensor. REFER to Height Sensor—Air Suspension . CLEAR the DTCs. REPEAT the Auto Test.

PINPOINT TEST Q: DTC 71, AIR SUSPENSION HEIGHT SENSOR CIRCUIT OPEN

CONDITIONS	DETAILS/RESULTS/ACTIONS
Q1 CHECK CIRCUIT 428 (OG/BK) FOR SHORT TO POWER	
1  2  Air Suspension Height Sensor C4043 3  Air Suspension Control Module C2131b 4  5	5 Measure the voltage between air suspension control module C2131b Pin 3, Circuit 428 (OG/BK), and ground.



- **Is voltage present?**

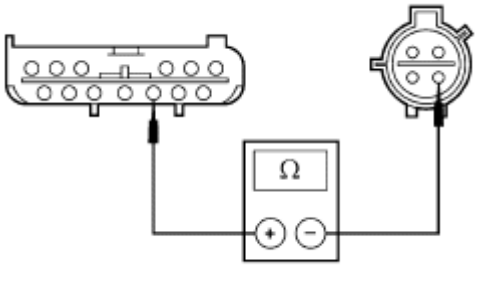
→ **Yes**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

→ **No**
GO to Q2 .

Q2 CHECK CIRCUIT 428 (OG/BK) FOR AN OPEN

1

2



2 Measure the resistance between air suspension control module C2131b Pin 3, Circuit 428 (OG/BK), and air suspension height sensor C4043 Pin 4, Circuit 428 (OG/BK), harness side.

- **Is the resistance less than 5 ohms?**

→ **Yes**
GO to Q3 .

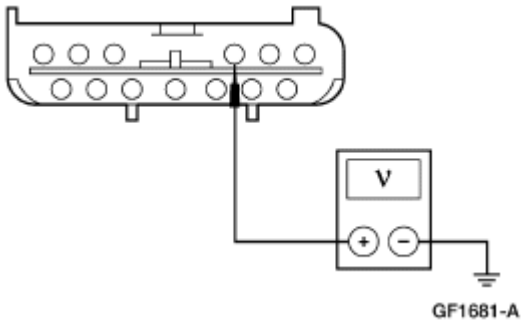
→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

Q3 CHECK CIRCUIT 427 (PK/BK) FOR SHORT TO POWER

1

2

2 Measure the voltage between air suspension control module C2131b Pin 17, Circuit 427 (PK/BK), and ground.



- **Is any voltage present?**

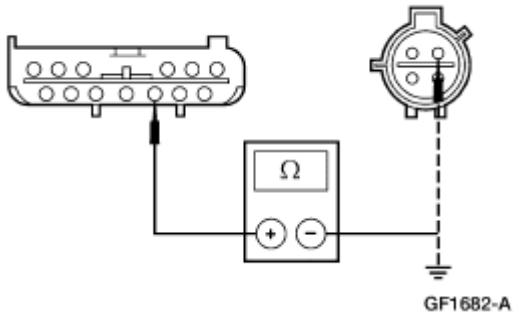
→ **Yes**
REPAIR the circuit. CLEAR the DTCs. REPEAT the auto test.

→ **No**
GO to Q4 .

Q4 CHECK CIRCUIT 427 (PK/BK)

1

2



2 Measure the resistance between air suspension control module C2131b Pin 3, Circuit 427 (PK/BK), and air suspension height sensor C4043 Pin 2, Circuit 427 (PK/BK), harness side; and between air suspension control module C2131b Pin 3, Circuit 427 (PK/BK), and ground.

- **Is the resistance less than 5 ohms between air suspension control module and air suspension height sensor; and greater than 10,000 ohms between air suspension control module and ground?**

→ **Yes**
GO to Q5 .

→ **No**
REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.

Q5 CHECK THE AIR SUSPENSION HEIGHT SENSOR

1 Install a known good air suspension height sensor.

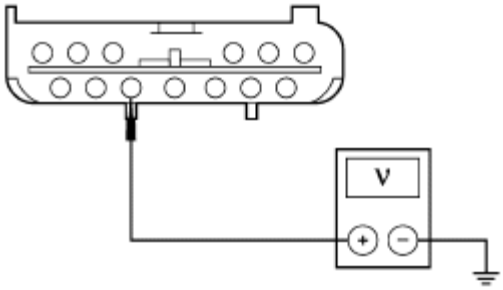
2 Reconnect the air suspension height sensor C4043, and air suspension control module.

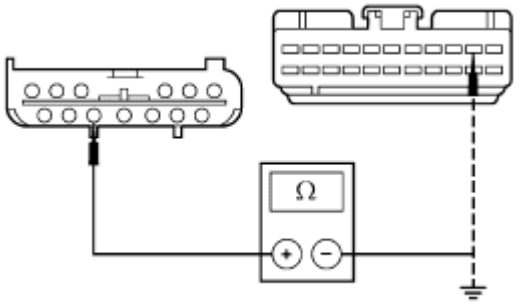
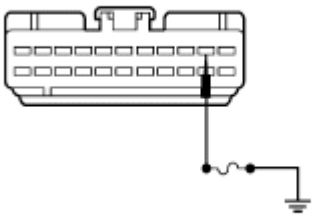
3 Retrieve and document DTCs.

- **Is DTC 71 retrieved?**

	→ **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new air suspension height sensor. REFER to Height Sensor—Air Suspension . CLEAR the DTCs. REPEAT the Auto Test.

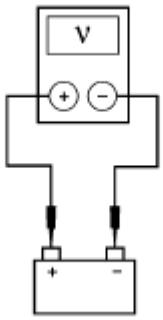
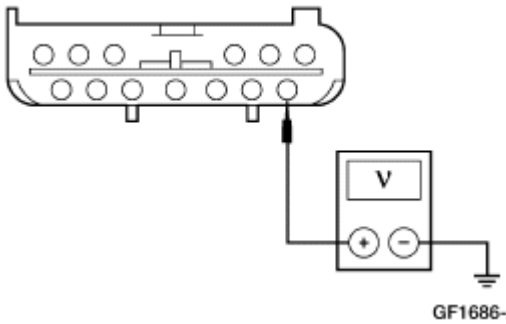
PINPOINT TEST R: DTC 72, DID NOT DETECT FOUR OPEN OR CLOSED DOOR SIGNALS

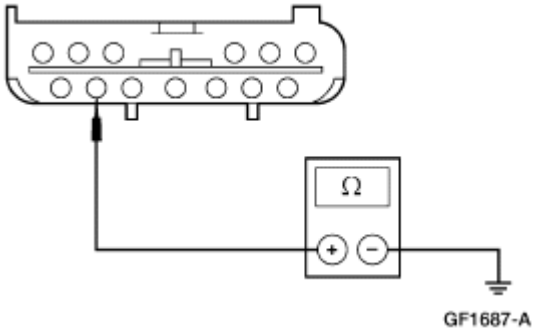
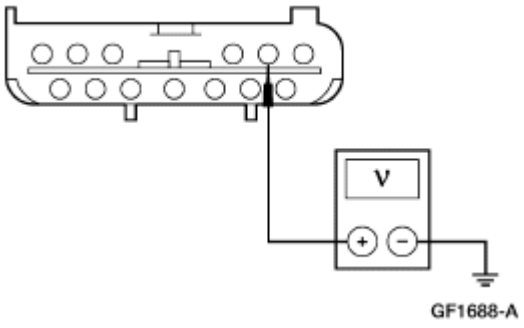
CONDITIONS	DETAILS/RESULTS/ACTIONS
R1 CHECK CIRCUIT 344 (BK/YE) FOR SHORT TO POWER	
1  2  Air Suspension Switch C4087 3  Air Suspension Control Module C2131b 4  LCM C2145a 5  6  GF1683-A	6 Measure the voltage between air suspension control module C2131b Pin 5, Circuit 344 (BK/YE), harness side and ground. • **Is any voltage present?** → **Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT

	the Auto Test. → **No** GO to R2 .
R2 CHECK CIRCUIT 344 (BK/YE) FOR AN OPEN OR SHORT TO GROUND	
1  2  GF1684-A	2 Measure the resistance between air suspension control module C2131b Pin 5, Circuit 344 (BK/YE), harness side and LCM C2145a Pin 10, Circuit 344 (BK/YE), harness side; and between air suspension control module C2131b Pin 5, Circuit 344 (BK/YE), harness side and ground. • **Is the resistance less than 5 ohms between air suspension control module and LCM; and greater than 10,000 ohms between air suspension control module and ground?** → **Yes** GO to R3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
R3 CHECK THE AIR SUSPENSION CONTROL MODULE	
1  Air Suspension Control Module C2131b 2  3  GF1685-A	3 **NOTE:** The Super Star II Tester must be in manual input mode. The jumper wire must be connected and disconnected four times in 5 second intervals. Connect a jumper wire with a 10A in-line fuse to LCM C2145a Pin 10, Circuit 344 (BK/YE), harness side and ground. 4 Retrieve and document DTCs.

	• **Is DTC 72 retrieved?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** INSTALL a new LCM. REFER to Section 417-01 . REPEAT the Auto Test.

PINPOINT TEST S: DTC 80, BATTERY VOLTAGE HIGH OR LOW

CONDITIONS	DETAILS/RESULTS/ACTIONS
NOTE: A recent jump start may cause these DTCs to set.	
S1 CHECK BATTERY VOLTAGE	
1  GL1223-A	1 Measure the battery voltage between the positive and negative battery posts with the key ON engine OFF (KOEO), and with the engine running. • **Is the battery voltage between 10 and 13 volts with KOEO, and between 11 and 17 volts with the engine running?** → **Yes** GO to S2 . → **No** REFER to Section 414-00 .
S2 CHECK CIRCUIT 1053 (LB/PK) FOR AN OPEN	
1  Air Suspension Control Module C2131b 2  GF1686-A	2 Measure the voltage between air suspension control module C2131b Pin 1, Circuit 1053 (LB/PK), harness side and ground.

	• **Is the voltage greater than 10 volts?** → **Yes** GO to S3 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
S3 CHECK CIRCUIT 57 (BK) FOR AN OPEN	
1  GF1687-A	1 Measure the resistance between air suspension control module C2131b Pin 6, Circuit 57 (BK), harness side and ground. • **Is the resistance less than 5 ohms?** → **Yes** GO to S4 . → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT the Auto Test.
S4 CHECK CIRCUIT 298 (VT/OG) FOR AN OPEN	
1  2  GF1688-A	2 Measure the voltage between air suspension control module C2131b Pin 16, Circuit 298 (VT/OG), harness side and ground. • **Is the voltage greater than 10 volts?** → **Yes** INSTALL a new air suspension control module. REFER to Module—Air Suspension Control . REPEAT the Auto Test. → **No** REPAIR the circuit. CLEAR the DTCs. REPEAT

	the Auto Test.