Air Suspension - Hummer H2

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Compressor Air Suspension Isolator Nuts	25 N.m	18 lb ft
Compressor Air Suspension Mounting Nuts	25 N.m	18 lb ft
Control Module Air Suspension Compressor Retaining Screw	1.4 N.m	12 lb in
Dryer Air Suspension Compressor Mounting Nuts	12 N.m	106 lb in
Electronic Suspension Switch Screws	12 N.m	106 lb in
Ground Wire Bolt	6 N.m	53 lb in
Plate Mounting Air Suspension Compressor to Frame Bolts	50 N.m	37 lb ft
Sensor Air Suspension Leveling to Frame Mounting Bolts	8.5 N.m	75 lb in
Sensor Air Suspension Leveling to Upper Control Arm Bracket Bolt	17 N.m	13 lb ft
Support Bolt	22 N.m	16 lb ft
Valve Block Air Suspension Compressor Mounting Bolts	5.0 N.m	44 lb in

SCHEMATIC AND ROUTING DIAGRAMS

SUSPENSION CONTROLS SCHEMATICS

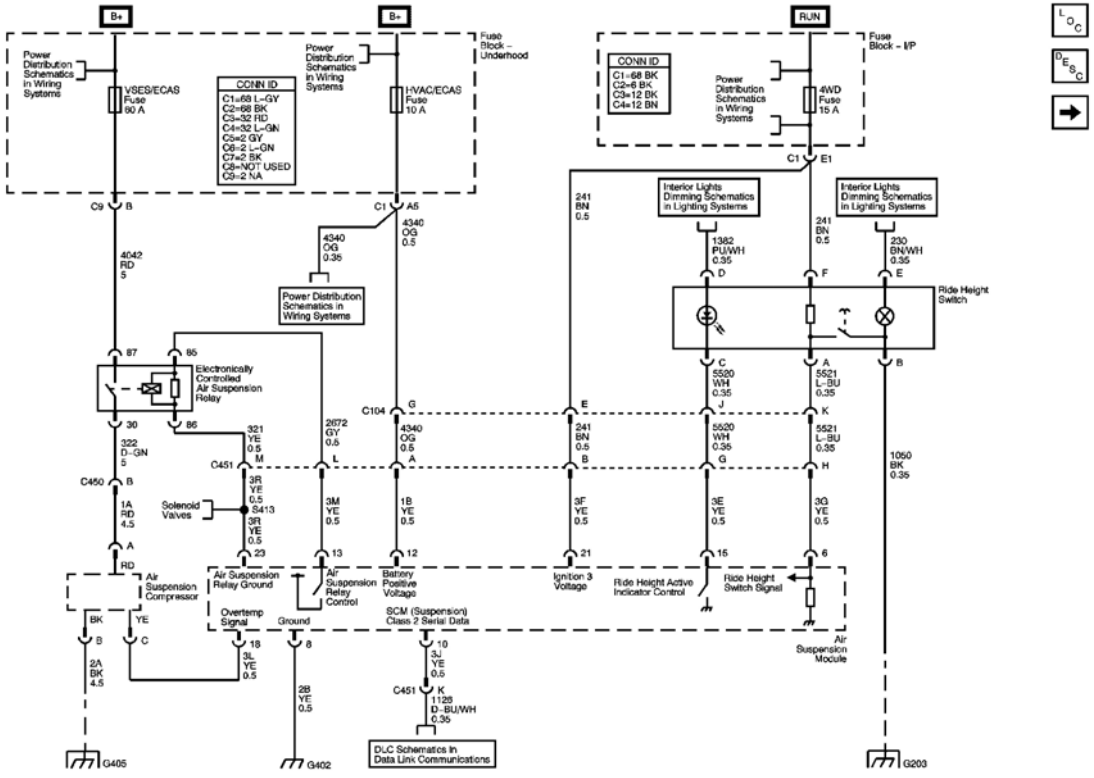


Fig. 1: Power, Ground, DLC, Relay, and Ride Height Switch
Courtesy of GENERAL MOTORS CORP.

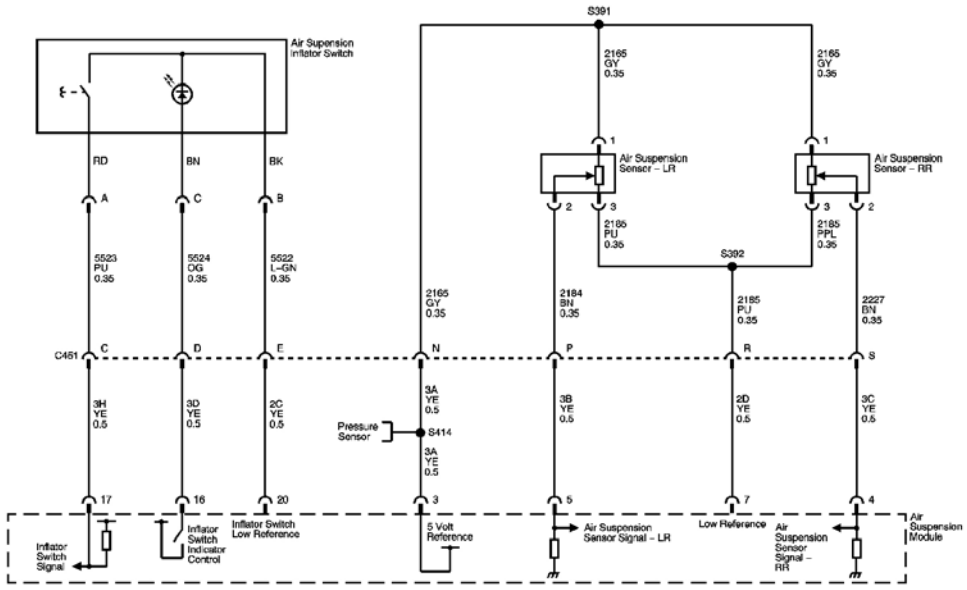


Fig. 2: Inflator Switch and Suspension Position Sensors
Courtesy of GENERAL MOTORS CORP.

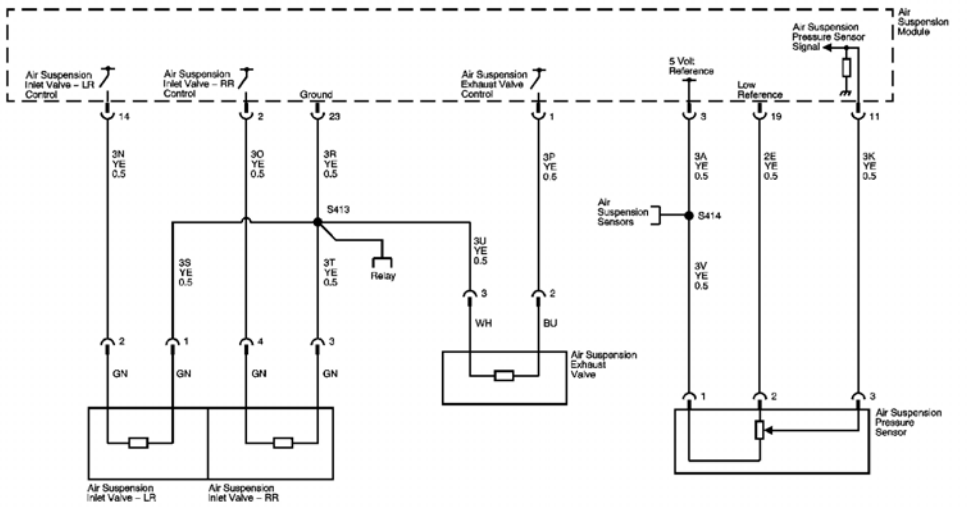


Fig. 3: Solenoid Valves and Pressure Sensor
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

SUSPENSION CONTROLS COMPONENT VIEWS

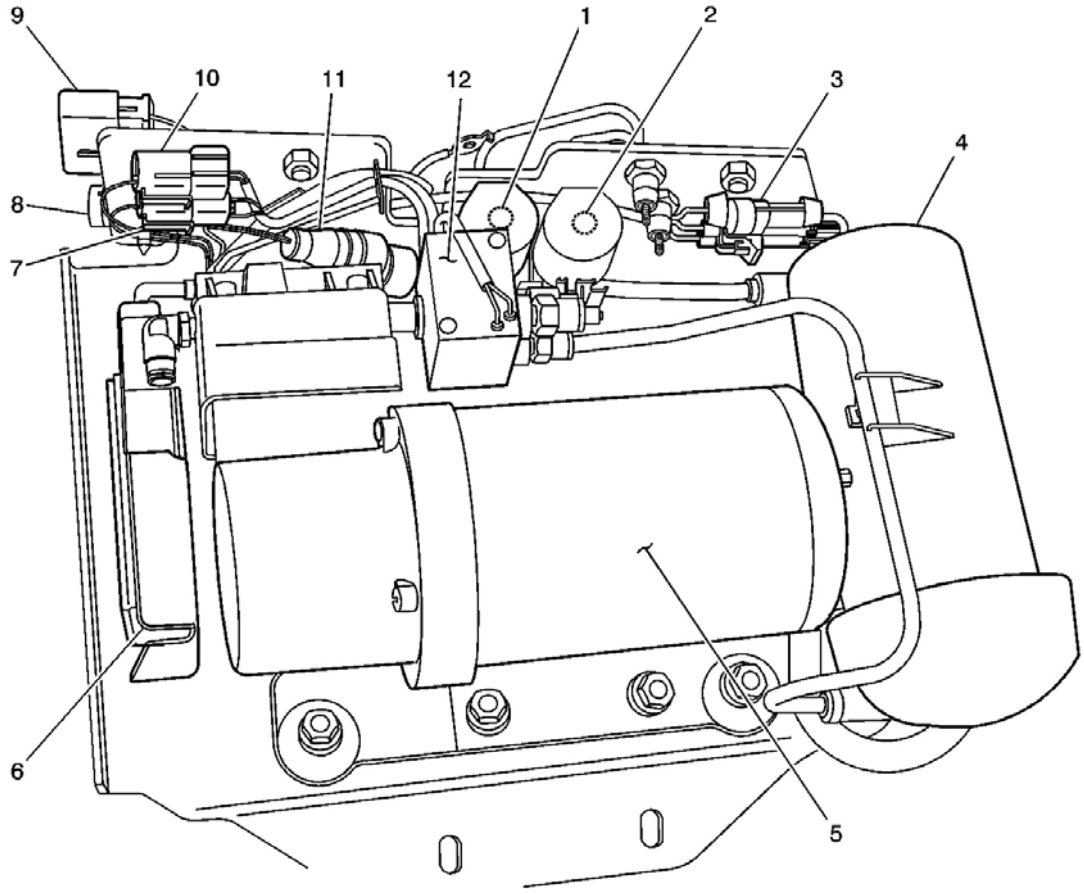


Fig. 4: Air Suspension Sub-System Component Views (1 of 2)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 4

Callout	Component Name
1	Air Suspension Inlet Valve - LR
2	Air Suspension Inlet Valve - RR
3	Compressor Connector
4	Air Suspension Air Dryer
5	Air Suspension Compressor
6	Air Suspension Module
7	Air Suspension Exhaust Valve Connector
8	C450
9	C451
10	Air Suspension Inlet Valve Connector - LR/RR

11	Air Suspension Pressure Sensor
12	Air Suspension Exhaust Valve

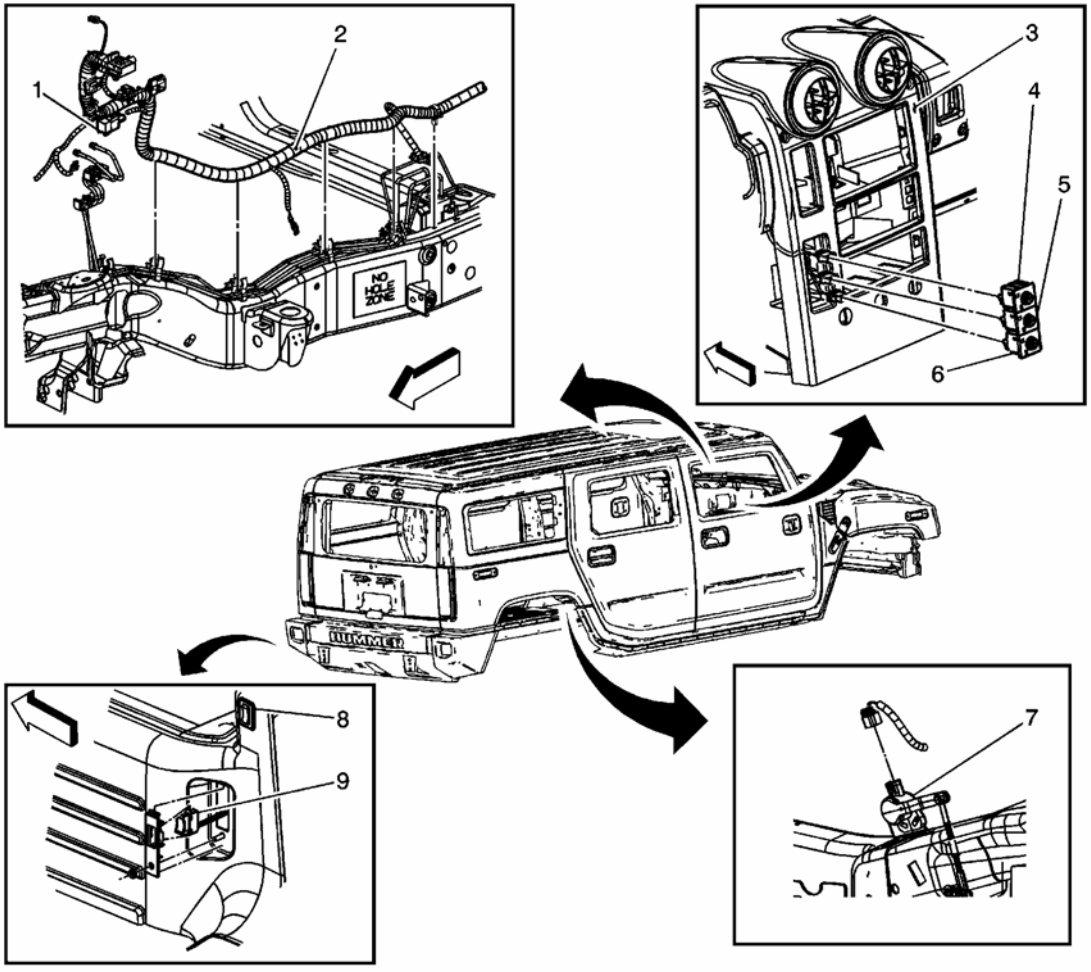


Fig. 5: Air Suspension Sub-System Component Views (2 of 2)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 5

Callout	Component Name
1	Electronically Controlled Air Suspension Relay
2	Chassis Harness
3	I/P Compartment
4	Traction Control Switch
5	Tow/Haul Switch
6	Ride Height Switch
7	Air Suspension Sensor - LR

8	Door Lock Switch - Rear
9	Air Suspension Inflator Switch

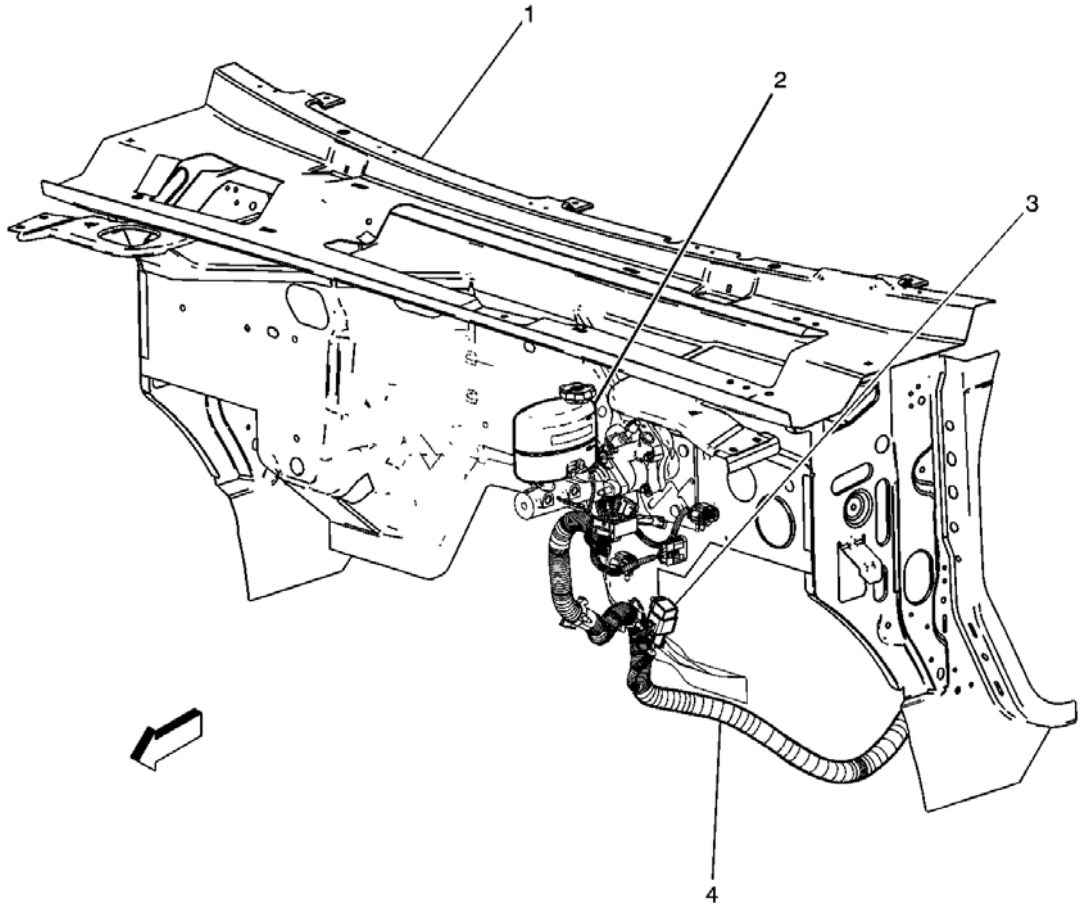


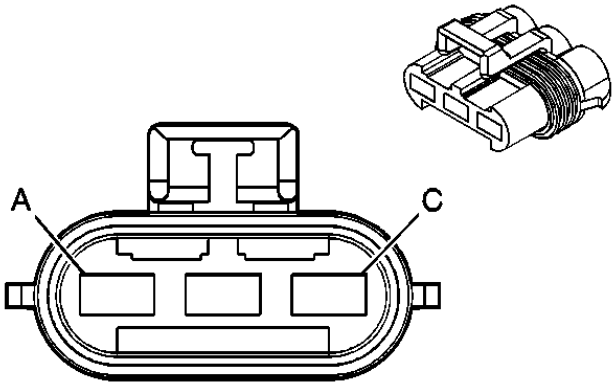
Fig. 6: LR Of Engine Compartment Component Views
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Dash - Upper Plenum
2	Master Cylinder
3	Electronically Controlled Air Suspension Relay
4	Chassis Harness

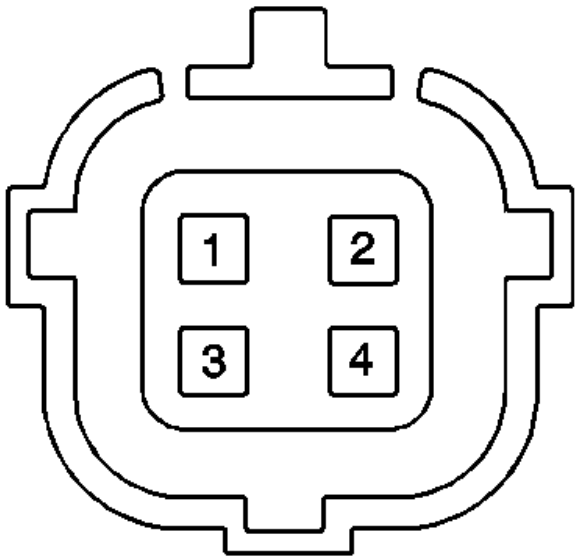
SUSPENSION CONTROLS CONNECTOR END VIEWS

Air Suspension Terminal Identification Compressor (ZM6)



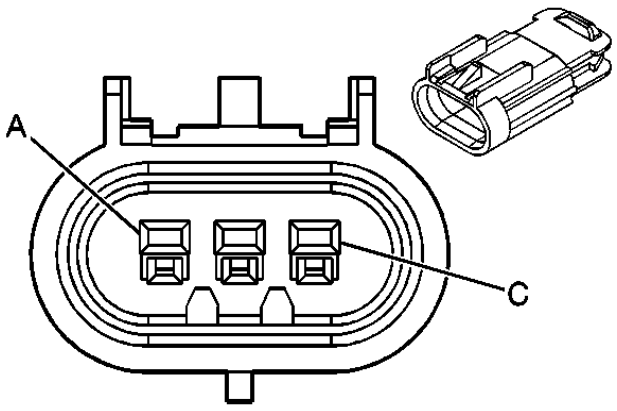
Connector Part Information		• 12124685 • 3-Way F Metri-Pack 680 Series Sealed (BK)	
Pin	**Wire Color**	**Circuit No.**	**Function**
A	RD	1A	Compressor Battery Positive Voltage
B	BK	2A	Ground
C	YE	3L	Over Temperature Signal

Air Suspension Exhaust Valve Terminal Identification (ZM6)



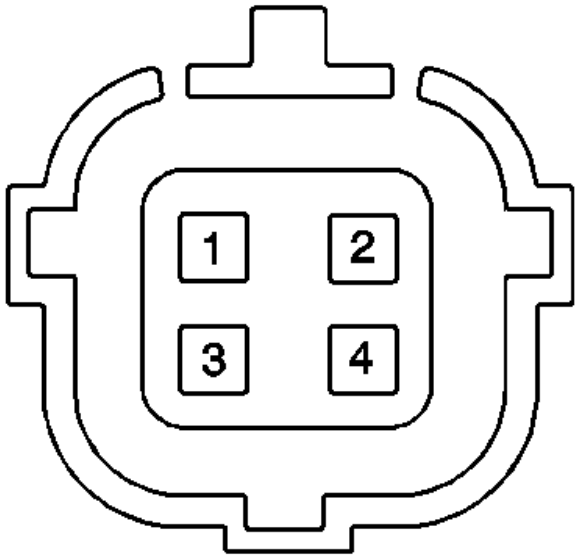
Connector Part Information		• 344270-3 • 4-Way F AMP 070 Series Sealed (BU)	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	-	-	Not Used
2	YE	3P	Air Suspension Exhaust Valve Control
3	YE	3U	Ground
4	-	-	Not Used

Air Suspension Inflator Terminal Identification Switch (ZM6)



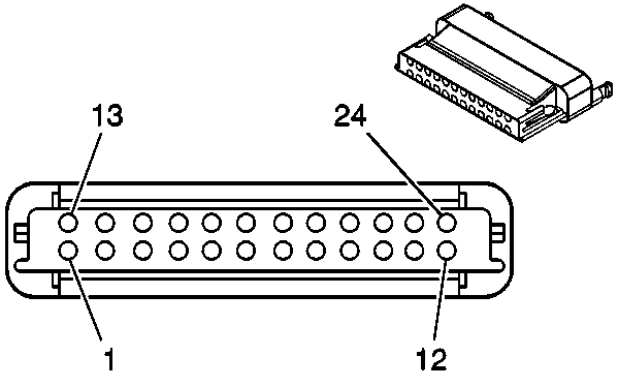
Connector Part Information		• 15326813 • 3-Way M 150 Sealed (BK)	
Pin	**Wire Color**	**Circuit No.**	**Function**
A	PU	5523	Inflator Switch Signal
B	L-GN	5522	Inflator Switch Low Reference
C	OR	5524	Inflator Switch Indicator Control

Air Suspension Inlet Valve Terminal Identification - LR/RR (ZM6)



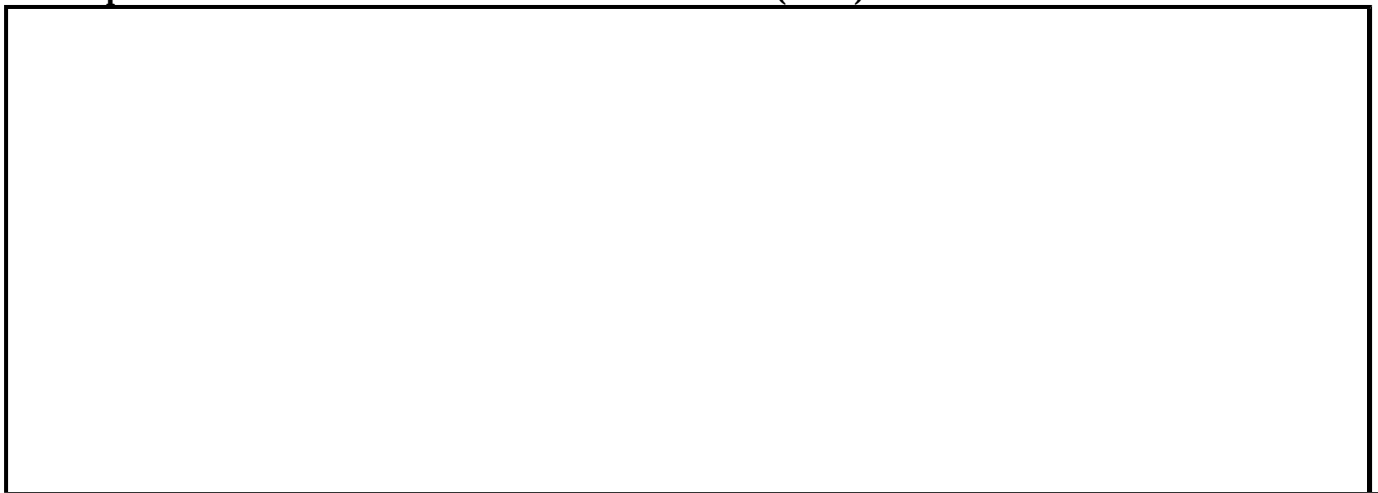
Connector Part Information		• 344270-1 • 4-Way F AMP 070 Series Sealed (BK)	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	YE	3S	Ground
2	YE	3N	Inlet Valve - LR Control
3	YE	3T	Ground
4	YE	3O	Inlet Valve - RR Control

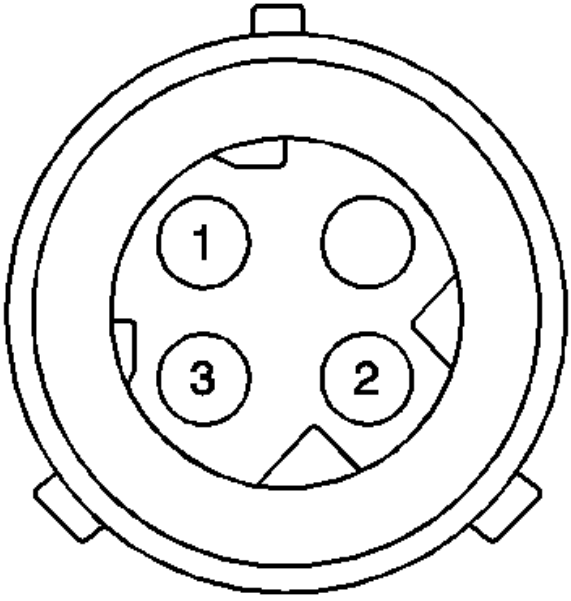
Air Suspension Terminal Identification Module (ZM6)



Connector Part Information		• 12129225 • 24-Way F Micro-Pack 100 Series (GY)	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	YE	3P	Air Suspension Exhaust Valve Control
2	YE	3O	Air Suspension Inlet Valve - RR Control
3	YE	3A	5-Volt Reference
4	YE	3C	Air Suspension Sensor Signal - RR
5	YE	3B	Air Suspension Sensor Signal - LR
6	YE	3G	Ride Height Switch Signal
7	YE	2D	Low Reference
8	YE	2B	Ground
9	-	-	Not Used
10	YE	3J	SCM (Suspension) Class 2 Serial Data
11	YE	3K	Air Suspension Pressure Sensor Signal
12	YE	1B	Battery Positive Voltage
13	YE	3M	Air Suspension Relay Control
14	YE	3N	Air Suspension Inlet Valve - LR Control
15	YE	3E	Ride Height Active Indicator Control
16	YE	3D	Inflator Switch Indicator Control
17	YE	3H	Inflator Switch Signal
18	YE	3L	Over Temperature Signal
19	YE	2E	Low Reference
20	YE	2C	Inflator Switch Low Reference
21	YE	3F	Ignition 3 Voltage
22	-	-	Not Used
23	YE	3R	Ground
24	-	-	Not Used

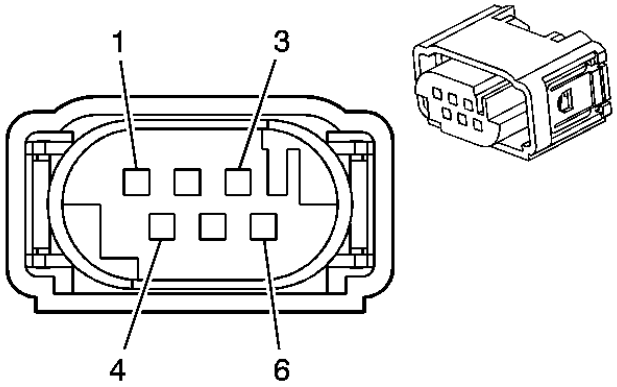
Air Suspension Pressure Terminal Identification Sensor (ZM6)





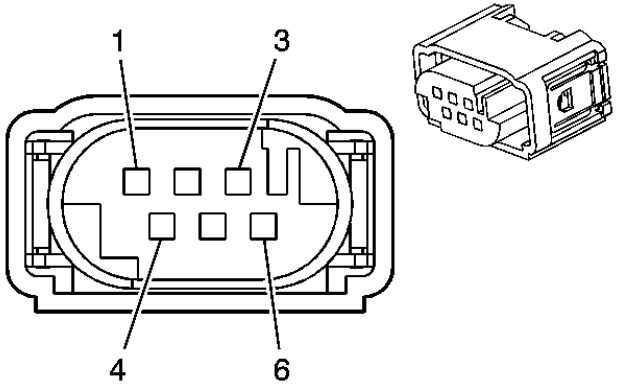
Connector Part Information		• 9800426 • 4-Way F Schlemmer DIN Sealed (GN)	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	YE	3A	5-Volt Reference
2	YE	2E	Low Reference
3	YE	3K	Air Suspension Pressure Sensor Signal
4	-	-	Not Used

Air Suspension Terminal Identification Sensor - LR (ZM6)



Connector Part Information		• **15355474** • **6-Way F MQS SLD (BK)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	GY	2165	5-Volt Reference
2	BN	2184	Air Suspension Sensor Signal - LR
3	PU	2185	Low Reference
4-6	-	-	Not Used

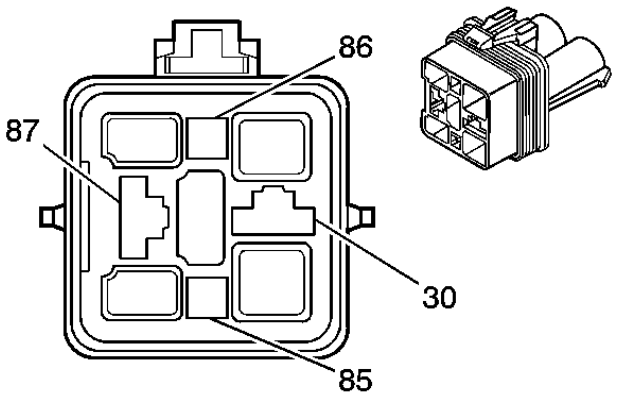
Air Suspension Terminal Identification Sensor - RR (ZM6)



Connector Part Information		• **15355474** • **6-Way F MQS SLD (BK)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
1	PU	2185	Low Reference
2	BN	2227	Air Suspension Sensor Signal - RR

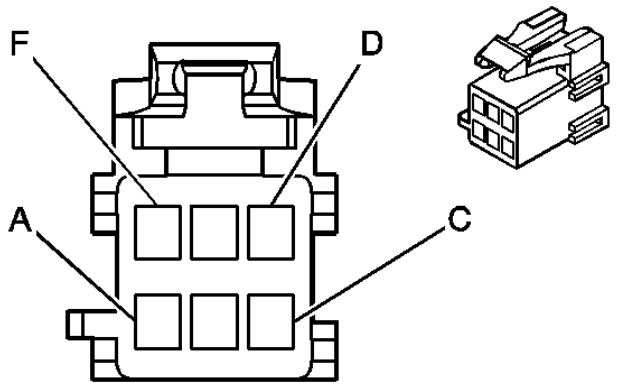
3	GY	2165	5-Volt Reference
4-6	-	-	Not Used

Electronically Controlled Air Suspension Compressor Terminal Identification Relay (ZM6)



Connector Part Information		• **15336745** • **4-Way F GR 280 Series Metri-Pack 800 Sealed (GY)**	
Pin	**Wire Color**	**Circuit No.**	**Function**
30	D-GN	322	Air Suspension Compressor Motor Control
85	GY	2672	Air Suspension Relay Control
86	YE	321	Air Suspension Relay Ground
87	RD	4042	Air Suspension Relay Supply Voltage

Air Suspension Ride Height Terminal Identification Switch (ZM6)



	• **12177194**

Connector Part Information		• 6-Way F Metri-Pack 150 Series (WH)	
Pin	**Wire Color**	**Circuit No.**	**Function**
A	L-BU	5521	Ride Height Switch Signal
B	BK	1050	Ground
C	WH	5520	Ride Height Active Indicator Control
D	PU/WH	1382	LED Dimming Signal
E	BN/WH	230	Instrument Panel Lamps Dimming Control
F	BN	241	Ignition 3 Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - AIR SUSPENSION

Begin the system diagnosis with the **Diagnostic System Check - Air Suspension** . The Diagnostic System Check will provide the following information:

- The identification of the control module(s) which command the system.
- The identification of any stored diagnostic trouble codes (DTCs) and their status.

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

DIAGNOSTIC SYSTEM CHECK - AIR SUSPENSION

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Lack of communication may be due to a partial malfunction of the class 2 serial data circuit or due to a total malfunction of the class 2 serial data circuit. The specified procedure will determine the particular condition.

3: Check for the presence of DTCs.

4: The presence of DTCs which begin with "U" indicate some other module is not communicating. The specified procedure will compile all the available information before tests are performed.

5: Check for the presence of DTCs in Body Control system.

6: Check for the presence of DTCs in Air Suspension system.

Diagnostic System Check - Air Suspension

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Install a scan tool. Does the scan tool power up?	Go to **Step 2**	Go to **Scan Tool Does Not Power Up** in Data Link Communications

2	1. Turn ON the ignition, with the engine OFF. 2. Attempt to establish communication with the suspension control module. Does the scan tool communicate with the suspension control module?	Go to **Step 3**	Go to **Scan Tool Does Not Communicate with Class 2 Device** in Data Link Communications
3	Select the suspension control module display DTCs function on the scan tool. Does the scan tool display any DTCs?	Go to **Step 4**	Go to **Symptoms - Air Suspension**
4	Does the scan tool display any DTCs which begin with a "U"?	Go to **Scan Tool Does Not Communicate with Class 2 Device** in Data Link Communications	Go to **Step 5**
5	Does the scan tool display DTC B1000?	Go to **Diagnostic Trouble Code (DTC) List** in Body Control System	Go to **Step 6**
6	Does the scan tool display other DTC's?	Go to **Diagnostic Trouble Code (DTC) List**	Go to **Symptoms - Air Suspension**

SCAN TOOL OUTPUT CONTROLS

Scan Tool Output Controls

Scan Tool Output Control	Additional Menu Selections	Description
Calibrate Trim Height	-	Commands the module to calibrate trim height.
Compressor Test	-	Commands the air compressor and both air suspension inlet valves ON and OFF.
Depressurize System	-	Commands the suspension module to deflate the air springs.
Exhaust Solenoid	-	Commands the exhaust solenoid ON and OFF.
Extended Ride Height Lamp	-	Commands the ERH switch lamp ON and OFF.
Extended Ride Height Switch	-	Commands the module to activate extended ride height.
Inflator Switch	-	Commands the module to activate the accessory inflator.
Inflator Switch Lamp	-	Commands the inflator switch lamp ON and OFF.
Left Air Solenoid	-	Commands the left air solenoid ON and OFF.

Right Air Solenoid	-	Commands the right air solenoid ON and OFF.

SCAN TOOL DATA LIST

Scan Tool Data List

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Vehicle in park with Ignition switch ON			
ALC Exhaust Solenoid	Data Display	Active/Inactive	Inactive
Battery Voltage Signal	Data Display	Volts	9 - 16
Compressor Relay	Data Display	ON/OFF	OFF
Compressor Temperature	Data Display	OK/Hot	OK
Door Switch	Data Display	Open/Closed	Closed
Engine Running	Data Display	Yes/No	No
ERH Lamp Command	Data Display	On/Off	Off
ERH Switch	Data Display	Pressed/Released	Released
Height Sensor Current	Data Display	ma	19ma
Height Sensor Supply Status	Data Display	On/Off	On
Ignition	Data Display	On/Off	On
Ignition 3	Data Display	Volts	12-14.7
Inflator Switch	Data Display	Pressed/Released	Released
Inflator Switch Lamp Command	Data Display	ON/Off	OFF
Left Height Sensor	Data Display	Volts	2.50-3.50
Left Isolation Valve	Data Display	Active/Inactive	Inactive
Neutral Switch	Data Display	On/Off	Off
Number of DTCs	Data Display	Number	0
Park Switch	Data Display	On/Off	On
Ride Height Status	Data Display	Normal/Extended	Normal
Right Height Sensor	Data Display	Volts	2.50-3.50
Right Isolation Valve	Data Display	Active/Inactive	Inactive
Total Valve Current	Data Display	ma	0
Tow/Haul Mode	Data Display	Active/Inactive	Inactive
Trim Height Learned	Data Display	Yes/No	Yes
Vehicle Speed	Data Display	mph/km/h	0

SCAN TOOL DATA DEFINITIONS

ALC Exhaust Solenoid

Indicates weather the exhaust solenoid is on or off.

Battery Voltage Signal

Range 10.0 - 16.0 V. Voltage measured by the suspension control module.

Compressor Relay

Indicates when the compressor relay is activated.

Compressor Temperature

Identifies when the compressor thermal trip has set.

Door Switch

Indicates if any doors or the hatch is open.

Engine Running

Indicates if the engine is running.

ERH Lamp Command

Indicates when the ERH lamp is commanded on.

ERH Switch

Indicates when the ERH switch is pressed.

Height Sensor Current

Indicates the current of the 5 volt reference circuit for both height sensors and the pressure sensor.

Height Sensor Supply Status

Indicates if the 5 volt reference circuit for both height sensors and the pressure sensor is active.

Ignition

Indicates when the ignition is on or off.

Ignition 3

Indicates switched voltage at the suspension module.

Inflator Switch

Indicates when the inflator switch is pressed.

Inflator Switch Lamp Command

Indicates when the inflator switch lamp is commanded on.

Left Height Sensor

Range 0.5 - 4.85 V. Indicates the vehicle height measured in volts.

Left Isolation Valve

Indicates when the inlet valve is active.

Neutral Switch

Indicates when the shifter is in neutral.

Number of DTCs

Indicates the number of DTCs set in the suspension module.

Park Switch

Indicates when the shifter is in park.

Ride Height Status

Indicates if the vehicle is in extended or normal ride height.

Right Height Sensor

Range 0.5 - 4.85 V. Indicates the vehicle height measured in volts.

Right Isolation Valve

Indicates when the inlet valve is active.

Total Valve Current

Indicates the total current that the inlet valves, exhaust valve, and compressor relay are using.

Tow/Haul Mode

Indicates when the transmission is in the tow/haul mode.

Trim Height Learned

Indicates if the trim height was learned after the calibration procedure.

Vehicle Speed

Indicates the speed of the vehicle.

DIAGNOSTIC TROUBLE CODE (DTC) LIST

Diagnostic Trouble Code (DTC) List

DTC	Diagnostic Procedure	Modules
B2795	**DTC B2795**	ASM
C0550	**DTC C0550**	ASM
C0563	**DTC C0563**	ASM
C0569	**DTC C0569**	ASM
C0626	**DTC C0626**	ASM
C0631	**DTC C0631**	ASM
C0660	**DTC C0660**	ASM
C0696	**DTC C0696**	ASM
C0702	**DTC C0702**	ASM
C0707	**DTC C0707**	ASM
C0711	**DTC C0711**	ASM
C0712	**DTC C0712**	ASM
C0713	**DTC C0713**	ASM
C0716	**DTC C0716**	ASM
C0717	**DTC C0717**	ASM

DTC B2795

Circuit Description

The air suspension module monitors the ride height switch signal circuit for a short to ground or battery with ignition on and up to 3 minutes with the ignition OFF.

Conditions for Running the DTC

Ignition ON or OFF.

Conditions for Setting the DTC

The air suspension module senses the ride height switch signal circuit voltage is shorted to ground or battery.

Action Taken When the DTC Sets

- A DTC is set.

- No message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the ride height switch circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: This step tests for normal scan tool data parameters.
3: This step tests for data parameter change with scan tool.
4: This step tests the signal circuit to be inactive.

DTC B2795

Step	Action	Yes	No
Schematic Reference:Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the ERH Switch parameter in the data list for the air suspension module. Does the scan tool display released?	Go to **Step 3**	Go to **Step 4**
3	1. Activate the ERH switch. 2. With the scan tool, observe the ERH Switch parameter. Does the ERH Switch parameter change state?	Go to Diagnostic Aids	Go to **Step 4**
4	1. Turn OFF the ignition. 2. Disconnect the ERH switch. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the ERH Switch parameter. Does the scan tool display released?	Go to **Step 7**	Go to **Step 5**
5	Test the signal circuit of the ERH switch for a short to battery, ground or an open circuit. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems.	Go to **Step**	

	Did you find and correct the condition?	**10**	Go to **Step 6**
6	Inspect for poor connections at the harness connector of the air suspension module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 8**
7	Inspect for poor connections at the harness connector of the ERH Switch. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 9**
8	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module if necessary after check trim height procedure. Did you complete the replacement?	Go to **Step 10**	-
9	Replace the ride height switch. Refer to **Electronic Suspension Switch Replacement** . Did you complete the replacement?	Go to **Step 10**	-
10	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0563

Circuit Description

On the power-up self test, the calibration data stored in the electronically erasable programmable read-only memory (EEPROM) is copied to shadow RAM. Data checksums are generated and verified, and the data in shadow RAM is verified against the contents of the EEPROM. In certain situations data is written to the EEPROM. In these circumstanced any checksums are recalculated, and the data written to the EEPROM is read back and compared with the original data.

Conditions for Running the DTC

The ignition is on.

Conditions for Setting the DTC

If the EEPROM test fails then it is repeated. If the fault is still present after 5 test cycles, then a DTC is set.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

DTC is cleared by cycling ignition.

DTC C0563

Step	Action	Yes	No
Schematic Reference:Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	Perform the trim height calibration procedure. Refer to **Trim Height Calibration Procedure** . Does the DTC reset?	Go to **Step 3**	System OK
3	Replace the electronic suspension control module. Refer to **Module Assembly Electronic Suspension Control Replacement** . Did you complete the replacement.	System OK	-

DTC C0569

Circuit Description

The Air Suspension Module monitors the trim height calibration procedure. When the calibration procedure is activated the vehicle exhaust down to rest on a chassis support at a predetermined height. When no further height change is detected, the height sensor readings are verified to be within 2.06 V and 2.88 V. If there are no errors then the new trim height is accepted. If the Air Suspension Module detects any errors in the trim height calibration procedure then the new trim height is not accepted and a DTC is set.

Conditions for Running the DTC

Ignition on

Conditions for Setting the DTC

The Air Suspension Module detects that the height sensors are not within 2.06 V and 2.88 V.

Action Taken When the DTC Sets

The new trim height is not accepted.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed

Diagnostic Aids

Make sure the vehicle chassis is being supported at the proper trim height.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3: Tests whether the condition is module, system, or condition related.

4: Tests if the condition has been corrected or identified as specified in the supporting text.

5: Test if the Air Suspension Sensors are within the proper range before the relearn procedure is activated.

DTC C0569

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, monitor the DTC Information for DTC C0569 in the Air Suspension Module. Does the scan tool indicate that DTC C0569 is current?	Go to **Step 4**	Go to **Step 3**
3	Most occurrences of this DTC are caused by not having the vehicle supported at the proper trim height when doing the trim height relearn procedure. Did trim height relearn procedure cause this DTC to set?	Go to Diagnostic Aids	Go to **Step 4**
4	1. Use the scan tool in order to clear the DTCs. 2. Activate the trim height relearn procedure after making sure the vehicle is being supported at the correct trim height. Does the DTC reset?	Go to **Step 5**	System OK
5	If needed, inspect the Right and Left Height Sensor voltage reading with the scan tool to be sure that they read between 2.06 V and 2.88 V after the Air Suspension system has		

	exhausted. Did you find and correct the condition?	System OK	Go to **Step 6**
6	**IMPORTANT:** **Always check the trim height and recalibrate the Air Suspension module if necessary.** 1. Replace the Air Suspension Module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Check the trim height and recalibrate the Air Suspension Module if necessary. Did you complete the replacement?	System OK	-

DTC C0626

Circuit Description

The air suspension sensor provides a signal voltage between 0.3-4.7 volts to the air suspension module. This signal voltage represents the wheel's position relative to the body. The air suspension module provides a 5-volt reference and a low reference to the sensor.

Conditions for Running the DTC

At power-up and continuous when ignition is activated.

Conditions for Setting the DTC

The air suspension module senses a suspension sensor voltage below 0.3 volts or above 4.7 volts.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set for a high or low signal to the air suspension module from the air suspension sensor - LR.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: This step checks the air suspension sensor - LR data parameter.

3: This step tests for the proper operation of the circuit in the high voltage range.

4: This step tests for the proper operation of the circuit in the low voltage range. If the fuse in the jumper opens upon performing this test, the signal circuit has a short to voltage.

5: This step tests for a short to ground in the 5-volt reference circuit.

7: This step tests the 5-volt reference circuit for the air suspension sensor - LR.

DTC C0626

Step	Action	Values	Yes	No
Schematic Reference: Suspension Controls Schematics				
1	Did you perform the Air Suspension System Diagnostic System Check?	-	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Left Height Sensor parameter in the data list for the air suspension module. Is the Left Height Sensor parameter within the specified range?	0.3-4.7 V	Go to Diagnostic Aids	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Disconnect the air suspension sensor - LR. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Left Height Sensor parameter. Is the Left Height Sensor parameter more than the specified value?	0.3 V	Go to **Step 4**	Go to **Step 8**
4	1. Turn OFF the ignition 2. Connect a 3-ampere fused jumper wire between the signal circuit of the air suspension sensor-LR and the low reference circuit of the air suspension sensor - LR. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Left Height Sensor parameter. Is the Left Height Sensor parameter less than the specified value?	0.3 V	Go to **Step 5**	Go to **Step 9**
	1. Turn OFF the ignition.			

5	2. Disconnect the fused jumper wire. 3. Turn ON the ignition, with the engine OFF. 4. Test the 5-volt reference circuit voltage of the air suspension sensor - LR. Is the Left Height Sensor 5 volt reference voltage greater than the specified value?	4.7 V	Go to **Step 7**	Go to **Step 6**
6	Test the 5-volt reference circuit of the air suspension sensor-LR for a short to ground. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
7	Test the 5-volt reference circuit of the air suspension sensor - LR for one of the following conditions: • A short to voltage • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 11**
8	Test the signal circuit of the air suspension sensor - LR for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
9	Test the signal circuit of the air suspension sensor - LR for one of the following conditions: • A short to voltage • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 10**
10	Test the low reference circuit of the air suspension sensor - LR for one of the following conditions: • A high resistance • An open	-		

	Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?		Go to **Step 15**	Go to **Step 12**
11	Inspect for poor connections at the harness connector of the air suspension sensor - LR. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 13**
12	Inspect for poor connections at the harness connector of the air suspension module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 14**
13	Replace the air suspension sensor - LR. Refer to **Air Spring Leveling Sensor Replacement** . Did you complete the replacement?	-	Go to **Step 15**	-
14	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module if necessary after Check the trim height procedure. Did you complete the replacement?	-	Go to **Step 15**	-
15	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	Go to **Step 2**	System OK

DTC C0631

Circuit Description

The Air Suspension Sensor provides a signal voltage between 0.3 and 4.7 volts to the Air Suspension Module. This signal voltage represents the wheel's position relative to the body. The Air Suspension Module provides a 5 volt reference and a low reference to the sensor.

Conditions for Running the DTC

At power-up and continuous when ignition is activated.

Conditions for Setting the DTC

Air Suspension Module senses a suspension sensor voltage below 0.3 volts or above 4.7 volts.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set for a high or low signal to the Air Suspension Module from the Air Suspension Sensor-RR.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Checks the Air Suspension Sensor - RR data parameter.

3: Tests for the proper operation of the circuit in the high voltage range.

4: Tests for the proper operation of the circuit in the low voltage range. If the fuse in the jumper opens upon performing this test, the signal circuit has a short to voltage.

5: Tests for a short to ground in the 5 volt reference circuit.

7: Test the 5 volt reference circuit for the Air Suspension Sensor - RR.

DTC C0631

Step	Action	Values	Yes	No
Schematic Reference: Suspension Controls Schematics				
1	Did you perform the Air Suspension System Diagnostic System Check?	-	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Right Height Sensor parameter in the data list for the Air Suspension Module. Is the Right Height Sensor parameter within the specified range?	0.3-4.7 V	Go to Diagnostic Aids	Go to **Step 3**
	1. Turn OFF the ignition. 2. Disconnect the Air Suspension Sensor-RR.			

3	3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Right Height Sensor parameter. Is the Right Height Sensor parameter more than the specified value?	0.3 V	Go to **Step 4**	Go to **Step 8**
4	1. Turn OFF the ignition. 2. Connect a 3-ampere fused jumper wire between the signal circuit of the Air Suspension Sensor-RR and the low reference circuit of the Air Suspension Sensor - RR. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Right Height Sensor parameter. Is the Right Height Sensor parameter less than the specified value?	0.3 V	Go to **Step 5**	Go to **Step 9**
5	1. Turn OFF the ignition. 2. Disconnect the fused jumper wire. 3. Turn ON the ignition, with the engine OFF. 4. Test the 5 volt reference circuit voltage of the Air Suspension Sensor - RR. Is the Right Height Sensor 5 volt reference voltage greater than the specified value?	4.7 V	Go to **Step 7**	Go to **Step 6**
6	Test the 5 volt reference circuit of the Air Suspension Sensor-RR for a short to ground. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
7	Test the 5 volt reference circuit of the Air Suspension Sensor - RR for one of the following conditions: • A short to voltage • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 11**
8	Test the signal circuit of the Air Suspension Sensor - RR for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems.	-	Go to **Step**	

	Did you find and correct the condition?		**15**	Go to **Step 12**
9	Test the signal circuit of the Air Suspension Sensor - RR for one of the following conditions: • A short to voltage • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 10**
10	Test the low reference circuit of the Air Suspension Sensor - RR for one of the following conditions: • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
11	Inspect for poor connections at the harness connector of the Air Suspension Sensor - RR. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 13**
12	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 14**
13	Replace the Air Suspension Sensor - RR. Refer to **Air Spring Leveling Sensor Replacement** . Did you complete the replacement?	-	Go to **Step 15**	-
14	**IMPORTANT:** **Always perform the check trim height procedure after Air Suspension Module replacement.** 1. Replace the Air Suspension Module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the Trim height calibration procedure for the Air Suspension Module if necessary after Check trim height procedure.	-		-

	Did you complete the replacement?		Go to **Step 15**	
15	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	 Go to **Step 2**	 System OK

DTC C0660

Circuit Description

The Air Suspension Exhaust Valve is controlled by the Air Suspension Module. The Air Suspension Module provides a switched path to voltage whenever exhaust valve activity is required. The Air Suspension Module monitors the exhaust valve circuity to determine if the voltage level agrees with the command state.

Conditions for Running the DTC

Ignition on.

Conditions for Setting the DTC

Air Suspension Module senses exhaust valve voltage does not agree with command state.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the exhaust valve circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: During the Air Suspension exhaust valve operation, listen for an audible click. Command the ON and the OFF states. Repeat the commands as necessary.

3: Verifies that the Air Suspension Module is providing voltage to the Air Suspension Exhaust Valve.

4: Tests for an open in the ground circuit to the Air Suspension Exhaust Valve.

5: Tests for constant voltage to the Air Suspension Exhaust Valve.

DTC C0660

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the exhaust valve ON and OFF. Does the exhaust valve turn ON and OFF with each command?	Go to Diagnostic Aids	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Disconnect the exhaust valve. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp to ground. Probe the control circuit of the exhaust valve with a test lamp that is connected to ground. 5. With a scan tool, command the exhaust valve ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 4**	Go to **Step 5**
4	1. Connect a test lamp between the control circuit of the exhaust valve and the ground circuit of the exhaust valve. 2. With a scan tool, command the exhaust valve ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 8**	Go to **Step 10**
5	Does the test lamp remain illuminated with each command?	Go to **Step 7**	Go to **Step 6**
6	Test the control circuit of the exhaust valve for a short to ground or an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
7	Test the control circuit of the exhaust valve for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
	Inspect for poor connections at the exhaust valve. Refer to		

8	**Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 11**
9	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 12**
10	Repair the ground circuit of the exhaust valve. Refer to **Wiring Repairs** in Wiring Systems. Did you complete the repair?	Go to **Step 13**	-
11	Replace the Air Suspension Exhaust Valve. Refer to **Compressor Automatic Level Control Replacement** . Did you complete the replacement?	Go to **Step 13**	-
12	**IMPORTANT:** **Always perform the check trim height procedure after Air Suspension Module replacement.** 1. Replace the Air Suspension Module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the Air Suspension Module if necessary after check trim height procedure. Did you complete the replacement?	Go to **Step 13**	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0696

Circuit Description

With the ignition switch in the on position the current draw of both Air Suspension Sensors and the Air Suspension Pressure Sensor is verified by the Air Suspension Module to be within a calibrated range. If the current draw is out of range a DTC is set.

Conditions for Running the DTC

The ignition is on.

Conditions for Setting the DTC

The Air Suspension Module detects that the current drawn by the Air Suspension Sensors and Air Suspension Pressure Sensor is below 3 mA. or above 40 mA.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

DTC is cleared by cycling ignition.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Test Air Suspension Sensor current.
3: Test the wiring for the overcurrent condition.
4: Tests for the component that is creating the overcurrent.

DTC C0696

Step	Action	Values	Yes	No
Schematic Reference: Suspension Controls Schematics				
1	Did you perform the Air Suspension Diagnostic System Check?	-	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, observe the Height Sensor Current parameter in the data list for the air suspension module. Is the Height Sensor Current parameter within the specified range?	3-40 mA	Go to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Disconnect the Air Suspension Sensor - LR, Air Suspension Sensor - RR and the Air Suspension Pressure Sensor. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the Height Sensor Current parameter.	40 mA		

	Is the Height Sensor Current parameter less than the specified value?		Go to **Step 4**	Go to **Step 5**
4	Reconnect the Air Suspension Sensors and Air Suspension Pressure Sensor one at a time while observing the Height Sensor Current parameter. Is the Height Sensor Current parameter greater than the specified value when any of the components are reconnected?	40 mA	Go to **Step 6**	Go to **Step 7**
5	Test the 5 volt reference circuit of the Air suspension Sensors and Air Suspension Pressure Sensor for a short to ground. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 10**	Go to **Step 7**
6	Inspect for poor connections at the harness connector of the Air Suspension Sensors and Air Suspension Pressure Sensor. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 10**	Go to **Step 8**
7	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 10**	Go to **Step 9**
8	Replace the Air Suspension sensor or Pressure sensor. Refer to **Air Spring Leveling Sensor Replacement** or **Valve Automatic Level Control Solenoid Replacement** . Did you complete the replacement?	-	Go to **Step 10**	-
9	**IMPORTANT:** **Always perform the trim height check procedure after Air Suspension Module replacement.** 1. Replace the Air Suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Recalibrate the trim height in the Air Suspension Module if necessary after replacement. Did you complete the replacement?	-	Go to **Step 10**	-
	1. Use the scan tool in order to clear the			

	DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	Go to **Step 2**	System OK
10				

DTC C0702

Circuit Description

During the key ON self test of the air suspension system the air suspension inlet valves, exhaust valve, and electronically controlled air suspension relay are actuated and the voltage draw is calculated by the Air Suspension Control Module.

Conditions for Running the DTC

Ignition ON

Conditions for Setting the DTC

Air suspension module senses general valve voltage does not agree with command state.

Action Taken When the DTC Sets

- Air suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the general valve circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: During the air suspension exhaust valve operation, listen for an audible click. Command the ON and the OFF states. Repeat the commands as necessary.

3: Verifies that the air suspension module is providing voltage to the air suspension exhaust valve.

4: Tests for an open in the ground circuit to the air suspension exhaust valve.

5: Tests for constant voltage to the air suspension exhaust valve.

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the exhaust valve and inlet valves ON and OFF. Does the exhaust valve and inlet valves turn ON and OFF with each command?	Go to Diagnostic Aids	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Disconnect the exhaust valve and inlet valves. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp to ground. Probe the control circuit of the exhaust valve and inlet valves with a test lamp that is connected to ground. 5. With a scan tool, command the exhaust valve and inlet valves ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 4**	Go to **Step 5**
4	1. Connect a test lamp between the control circuit of the exhaust valve and inlet valves and the ground circuit of the exhaust valve and inlet valves. 2. With a scan tool, command the exhaust valve and inlet valves ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 8**	Go to **Step 10**
5	Does the test lamp remain illuminated with each command?	Go to **Step 7**	Go to **Step 6**
6	Test the control circuit of the exhaust valve and inlet valves for a short to ground or an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
7	Test the control circuit of the exhaust valve and inlet valves for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
8	Inspect for poor connections at the exhaust valve and inlet valves. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems.	Go to **Step**	

	Did you find and correct the condition?	**13**	Go to **Step 11**
9	Inspect for poor connections at the harness connector of the air suspension module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 12**
10	Repair the ground circuit of the exhaust valve and inlet valves. Refer to **Wiring Repairs** in Wiring Systems. Did you complete the repair?	Go to **Step 13**	-
11	Replace the air suspension exhaust valve or inlet valves. Refer to **Compressor Automatic Level Control Replacement** . Did you complete the replacement?	Go to **Step 13**	-
12	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module, if necessary, after check trim height procedure. Did you complete the replacement?	Go to **Step 13**	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0707

Circuit Description

The air suspension module monitors the run time of the compressor. If the compressor has run for more than 1 hour during an ignition cycle the air suspension module switches OFF the compressor relay. The run timer counts down when the compressor is OFF with the ignition ON.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

The compressor run timer has exceeded 1 hour of run time.

Action Taken When the DTC Sets

- The air suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the compressor has run to long.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3: This step tests whether the condition is module, system, or condition related.
4: This step tests if the condition has been corrected or identified as specified in the supporting text.
6: This step tests if the DTC sets during normal operating conditions.

DTC C0707

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, monitor the DTC Information for DTC C0707 in the air suspension module. Does the scan tool indicate that DTC C0707 is current?	Go to **Step 4**	Go to **Step 3**
3	Most occurrences of this DTC are caused by long run times of the compressor. Review the air suspension system with the customer to verify the conditions under which the DTC set. Did vehicle operation cause this DTC to set?	Go to Diagnostic Aids	Go to **Step 4**
4	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within normal operating conditions. Does the DTC reset?	Go to **Step 5**	System OK
5	Replace the air suspension compressor. Refer to **Compressor Automatic Level Control Replacement** . Did you complete the replacement?	Go to **Step 6**	-

6	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within normal operating conditions. Does the DTC reset?	Go to **Step 7**	System OK
7	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module if necessary after check trim height procedure. Did you complete the replacement?	System OK	-

DTC C0711

Circuit Description

The air suspension pressure sensor sends a voltage signal to the air suspension module that corresponds to a pressure within the range of 30-180 psi. The air suspension module also uses this signal to verify that the proper amount of pressure is achieved in the air dryer within 23 seconds prior to opening of the inlet valves for inflation of the air springs.

Conditions for Running the DTC

Ignition ON

Conditions for Setting the DTC

The air suspension module detects that the rate of height change, central air camber pressure or the signal from the air pressure sensor is out of limits.

Action Taken When the DTC Sets

- Air suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will be active when the vehicle is moving, but then it will go to history when the vehicle is not moving.

DTCs can be cleared with scan tool.

Diagnostic Aids

Repair all other DTCs before DTC C0711.

This DTC is set when:

- The pneumatic status of the air suspension system is out of limits.
- When excessive amounts of time have elapsed when inflating the air springs.
- When there is a air leak in the system.
- When vehicle speed is greater than 3 km/h (1.8 mph) and rate of height change is out of limits.
- When the 60 A compressor fuse is open.
- When the compressor relay is defective.
- When there is an intermittent or permanent loss of continuity between the compressor and the compressor supply voltage during an upwards leveling event.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Test for the proper operation of the compressor and compressor relay.
3: Tests for open circuits in the compressor battery positive voltage circuit and compressor ground circuit.
4: Tests for voltage in the 5-volt reference circuit.
5: Tests for a high resistance or for an open in the low reference circuit.
10: Check for open or high resistance in the sensor ground circuit.
14: The replacement suspension module calibration must be checked and calibrated if necessary.

DTC C0711

Step	Action	Values	Yes	No
Schematic Reference:Suspension Controls Schematics				
1	Did you perform the Air Suspension Diagnostic System Check?	-	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	**IMPORTANT:** **Be sure all doors are closed and engine is running for this test.** 1. Install a scan tool. 2. Turn ON ignition, with the engine ON. 3. With a scan tool, activate compressor test in scan tool output controls.	-	Go to	

	Does the compressor run and rear of vehicle raise?		Diagnostic Aids	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Check for open in 60 A ECAS fuse. 3. Check for defective air suspension relay. 4. Check for open or poor connections in compressor battery positive voltage circuit. 5. Check for open or poor connections in compressor ground circuit. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 4**
4	1. Turn ON the ignition. 2. Disconnect the air suspension pressure sensor. 3. Measure the voltage between the 5-volt reference circuit of the air pressure sensor and the low reference circuit of the air pressure sensor. Is the voltage less than the specified value?	5.0 V	Go to **Step 5**	Go to **Step 6**
5	1. Turn OFF the ignition. 2. Measure the resistance from the low reference circuit of the air pressure sensor to a good ground. Is the resistance less than the specified value?	5 ohm	Go to **Step 7**	Go to **Step 10**
6	Test the 5-volt reference circuit of the air pressure sensor for a short to voltage. Refer to **Circuit Testing** and to **Testing for a Short to Voltage** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
7	Test the 5-volt reference circuit of the air pressure sensor for one of the following conditions: • A short to ground • A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
	Test the signal circuit of the air pressure sensor for one of the following conditions: • A short to ground			

8	• A high resistance • An open Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 9**
9	Test the signal circuit of the air pressure sensor for a short to voltage. Refer to **Testing for a Short to Voltage** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
10	1. Disconnect the air suspension module. 2. Test the low reference circuit of the air pressure sensor for a high resistance or for an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 12**
11	Inspect for poor connections at the harness connector of the air pressure sensor. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 13**
12	Inspect for poor connections at the harness connector of the air suspension module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	-	Go to **Step 15**	Go to **Step 14**
13	Replace the air suspension pressure sensor. Refer to **Valve Automatic Level Control Solenoid Replacement** . Did you complete the replacement?	-	Go to **Step 15**	-
14	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module, if necessary, after check trim height procedure. Did you complete the replacement?	-	Go to **Step 15**	-

15	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	-	Go to **Step 2**	System OK

DTC C0712

Circuit Description

The air suspension compressor motor is switched ON and OFF via an air suspension relay which is controlled by the air suspension module. The air suspension module provides a switched path to voltage whenever compressor activity is required. The air suspension module monitors the compressor motor relay circuity to determine if the voltage level agrees with the command state.

Conditions for Running the DTC

Ignition ON

Conditions for Setting the DTC

Air suspension module senses relay circuity voltage does not agree with command state.

Action Taken When the DTC Sets

- Air suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the compressor relay circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: During the air suspension relay operation, listen for an audible click. Command the ON and the OFF states. Repeat the commands as necessary.

3: Verifies that the air suspension module is providing voltage to the air suspension relay.

4: Tests for an open in the ground circuit to the air suspension relay.

5: Tests for constant voltage to the air suspension relay.

DTC C0712

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	**IMPORTANT:** **Be sure all doors are closed and engine is running for this test.** 1. Install a scan tool. 2. Turn ON the ignition, with the engine ON. 3. With a scan tool, command the compressor relay ON and OFF. Does the compressor relay turn ON and OFF with each command?	Go to Diagnostic Aids	Go to **Step 3**
3	**IMPORTANT:** **Be sure all doors are closed and engine is running for this test.** 1. Turn OFF the ignition. 2. Disconnect the compressor relay. 3. Turn ON the ignition, with the engine ON. 4. Connect a test lamp to ground. 5. Probe the control circuit of the compressor relay with a test lamp that is connected to ground. 6. With a scan tool, command the compressor relay ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 4**	Go to **Step 5**
4	**IMPORTANT:** **Be sure all doors are closed and engine is running for this test.** 1. Connect a test lamp between the control circuit of the compressor relay and the ground circuit of the compressor relay. 2. With a scan tool, command the compressor relay ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 8**	Go to **Step 10**
5	Does the test lamp remain illuminated with each command?	Go to **Step 7**	Go to **Step 6**

6	Test the control circuit of the compressor relay for a short to ground or an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
7	Test the control circuit of the compressor relay for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
8	Inspect for poor connections at the compressor relay. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 11**
9	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 12**
10	Repair the ground circuit of the air suspension relay. Refer to **Wiring Repairs** in Wiring Systems. Did you complete the repair?	Go to **Step 13**	-
11	Replace the air suspension relay. Did you complete the replacement?	Go to **Step 13**	-
12	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module, if necessary, after check trim height procedure. Did you complete the replacement?	Go to **Step 13**	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0713

Circuit Description

The air suspension compressor has a temperature sensor. The overtemperature sensor is a thermal limit switch

that is in the normally closed position. This provides a ground signal to the air suspension module. The air suspension module monitors the temperature sensor for a compressor overtemperature condition. On receipt of a compressor overtemperature condition the air suspension module switches off the compressor relay. The relay cannot be switched on again until at least three minutes after removal of the overtemperature condition.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

Air suspension module senses a compressor overtemperature condition.

Action Taken When the DTC Sets

- Air suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

- This DTC is set when the compressor has run so long that it has overheated.
- The compressor has overheated because of a blockage in the air system.
- Bad compressor motor ground will set the DTC.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3: Tests whether the condition is module, system, or condition related.
4: Tests if the condition has been corrected or identified as specified in the supporting text.
6: Tests if the DTC sets during normal operating conditions.

DTC C0713

Step	Action	Yes	No
Schematic Reference:Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF.		

2	3. With a scan tool, monitor the DTC Information for DTC C0713 in the Air Suspension Module. Does the scan tool indicate that DTC C0713 is current?	Go to **Step 4**	Go to **Step 3**
3	Most occurrences of this DTC are caused by overload of the compressor. Review the Air Suspension System with the customer to verify the conditions under which the DTC set. Did vehicle operation cause this DTC to set?	Go to Diagnostic Aids	Go to **Step 4**
4	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within normal operating conditions. Does the DTC reset?	Go to **Step 5**	System OK
5	Replace the air suspension compressor. Refer to **Compressor Automatic Level Control Replacement** . Did you complete the replacement?	Go to **Step 6**	-
6	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within normal operating conditions. Does the DTC reset?	Go to **Step 7**	System OK
7	**IMPORTANT:** **Always perform the check trim height procedure after air suspension module replacement.** 1. Replace the air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the air suspension module if necessary after check trim height procedure. Did you complete the replacement?	System OK	-

DTC C0716

Circuit Description

The Air Suspension Inlet Valve-LR is controlled by the Air Suspension Module. The Air Suspension Module provides a switched path to voltage whenever inlet valve activity is required. The Air Suspension Module monitors the inlet valve circuity to determine if the voltage level agrees with the command state.

Conditions for Running the DTC

Ignition on.

Conditions for Setting the DTC

Air Suspension Module senses inlet valve voltage does not agree with command state.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the inlet valve circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: During the Left Air Solenoid operation, listen for an audible click. Command the ON and the OFF states. Repeat the commands as necessary.

3: Verifies that the Air Suspension Module is providing voltage to the Left Air Solenoid.

4: Tests for an open in the ground circuit to the Left Air Solenoid.

5: Tests for constant voltage to the Left Air Solenoid.

DTC C0716

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the Left Air Solenoid ON and OFF. Does the air solenoid turn ON and OFF with each command?	Go to Diagnostic Aids	Go to **Step 3**
	1. Turn OFF the ignition. 2. Disconnect the Air Suspension Inlet Valve. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp to ground.		

3	Probe the control circuit of the inlet valve with a test lamp that is connected to ground. 5. With a scan tool, command the Left Air Solenoid ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 4**	Go to **Step 5**
4	1. Connect a test lamp between the control circuit of the inlet valve and the ground circuit of the inlet valve. 2. With a scan tool, command the Left Air Solenoid ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 8**	Go to **Step 10**
5	Does the test lamp remain illuminated with each command?	Go to **Step 7**	Go to **Step 6**
6	Test the control circuit of the inlet valve for a short to ground or an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
7	Test the control circuit of the inlet valve for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
8	Inspect for poor connections at the inlet valve. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 11**
9	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 12**
10	Repair the ground circuit of the inlet valve. Refer to **Wiring Repairs** in Wiring Systems. Did you complete the repair?	Go to **Step 13**	-
11	Replace the Air Suspension Inlet Valve. Refer to **Valve Automatic Level Control Solenoid Replacement** . Did you complete the replacement?	Go to **Step 13**	-
12	**IMPORTANT:** **Always perform the check trim height procedure after Air Suspension Module replacement.** 1. Replace the Air Suspension Module. Refer to **Module Assembly Electronic Suspension Control Replacement** .		-

	2. Perform the trim height calibration procedure for the Air Suspension Module if necessary after check trim height procedure. Did you complete the replacement?	Go to **Step 13**	
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

DTC C0717

Circuit Description

The Air Suspension Inlet Valve - RR is controlled by the Air Suspension Module. The Air Suspension Module provides a switched path to voltage whenever inlet valve activity is required. The Air Suspension Module monitors the inlet valve circuity to determine if the voltage level agrees with the command state.

Conditions for Running the DTC

Ignition on.

Conditions for Setting the DTC

Air Suspension Module senses inlet valve voltage does not agree with command state.

Action Taken When the DTC Sets

- Air Suspension functionality is suspended.
- SERVICE AIR SUSPENSION message is displayed.

Conditions for Clearing the DTC

The DTC will clear when the condition for setting the DTC is removed.

Diagnostic Aids

This DTC is set when the inlet valve circuitry is shorted to ground, voltage and open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: During the Right Air Solenoid operation, listen for an audible click. Command the ON and the OFF states. Repeat the commands as necessary.

3: Verifies that the Air Suspension Module is providing voltage to the Right Air Solenoid.

4: Tests for an open in the ground circuit to the Right Air Solenoid.

5: Tests for constant voltage to the Right Air Solenoid.

DTC C0717

Step	Action	Yes	No
Schematic Reference: Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF. 3. With a scan tool, command the Right Air Solenoid ON and OFF. Does the air solenoid turn ON and OFF with each command?	Go to Diagnostic Aids	Go to **Step 3**
3	1. Turn OFF the ignition. 2. Disconnect the Air Suspension Inlet Valve. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp to ground. Probe the control circuit of the inlet valve with a test lamp that is connected to ground. 5. With a scan tool, command the Right Air Solenoid ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 4**	Go to **Step 5**
4	1. Connect a test lamp between the control circuit of the inlet valve and the ground circuit of the inlet valve. 2. With a scan tool, command the Right Air Solenoid ON and OFF. Does the test lamp turn ON and OFF with each command?	Go to **Step 8**	Go to **Step 10**
5	Does the test lamp remain illuminated with each command?	Go to **Step 7**	Go to **Step 6**
6	Test the control circuit of the inlet valve for a short to ground or an open. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 9**
7	Test the control circuit of the inlet valve for a short to voltage. Refer to **Circuit Testing** and to **Wiring Repairs** in Wiring Systems.	Go to **Step**	

	Did you find and correct the condition?	**13**	Go to **Step 9**
8	Inspect for poor connections at the inlet valve. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 11**
9	Inspect for poor connections at the harness connector of the Air Suspension Module. Refer to **Testing for Intermittent Conditions and Poor Connections** and to **Wiring Repairs** in Wiring Systems. Did you find and correct the condition?	Go to **Step 13**	Go to **Step 12**
10	Repair the ground circuit of the inlet valve. Refer to **Wiring Repairs** in Wiring Systems. Did you complete the repair?	Go to **Step 13**	-
11	Replace the Air Suspension Inlet Valve. Refer to **Valve Automatic Level Control Solenoid Replacement** . Did you complete the replacement?	Go to **Step 13**	-
12	**IMPORTANT:** **Always perform the check trim height procedure after Air Suspension Module replacement.** 1. Replace the Air Suspension Module. Refer to **Module Assembly Electronic Suspension Control Replacement** . 2. Perform the trim height calibration procedure for the Air Suspension Module if necessary after check trim height procedure. Did you complete the replacement?	Go to **Step 13**	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC. Does the DTC reset?	Go to **Step 2**	System OK

SYMPTOMS - AIR SUSPENSION

IMPORTANT: Review the system operation in order to familiarize yourself with the system functions.

Refer to **Air Suspension Description and Operation** .

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the air suspension system. Refer to

Checking Aftermarket Accessories in Wiring Systems.

- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Inflator Inoperative**
- **Compressor Runs at All Times**

INFLATOR INOPERATIVE

Inflator Inoperative

Step	Action	Yes	No
Schematic Reference:Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	Verify the fault is present. Does the system operate normally?	Go to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems	Go to **Step 3**
3	1. Connect a scan tool. 2. Turn ON ignition, with engine OFF. 3. Use scan tool to activate inflator switch. Does the compressor turn on?	Go to **Step 4**	Go to **Step 8**
4	Test the signal circuit of the air suspension inflator switch for an open, short to ground, short to voltage and high resistance. Refer to **Circuit Testing** , **Testing for Short to Ground** , **Testing for a Short to Voltage** , **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 5**
5	Test the low reference circuit of the air suspension inflator switch for an open, short to ground, short to voltage and high resistance. Refer to **Circuit Testing** , **Testing for Short to Ground** , **Testing for a Short to**		

	Voltage , **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 6**
6	Inspect for poor connections at the harness connector of the air suspension inflator switch. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 7**
7	Replace air suspension inflator switch. Refer to **Inflator Air Switch Replacement** . Did you complete the replacement?	Go to **Step 10**	-
8	Inspect for poor connections at the harness connector of the air suspension compressor assembly. Did you find and correct the condition?	Go to **Step 10**	Go to **Step 9**
9	Replace air suspension module. Refer to **Module Assembly Electronic Suspension Control Replacement** . Did you complete the replacement?	Go to **Step 10**	-
10	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to **Step 3**

COMPRESSOR RUNS AT ALL TIMES

Compressor Runs at All Times

Step	Action	Yes	No
Schematic Reference:Suspension Controls Schematics			
1	Did you perform the Air Suspension Diagnostic System Check?	Go to **Step 2**	Go to **Diagnostic System Check - Air Suspension**
2	Verify the fault is present. Does the system operate normally?	Go to **Testing for Intermittent Conditions and Poor Connections**	Go to **Step 3**
3	Remove the electronically controlled air suspension relay. Does the compressor stop running?	Go to **Step 4**	Go to **Step 6**
4	Test the relay for continuity between pin 30 and pin 87. Does the relay have continuity?	Go to **Step 5**	-
5	Replace the relay. Did you complete the replacement?	Go to **Step 7**	-
6	Check for a short to battery on the compressor battery positive voltage circuit. Did you find and correct the condition?	Go to **Step 7**	-
7	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to **Step 3**

REPAIR INSTRUCTIONS

TRIM HEIGHT CALIBRATION PROCEDURE

1. Depressurize the air suspension system to lower rear of vehicle. Refer to **Air Suspension Depressurization Procedure** .
2. Raise and support rear of vehicle at D height. 132 mm (5.2 in).

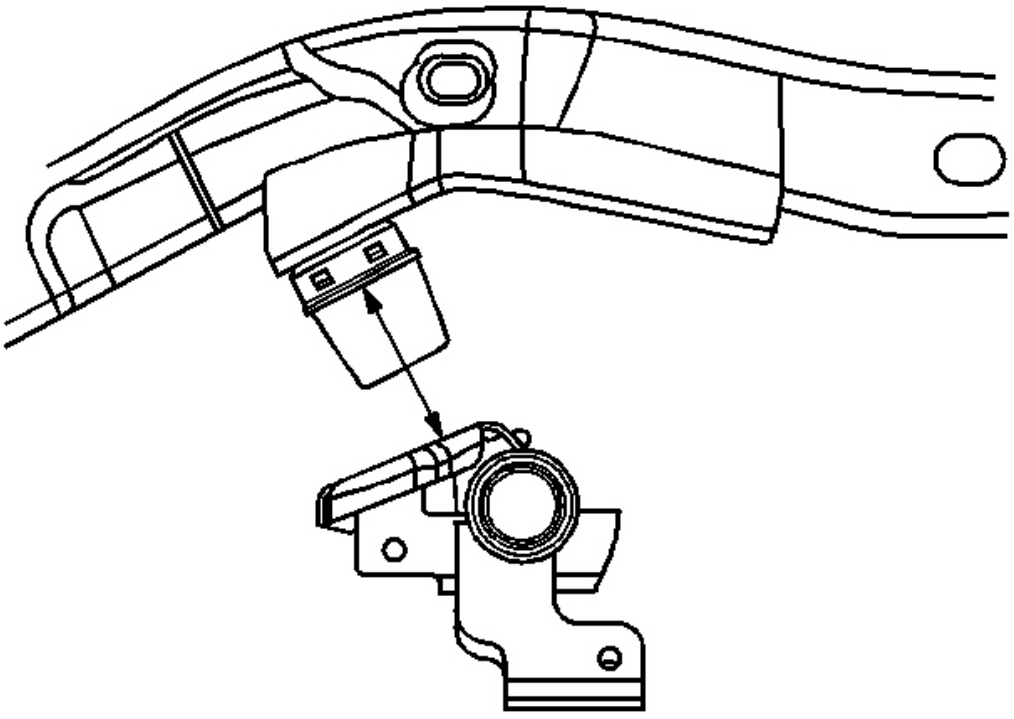


Fig. 7: Trim Height Calibration Procedure
Courtesy of GENERAL MOTORS CORP.

3. The D height is obtained by measuring the distance between the edge of the jounce cup along the jounce bumper center line and the jounce pad on the rear axle.
4. With the scan tool perform the calibrate trim height procedure in air suspension special functions.
5. Check scan tool data list for trim height learned. Typical data value will be YES.
6. If trim height was not accepted the typical data value will be NO and DTC C0569 will set.

AIR SUSPENSION DEPRESSURIZATION PROCEDURE

To depressurize the Air Suspension System install the scan tool with key in the on position. Go to the special functions menu of the Air Suspension section and follow the on screen directions. The suspension will deflate the air springs until the suspension is on the jounce bumpers.

AIR SUSPENSION PRESSURIZATION PROCEDURE

IMPORTANT: Any time the air suspension system has been depressurized, it is necessary to follow the steps below to avoid air spring damage upon lowering the vehicle and adding weight to the rear suspension components.

1. While the vehicle is raised, ensure that the lower end of the air springs are completely engaged in the spring supports on the axle housing.
2. Lower the vehicle but do not allow the vehicles tires to contact the ground.
3. Turn the ignition ON, with the engine OFF.
4. Install a scan tool.
5. With the scan tool in hand, raise the vehicle.
6. With the scan tool select Special Functions.
7. Select Compressor Test.
8. Press the ON soft key and visually observe the springs as their air pressures inflate.
9. When the air spring inflation pressures have reached a pressure where there are no visible wrinkles, or folds in the air springs, press the OFF soft key. This function will also stop after 90 seconds.
10. Press the Exit key.
11. Lower the vehicle.
12. Cycle the ignition OFF, then back ON, with the engine ON to allow the air suspension system to regain the desired rear suspension position.

ELECTRONIC SUSPENSION SWITCH REPLACEMENT

Removal Procedure

1. Remove the instrument panel trim plate bezel. Refer to **Trim Panel Replacement - Instrument Panel (I/P) Center** in Instrument Panel, Gauges, and Console.

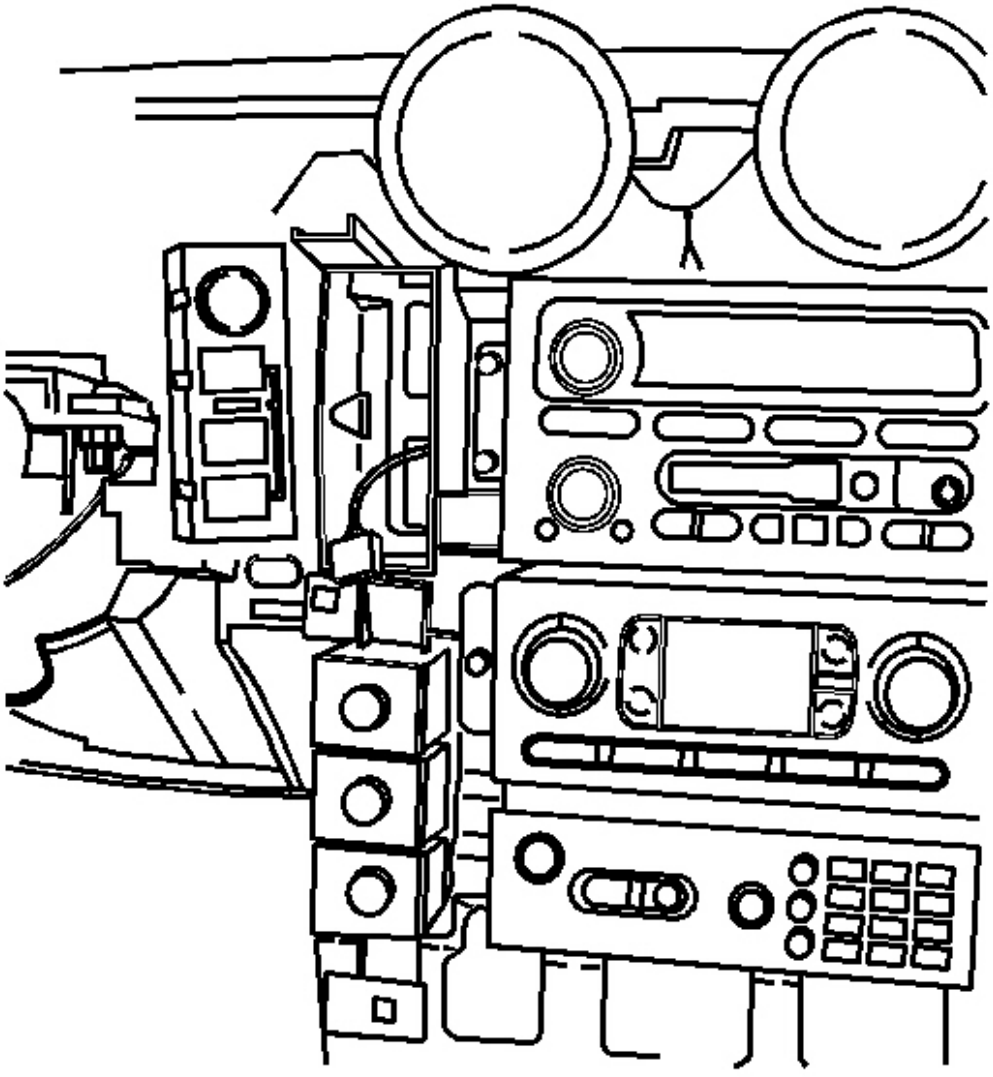


Fig. 8: Switch Receptacle Screws
Courtesy of GENERAL MOTORS CORP.

2. Remove the switch receptacle screws.

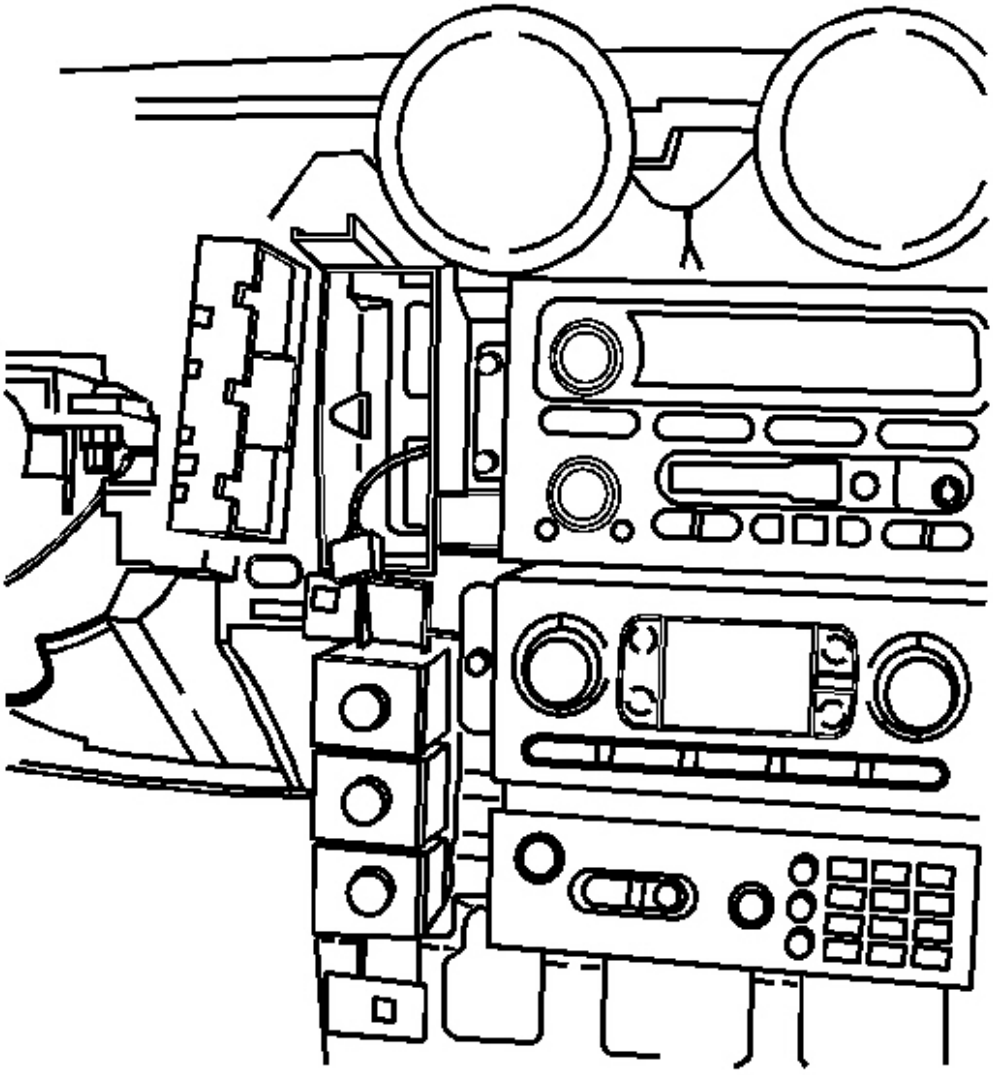


Fig. 9: Switch Receptacle & Instrument Panel
Courtesy of GENERAL MOTORS CORP.

3. Pull the switch receptacle from the instrument panel and disconnect the electrical connectors from the switch.

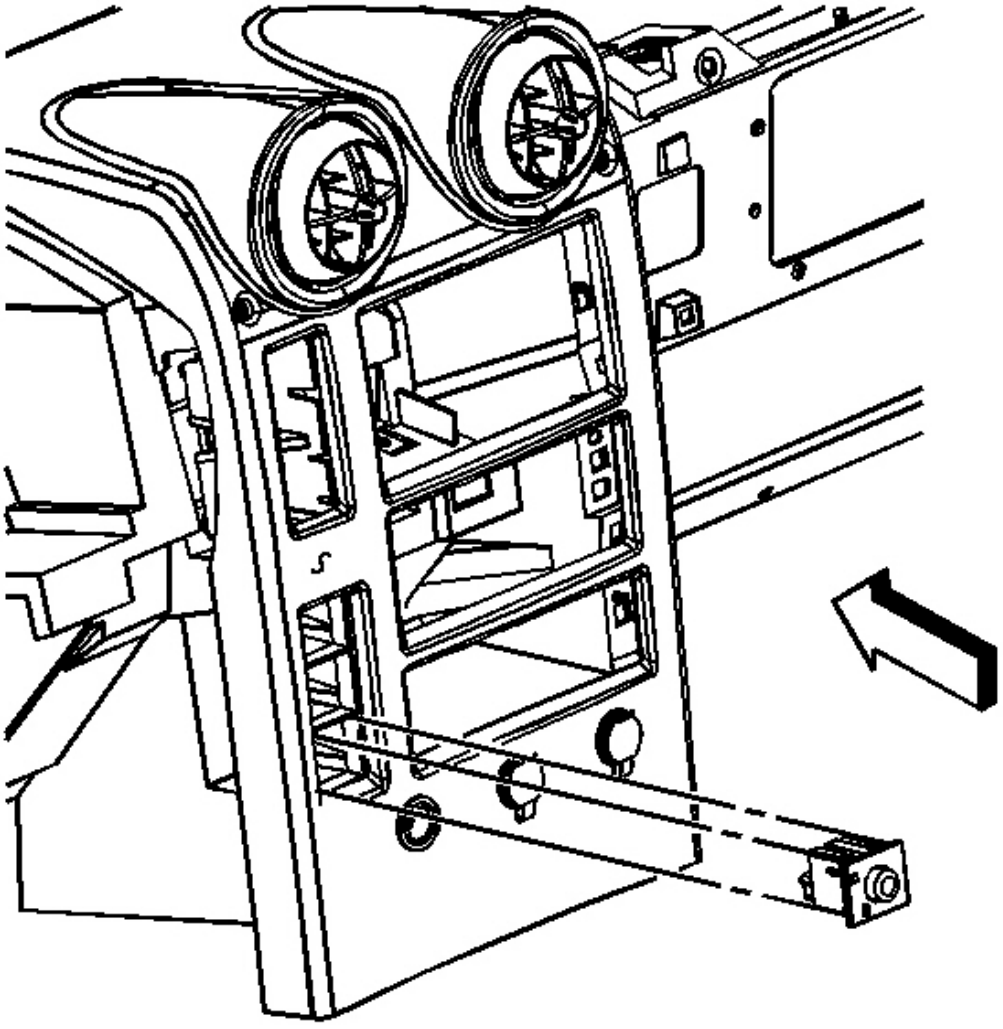


Fig. 10: Electronic Suspension Switch
Courtesy of GENERAL MOTORS CORP.

4. Remove the switch from the receptacle.

Installation Procedure

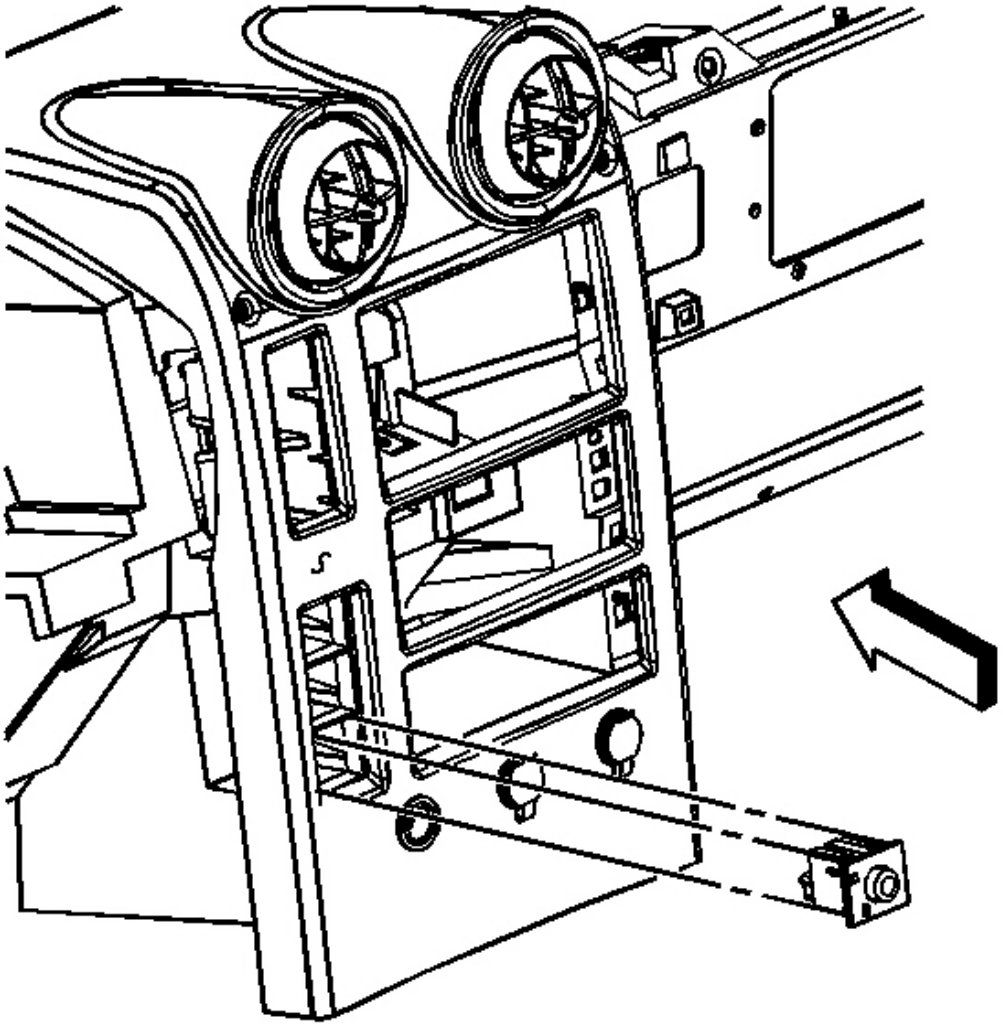


Fig. 11: Electronic Suspension Switch
Courtesy of GENERAL MOTORS CORP.

1. Install the switch to the receptacle.

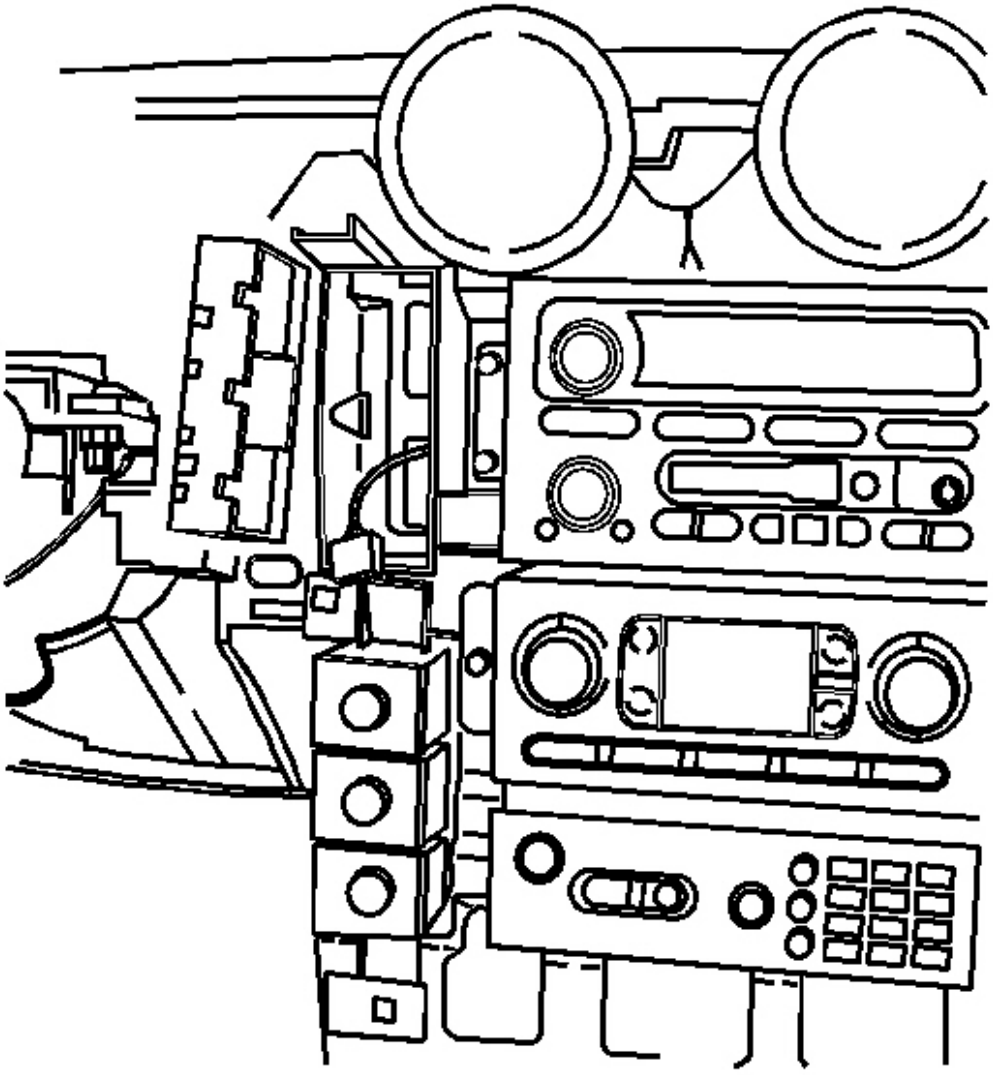


Fig. 12: Switch Receptacle & Instrument Panel
Courtesy of GENERAL MOTORS CORP.

2. Connect the electrical connector to the switch. Install the switch receptacle to the instrument panel.

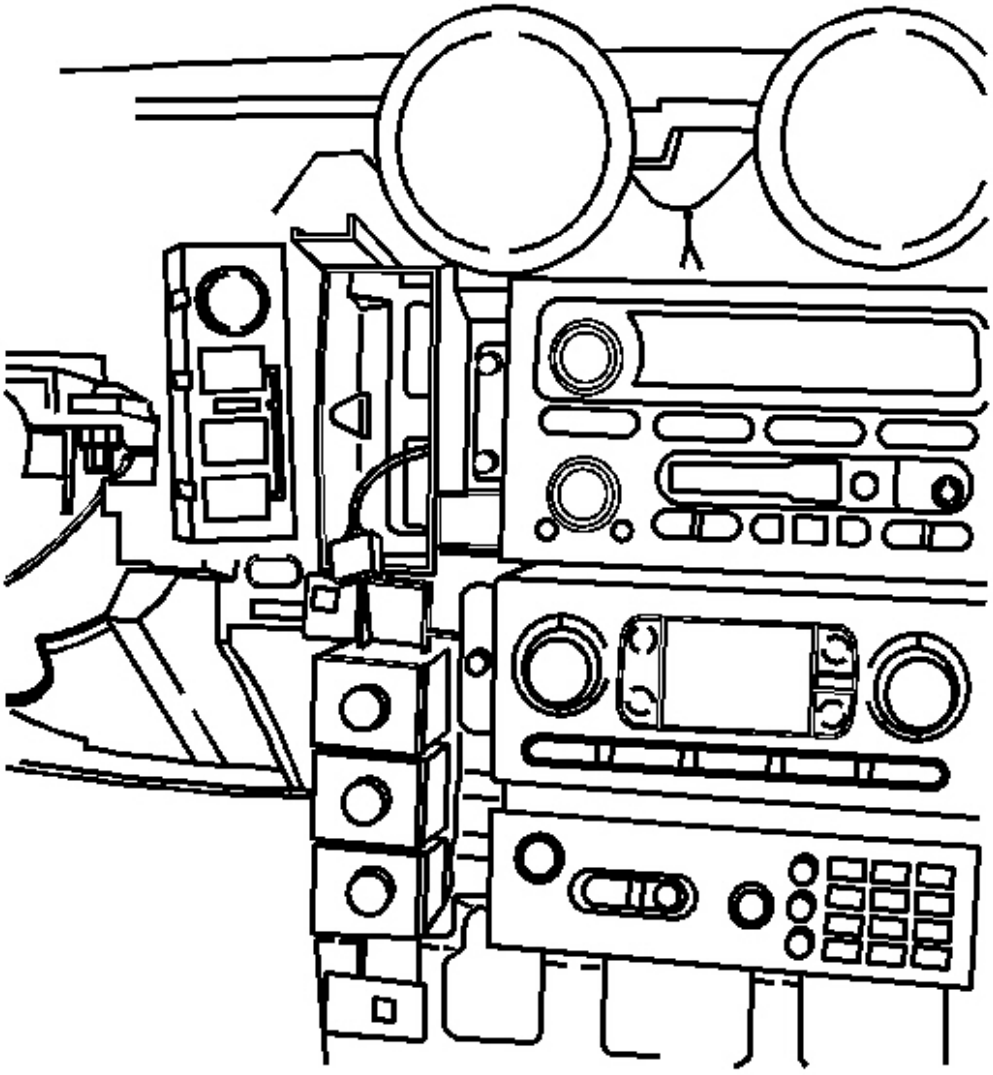


Fig. 13: Switch Receptacle Screws
Courtesy of GENERAL MOTORS CORP.

NOTE: **Fastener Notice in Cautions and Notices**

3. Install the switch receptacle screws.

   Tighten: Tighten the screws to 12 N.m (106 lb in).

4. Install the instrument panel trim plate bezel. Refer to **Trim Panel Replacement - Instrument Panel (I/P) Center** in Instrument Panel, Gauges, and Console.

AIR SPRING LEVELING SENSOR REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the rear tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Support the rear axle at the proper D height. Refer to **Trim Height Specifications** in Suspension General Diagnosis.

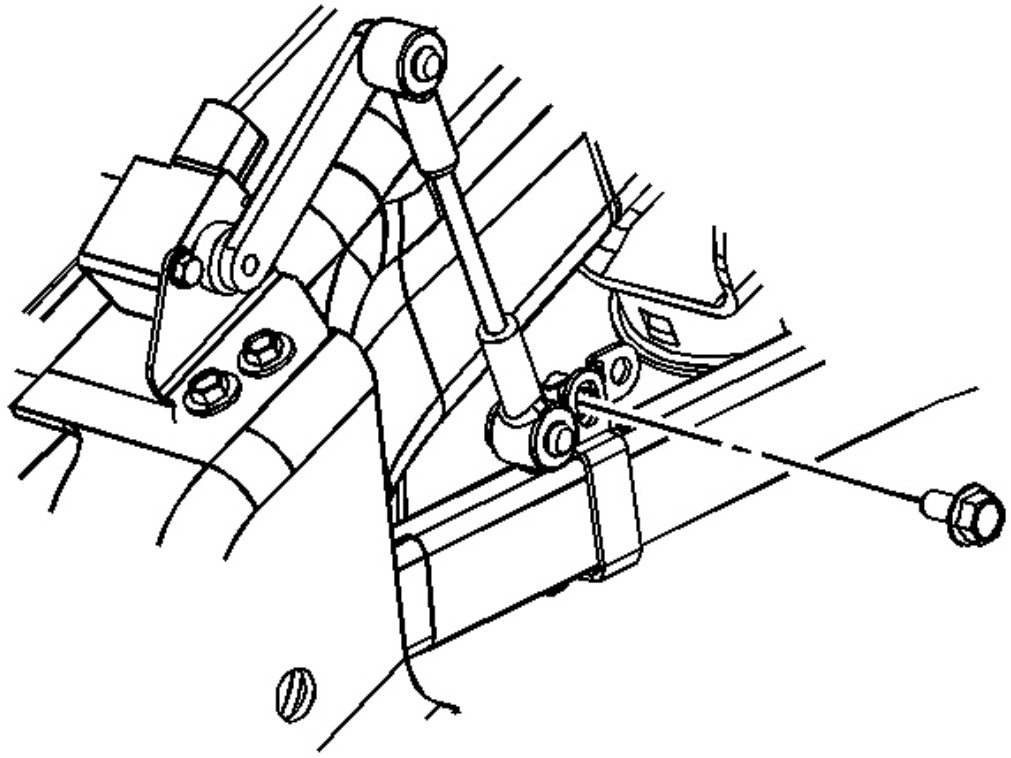


Fig. 14: Air Spring Level Sensor Link
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the air spring level sensor link from the upper control arm.
5. Disconnect the air spring level sensor electrical connector located on the frame. Do not attempt to

separate the connection at the sensor.

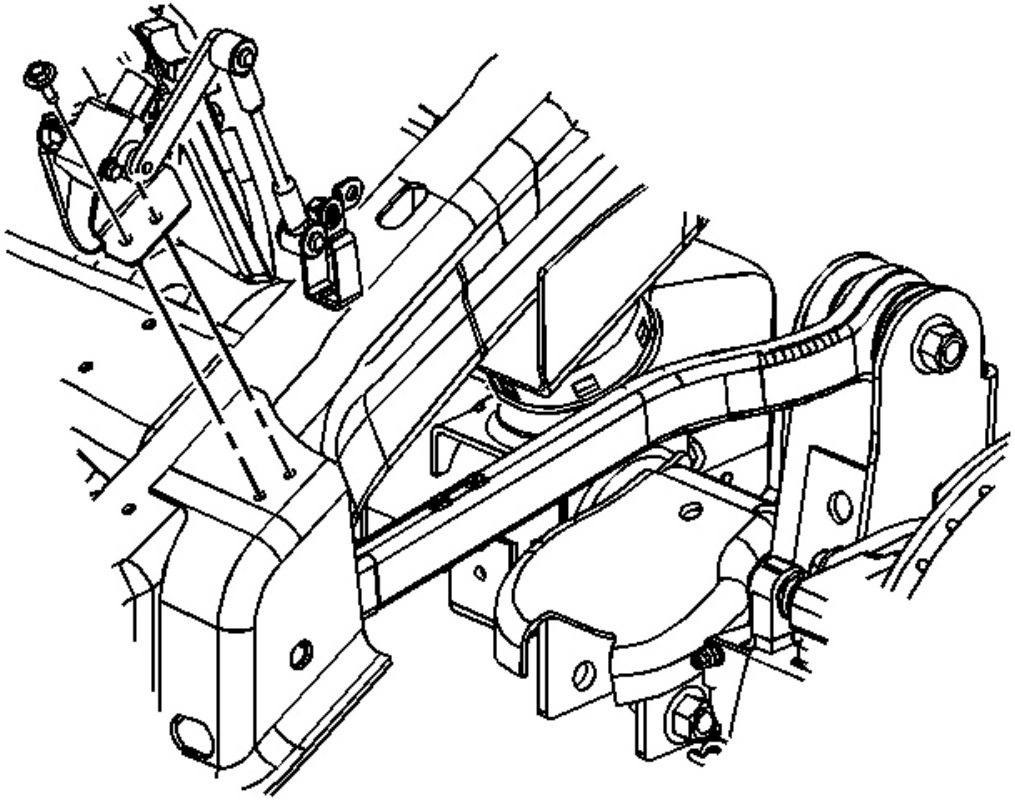


Fig. 15: Air Spring Level Sensor
Courtesy of GENERAL MOTORS CORP.

6. Remove the air spring level sensor to the frame mounting bolts.
7. Remove the air spring level sensor.

Installation Procedure

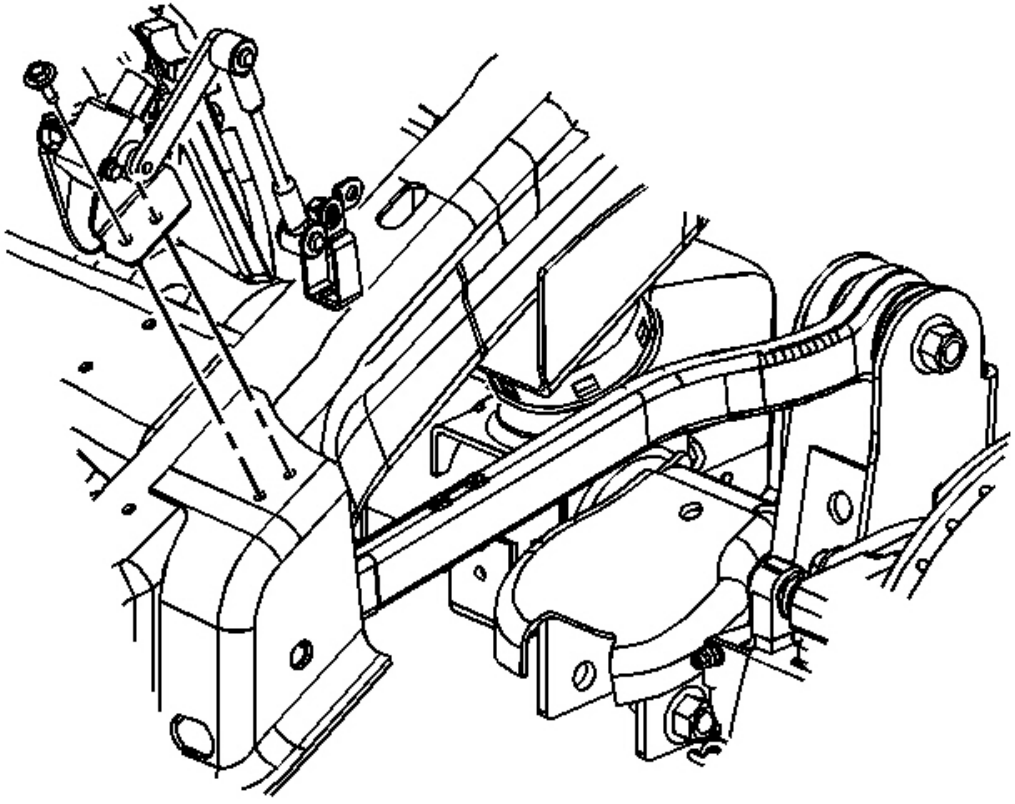


Fig. 16: Air Spring Level Sensor
Courtesy of GENERAL MOTORS CORP.

1. Install the air spring level sensor to the frame.

   NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the air spring level sensor to the frame mounting bolts.

   Tighten: Tighten the air spring level sensor to the frame mounting bolts to 8.5 N.m (75 lb in).

3. Connect the air spring level sensor electrical connector located on the frame.

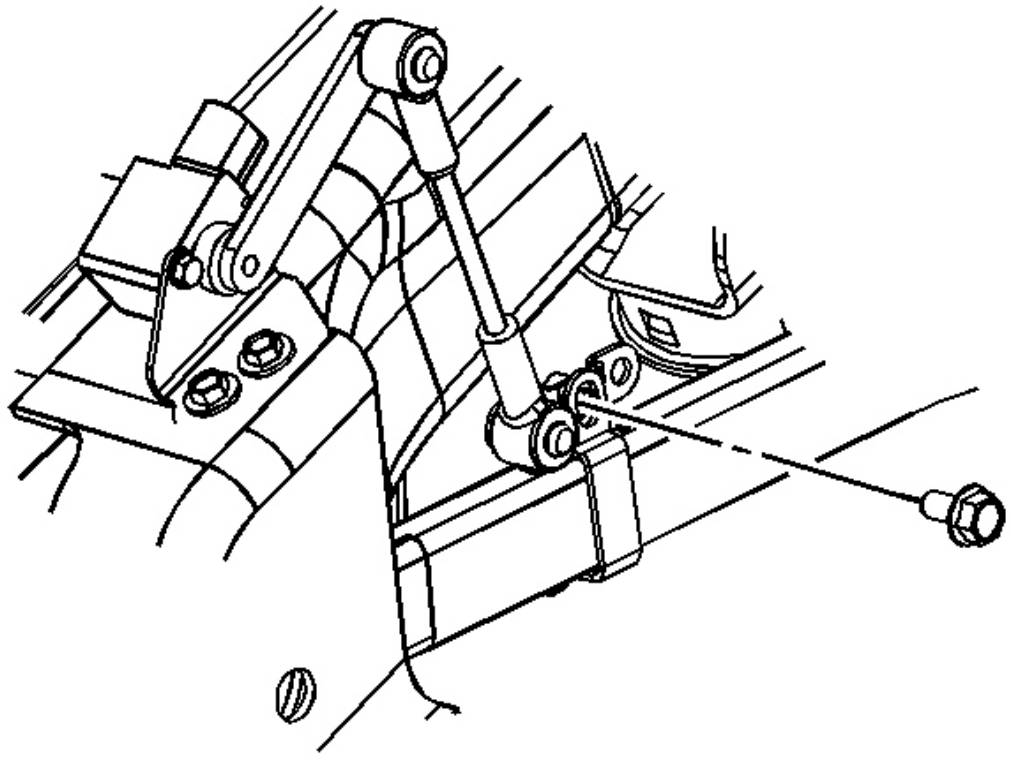


Fig. 17: Air Spring Level Sensor Link
Courtesy of GENERAL MOTORS CORP.

4. Install the air spring level sensor link to the upper control arm.

   Tighten: Tighten the bolt to 17 N.m (13 lb ft).

5. Remove the rear axle support.
6. Install the rear tire and wheels. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
7. Lower the vehicle.
8. Start the vehicle and run for approximately 2 minutes to ensure that the air spring leveling system is functioning properly.
9. Verify the D height. Refer to **Trim Height Inspection Procedure** in Suspension General Diagnosis.

VALVE AUTOMATIC LEVEL CONTROL SOLENOID REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Remove the compressor assembly from the vehicle and place on a bench. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

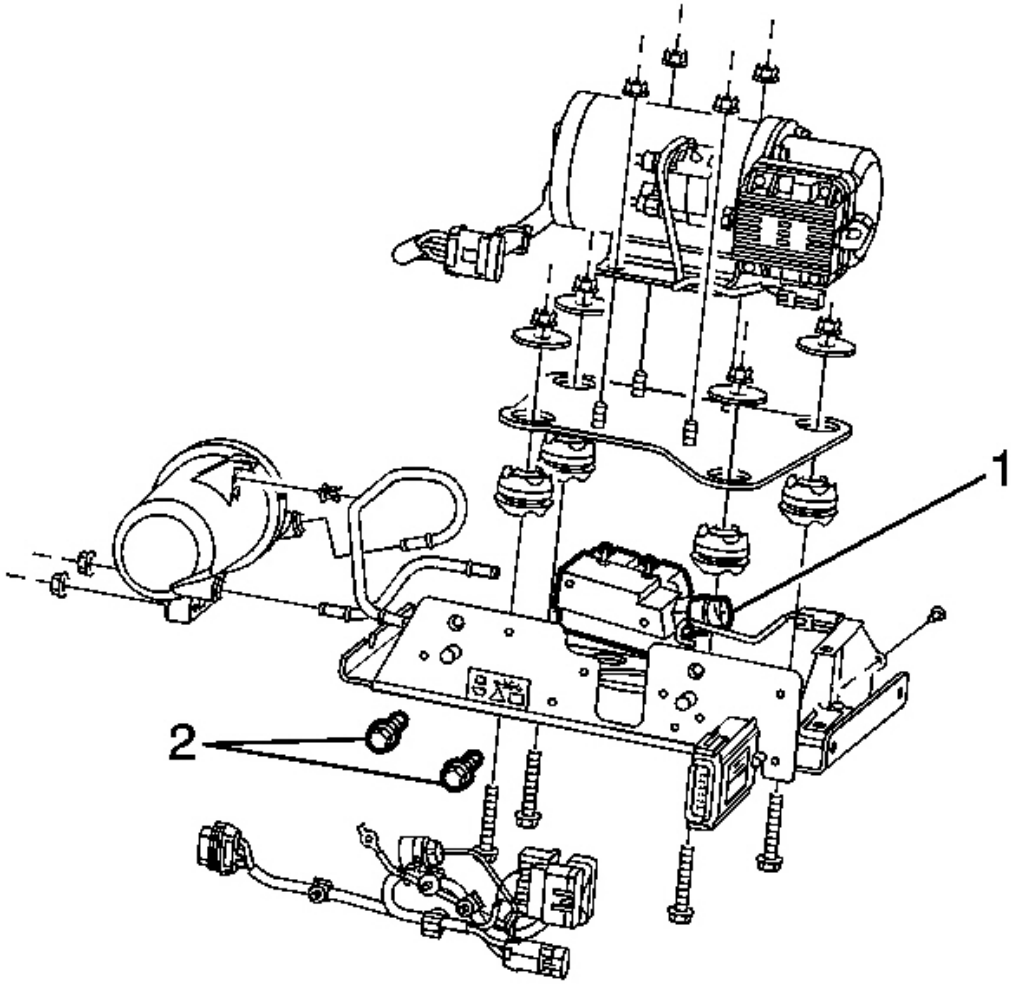


Fig. 18: Solenoid Assembly
Courtesy of GENERAL MOTORS CORP.

2. Unlock and disconnect the electrical connector from the pressure transducer/sensor by turning the

connection counter clockwise.

IMPORTANT: Note the port location of the air lines for reassembly.

3. Remove the air lines. Refer to **Air Suspension Air Line Replacement** .
4. Disconnect and remove the pigtail harness from the compressor assembly mounting bracket.
5. Remove the mounting screws (2).
6. Remove the solenoid assembly (1).

Installation Procedure

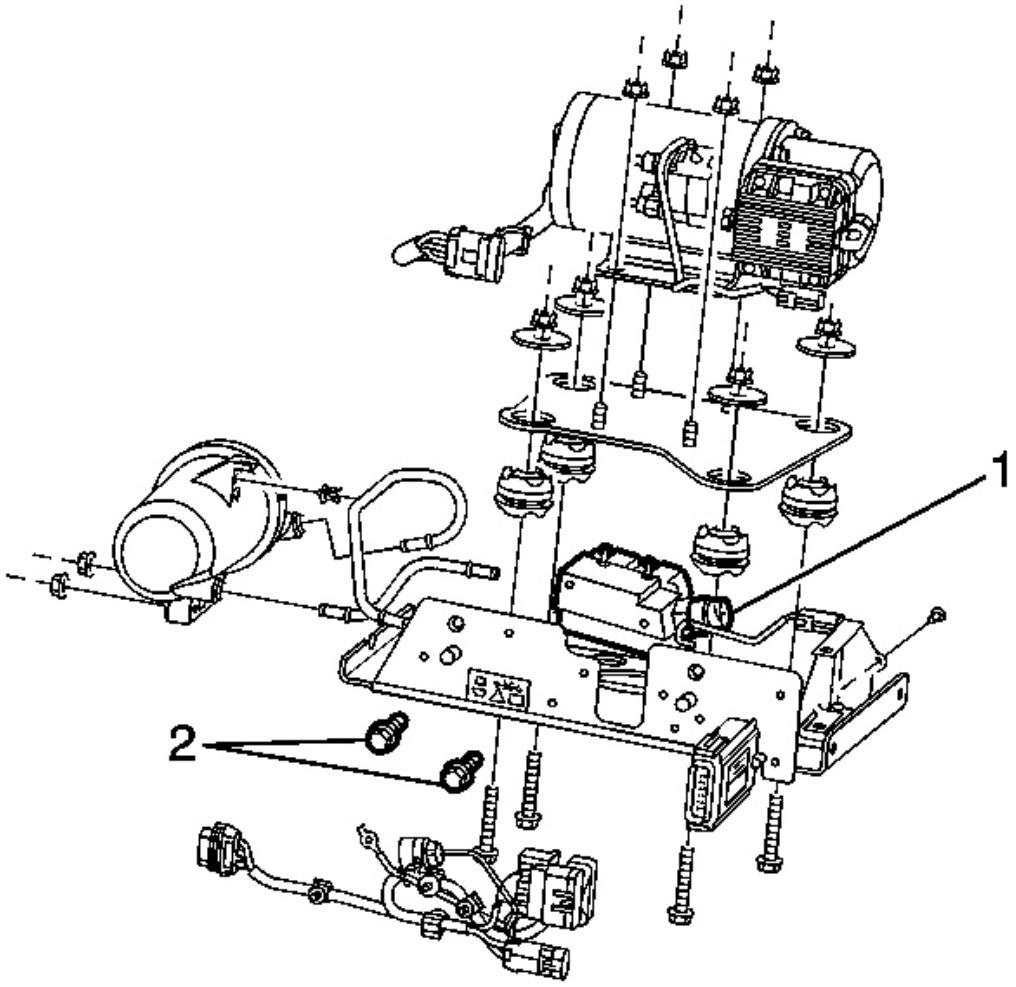


Fig. 19: Solenoid Assembly
Courtesy of GENERAL MOTORS CORP.

1. Install the solenoid assembly (1).

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the mounting screws (2).

Tighten: Tighten the screws to 5.0 N.m (44 lb in).

3. Install and connect the pigtail harness to the compressor assembly mounting bracket.
4. Install the air lines. Refer to **Air Suspension Air Line Replacement** .
5. Connect and lock the electrical connector to the pressure transducer/sensor by turning the connection clockwise.
6. Install the compressor assembly to the vehicle. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

DRYER AUTOMATIC LEVEL CONTROL REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Remove the compressor assembly from the vehicle and place on a bench. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

IMPORTANT: Note the port location of the air lines for reassembly.

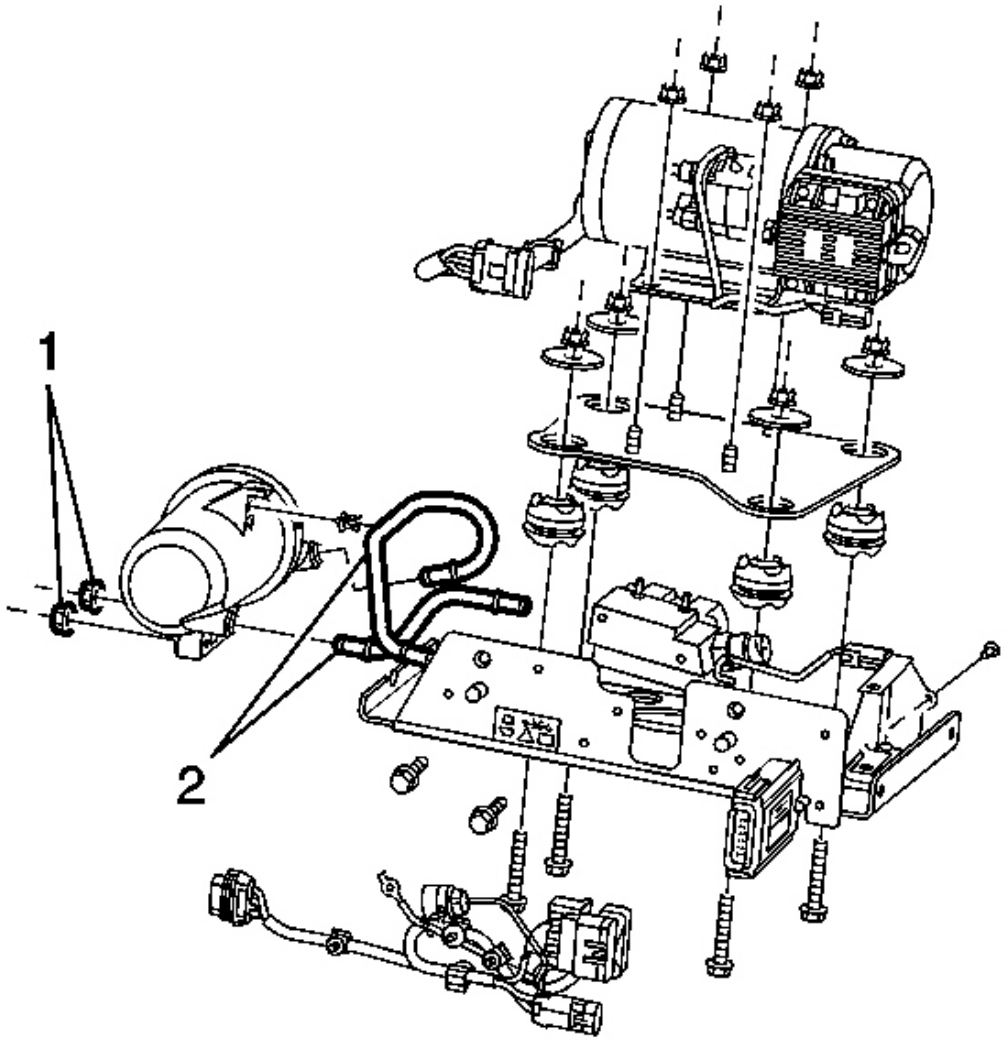


Fig. 20: Dryer Assembly
Courtesy of GENERAL MOTORS CORP.

2. Remove the air lines. Refer to **Air Suspension Air Line Replacement** .
3. Remove the mounting nuts (1).
4. Remove the dryer assembly (2).

Installation Procedure

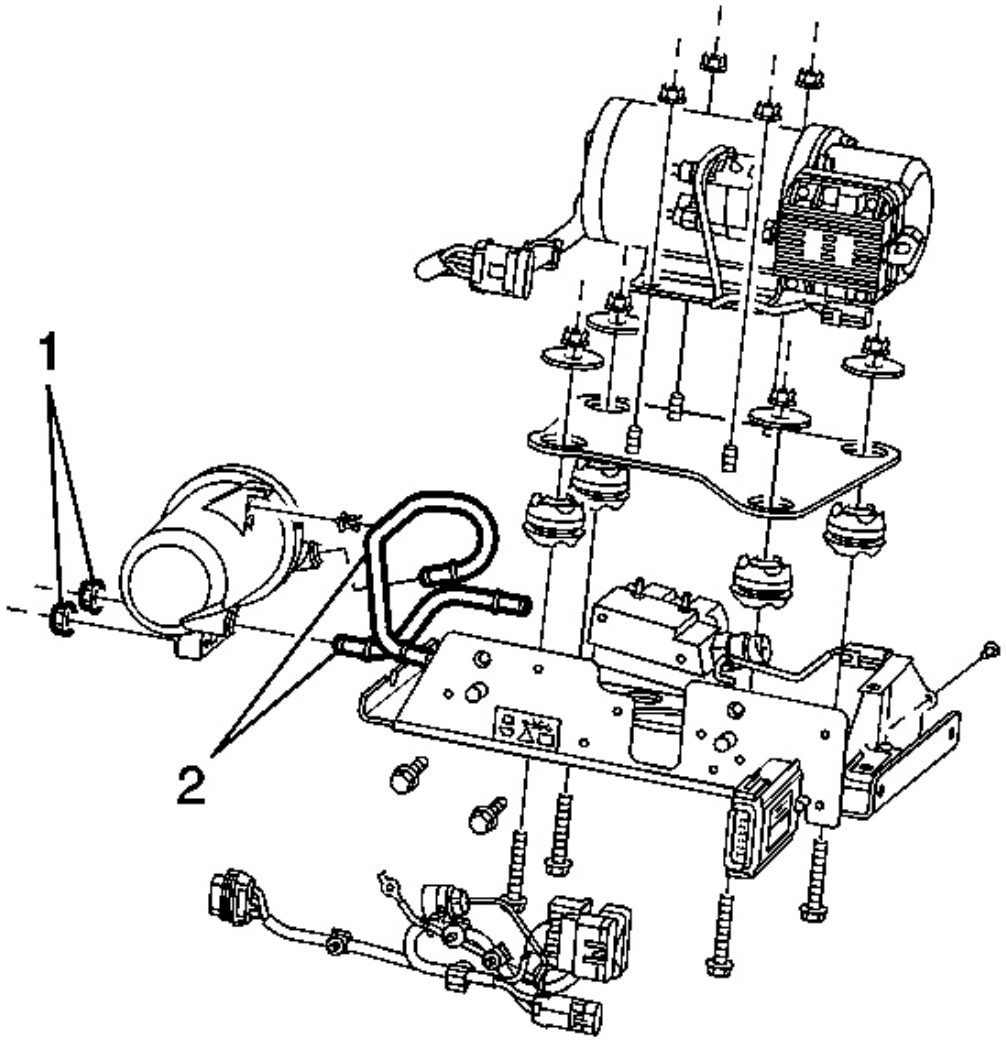


Fig. 21: Dryer Assembly
Courtesy of GENERAL MOTORS CORP.

1. Install the dryer assembly (2).

NOTE: **Refer to Fastener Notice in Cautions and Notices.**

2. Install the mounting nuts (1).

Tighten: Tighten the nuts to 12 N.m (106 lb in).

3. Install the air lines. Refer to **Air Suspension Air Line Replacement** .
4. Install the compressor assembly to the vehicle. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

MODULE ASSEMBLY ELECTRONIC SUSPENSION CONTROL REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Remove the compressor assembly from the vehicle and place on a bench. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

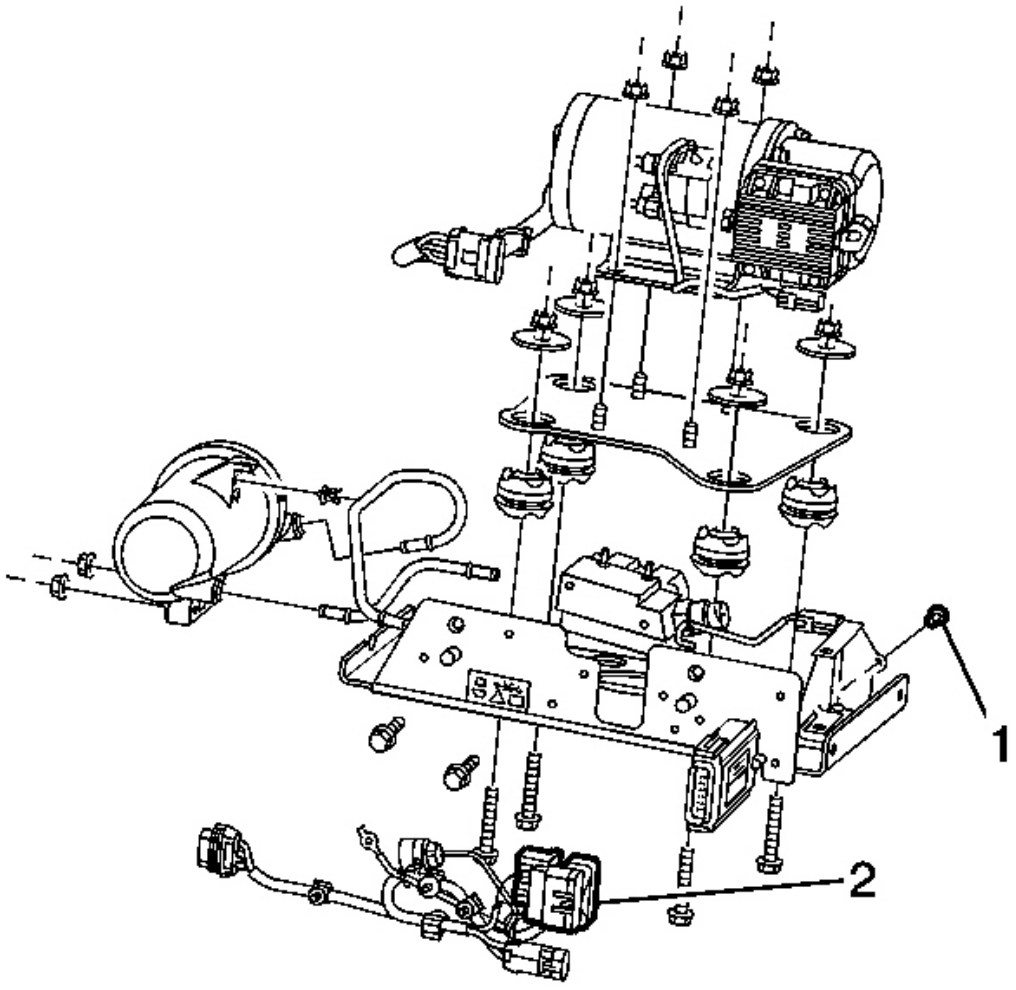


Fig. 22: Control Module & Bracket
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the electrical connection (2).
3. Remove the control module from the bracket.

Installation Procedure

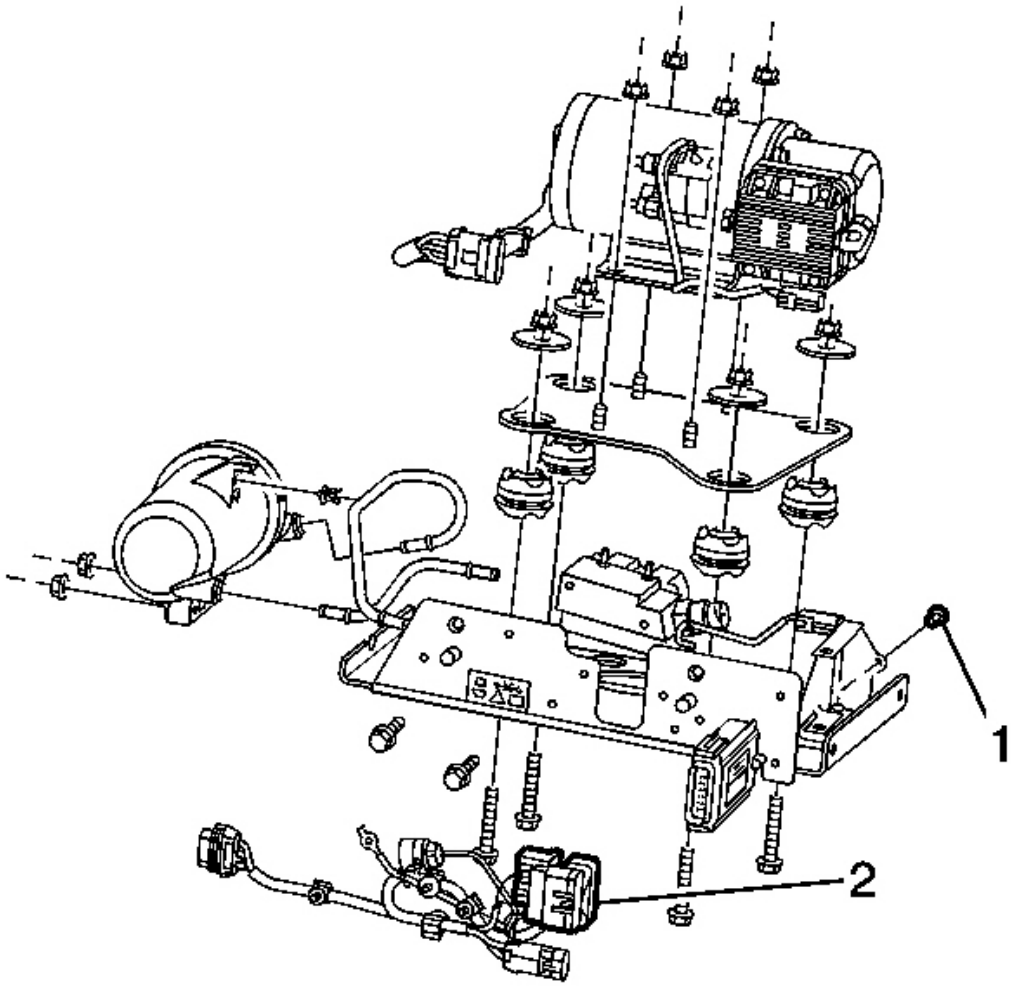


Fig. 23: Control Module & Bracket
Courtesy of GENERAL MOTORS CORP.

1. Install the control module to the bracket.
2. Connect the electrical connection (2)
3. Install the compressor assembly to the vehicle. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

ISOLATOR COMPRESSOR AUTOMATIC LEVEL CONTROL AIR REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Remove the compressor assembly from the vehicle and place on a bench. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

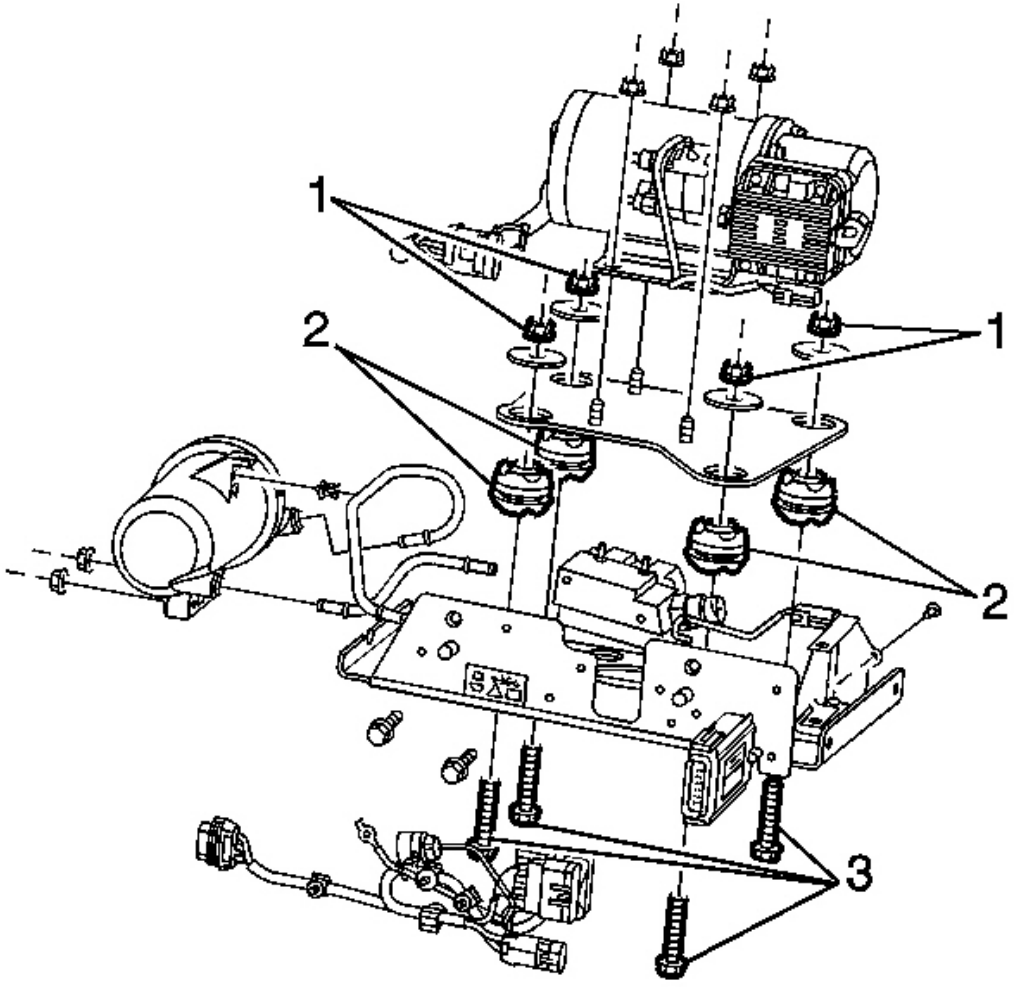


Fig. 24: Identifying Isolators
Courtesy of GENERAL MOTORS CORP.

2. Remove the compressor. Refer to **Compressor Automatic Level Control Replacement**

3. Remove the mounting nuts (1).
4. Remove the mounting bolts (3).
5. Remove the isolators (2).

Installation Procedure

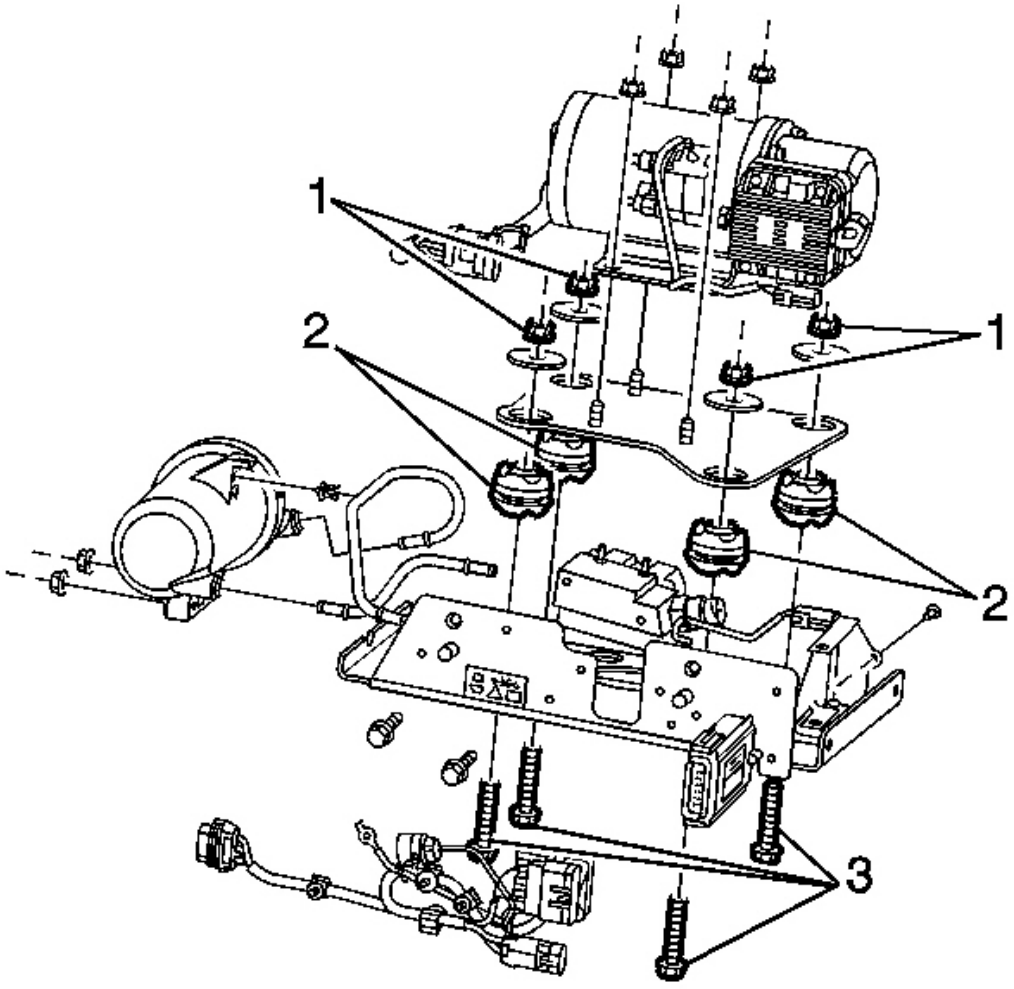


Fig. 25: Identifying Isolators
Courtesy of GENERAL MOTORS CORP.

1. Install the isolators (2).
2. Install the mounting bolts (3).

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the mounting nuts (1).

   Tighten: Tighten the nuts to 25 N.m (18 lb ft).

4. Install the compressor. Refer to **Compressor Automatic Level Control Replacement**
5. Install the compressor assembly to the vehicle. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

COMPRESSOR ASSEMBLY AUTOMATIC LEVEL CONTROL AIR REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Depressurize the air suspension system. Refer to **Air Suspension Depressurization Procedure** .
2. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
3. Support the compressor assembly with a suitable stand.

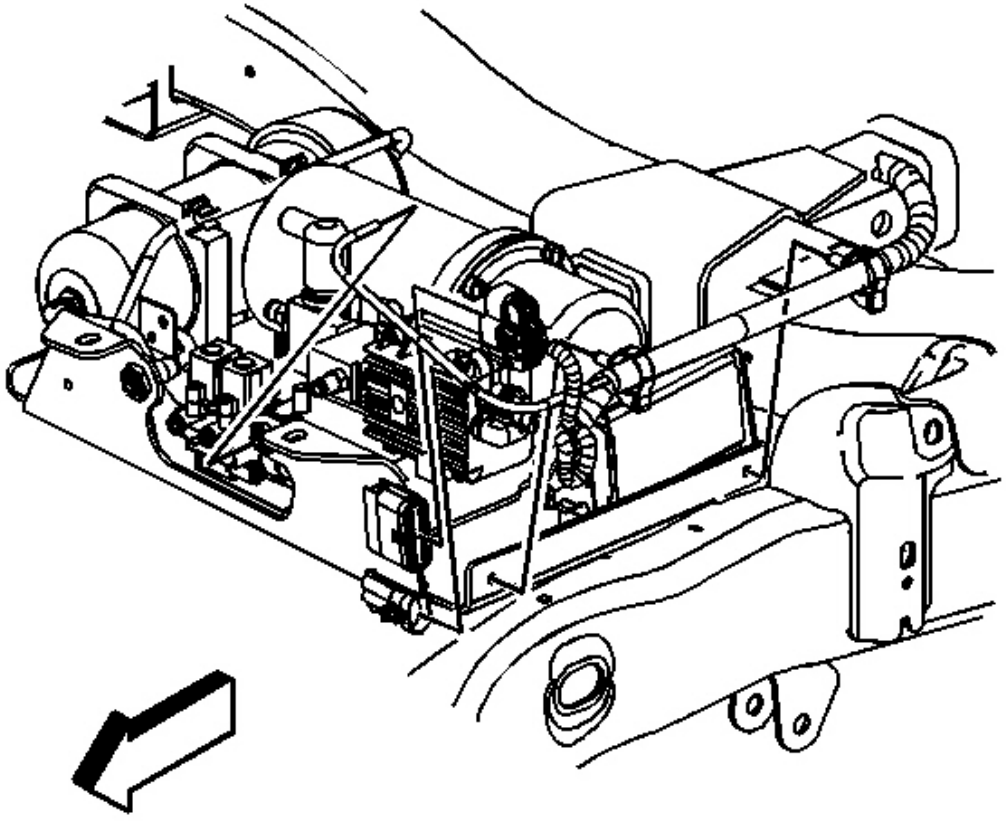


Fig. 26: Air Spring Compressor Electrical Connector
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the air inflator switch electrical connector.
5. Disconnect the compressor electrical connector.
6. Disconnect the ground strap.

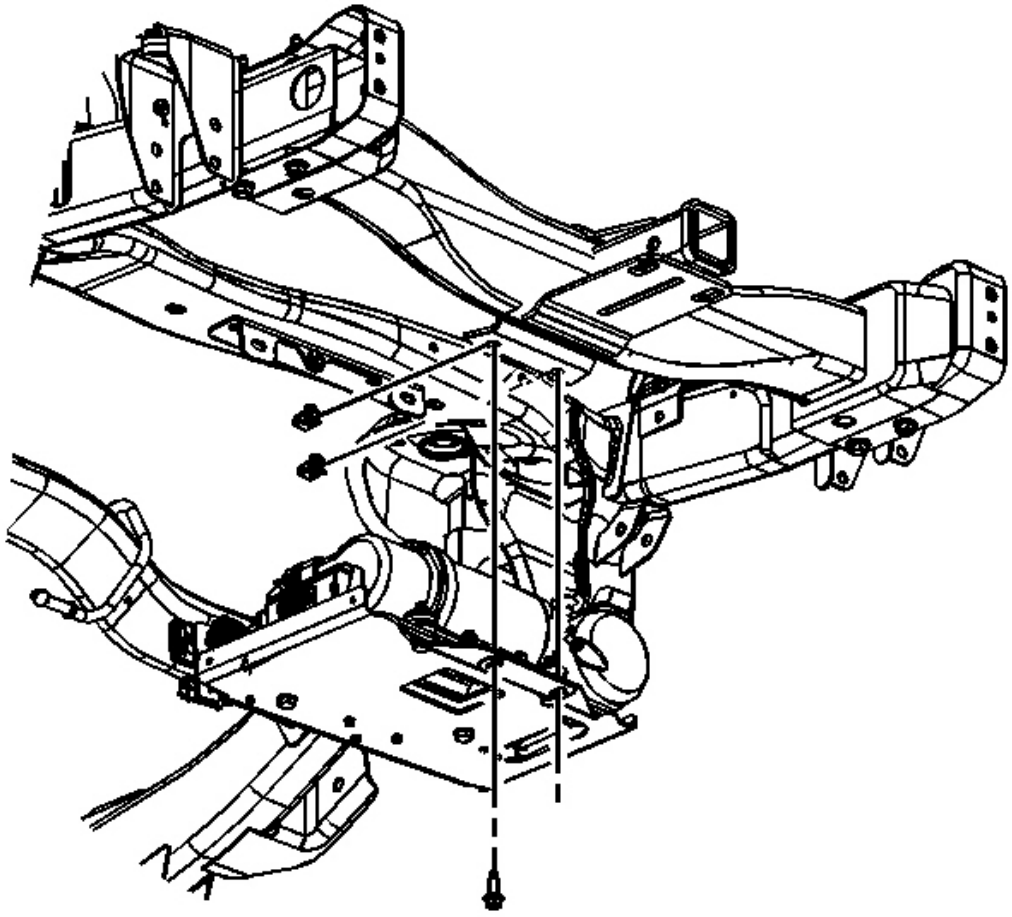


Fig. 27: Rear Compressor Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

7. Remove the rear compressor mounting bolts.

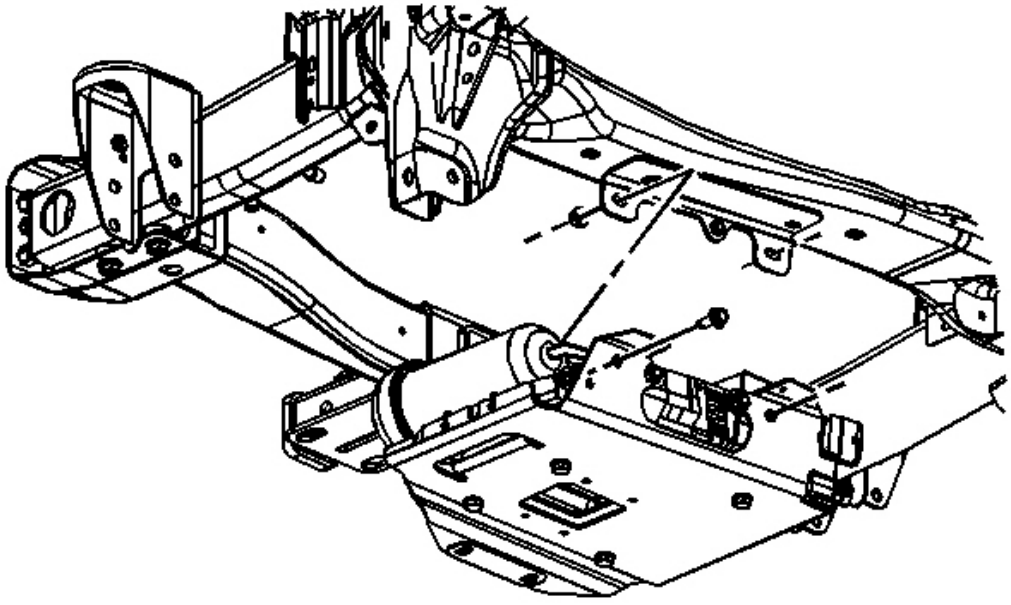


Fig. 28: Front Compressor Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

8. Remove the front compressor mounting bolts.

IMPORTANT: Note the port location of the air lines for reassembly.

9. Disconnect the air lines. Refer to **Air Suspension Air Line Replacement** .
10. Remove the compressor assembly from the vehicle.

Installation Procedure

1. Install the compressor assembly to the vehicle.

IMPORTANT: Check the air supply lines for deep scores or cuts. If the air supply lines are damaged the lines must be replaced.

2. Install the air lines.

NOTE: Refer to Fastener Notice in Cautions and Notices.

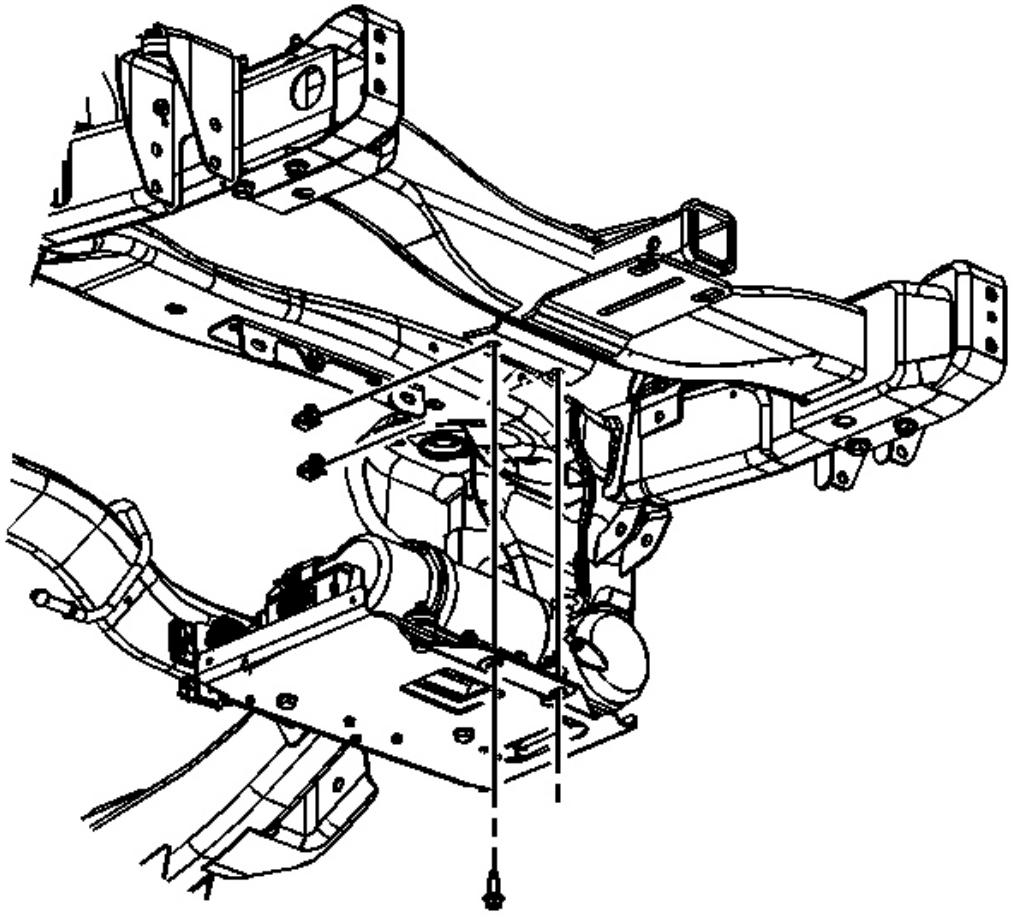


Fig. 29: Rear Compressor Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

3. Install the rear air spring compressor mounting nuts and bolts.

   Tighten: Tighten the bolts to 50 N.m (37 lb ft).

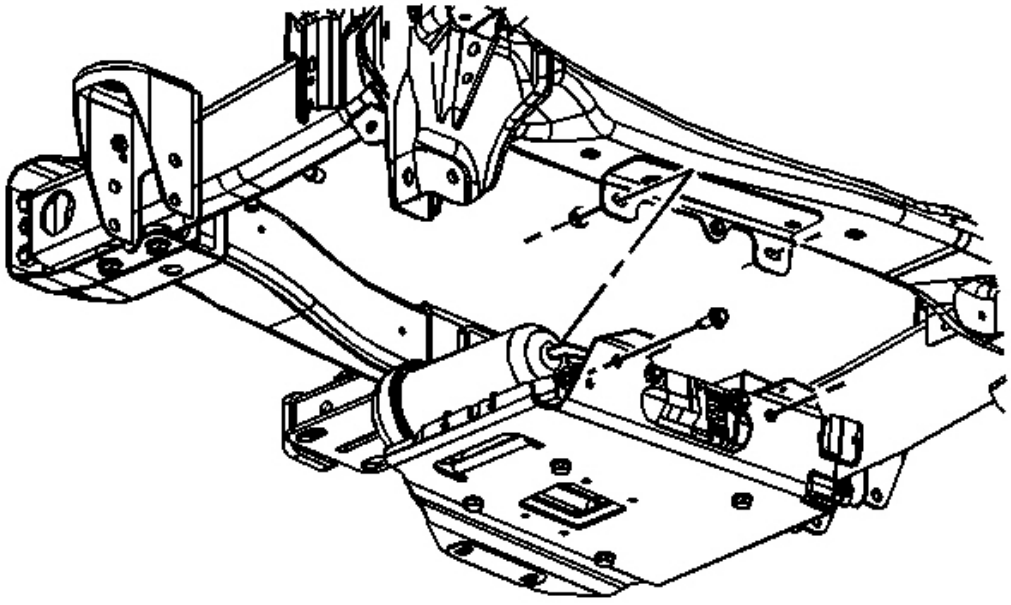


Fig. 30: Front Compressor Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

4. Install the front air spring compressor mounting bolts.

   Tighten: Tighten the bolts to 50 N.m (37 lb ft).

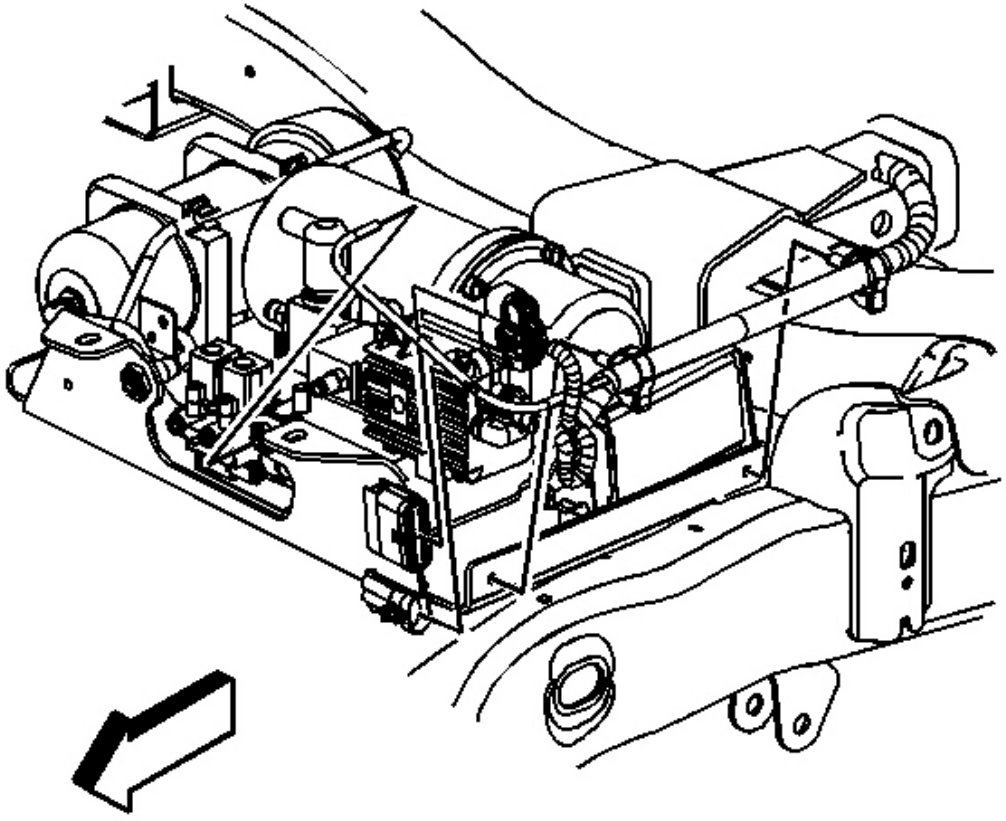


Fig. 31: Air Spring Compressor Electrical Connector
Courtesy of GENERAL MOTORS CORP.

5. Connect the air spring compressor electrical connector.
6. Connect the ground strap.

   Tighten: Tighten bolt to 6 N.m (53 lb in).

7. Connect the air inflator switch electrical connector.
8. Remove the support from the compressor

IMPORTANT: If the rear axle was allowed to hang unsupported, lower the vehicle far enough to allow the air spring to be manually engaged to the support on the axle tube with minimal distortion of the air spring bladder. Ensure that the air spring is fully engaged to the axle support.

9. Pressurize the air springs. Refer to **Air Suspension Pressurization Procedure** .
10. Lower the vehicle.
11. Start the vehicle and run for approximately 2 minutes to ensure that the air spring leveling system is functioning properly.
12. Verify the D height. Refer to **Trim Height Specifications** in Suspension General Diagnosis.
13. Check for leaks. If a leak is found at the air supply line connections replace the air supply lines. Refer to **Air Suspension Air Line Replacement** .

COMPRESSOR AUTOMATIC LEVEL CONTROL REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Remove the compressor assembly from the vehicle and place on a bench. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

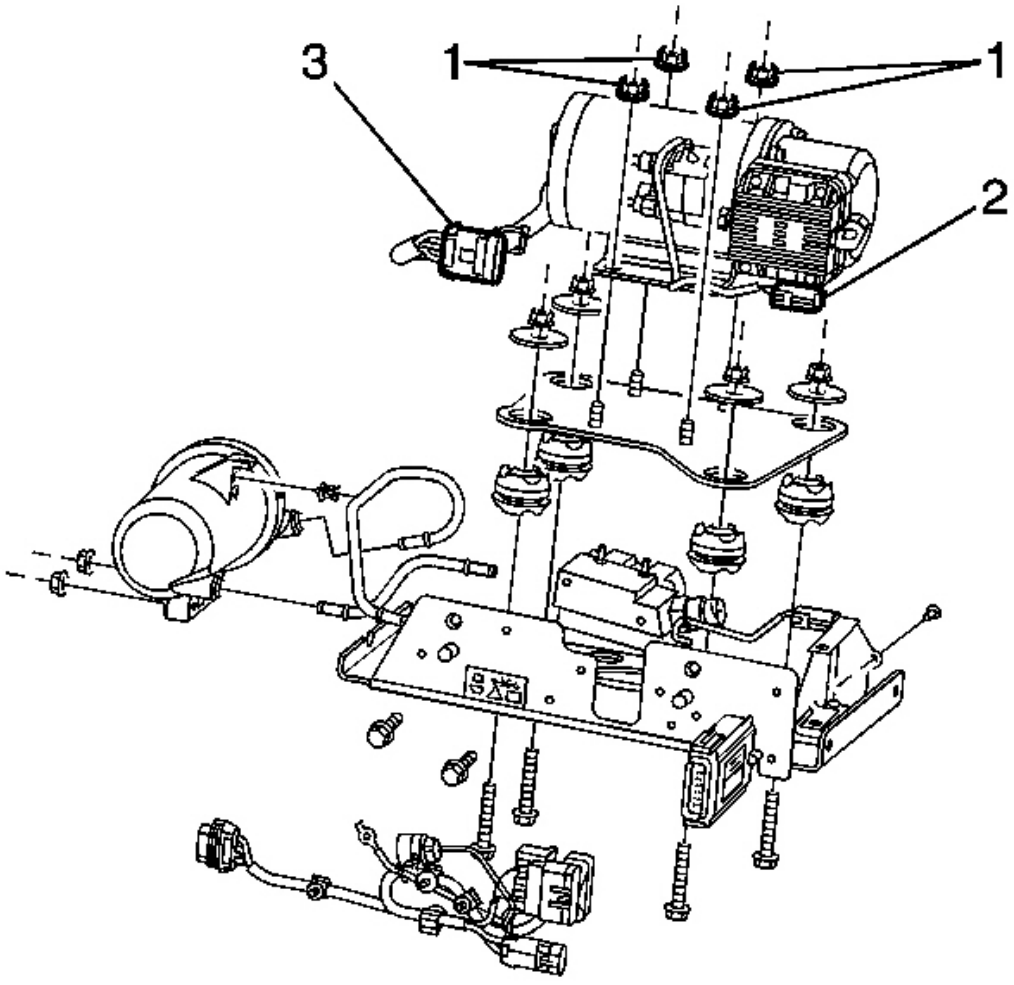


Fig. 32: View Of Compressor
Courtesy of GENERAL MOTORS CORP.

2. Disconnect all electrical connections (2, 3).
3. Remove connector (3) from the mounting bracket.
4. Remove the mounting nuts (1).
5. Remove the compressor.

Installation Procedure

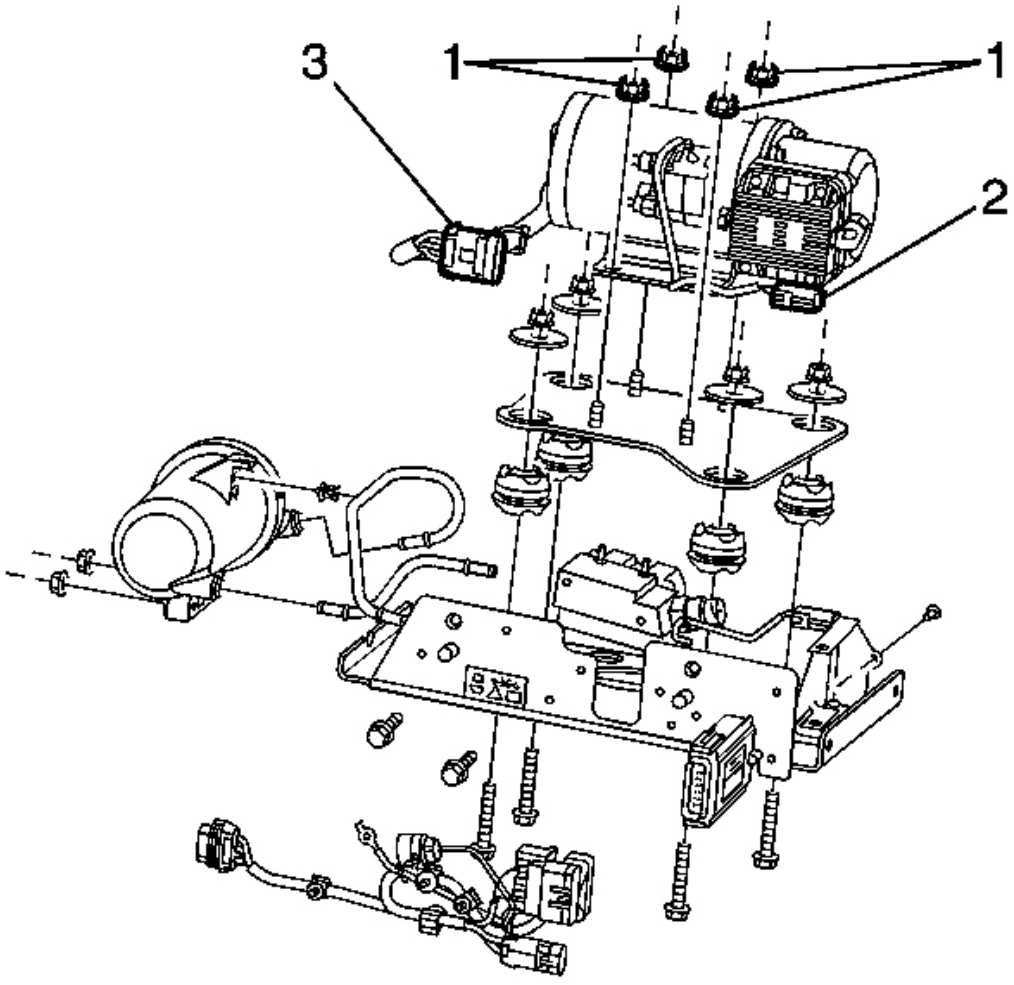


Fig. 33: View Of Compressor
Courtesy of GENERAL MOTORS CORP.

1. Install the compressor.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the mounting nuts (1).

Tighten: Tighten the nuts to 25 N.m (18 lb ft).

3. Install connector (3) to the mounting bracket.

4. Connect all electrical connections (2, 3).
5. Install the compressor assembly to the vehicle. Refer to **Compressor Assembly Automatic Level Control Air Replacement** .

INFLATOR AIR SWITCH REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Disconnect the air inflator switch harness and the air line from the air compressor.
3. Lower the vehicle.

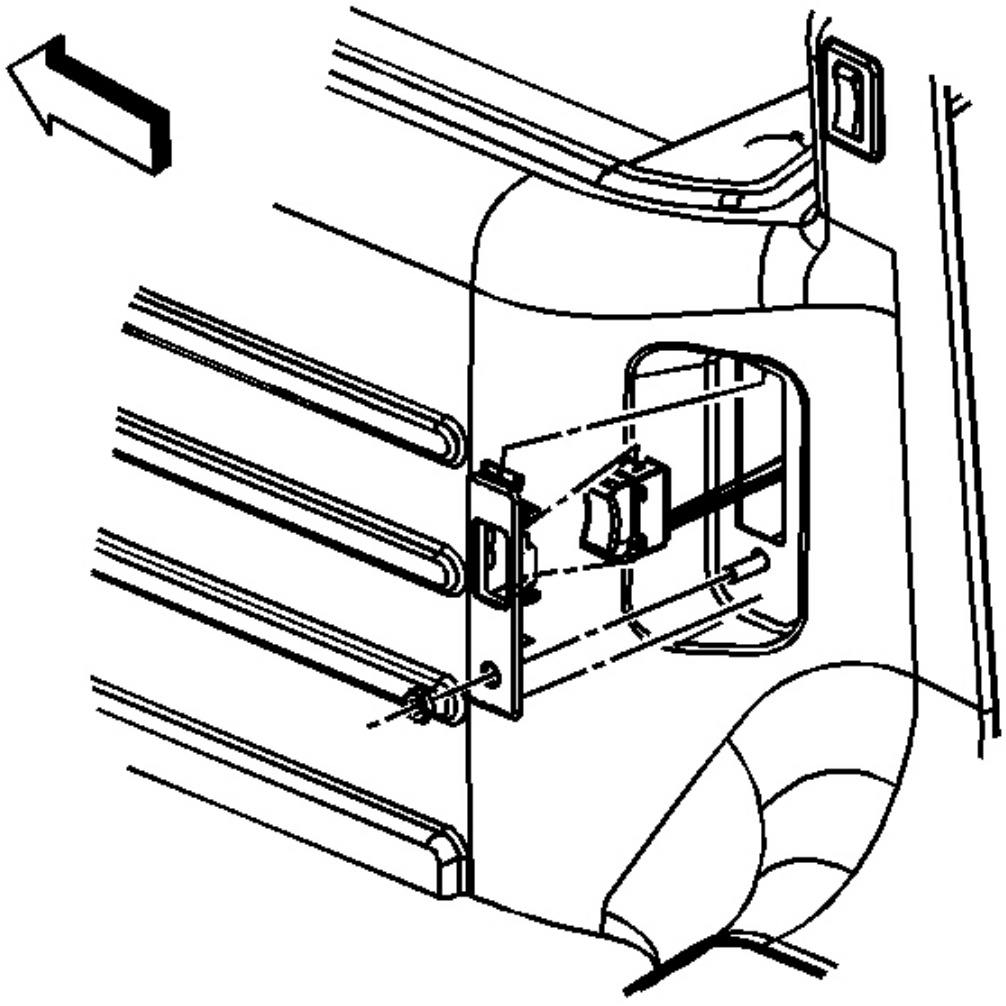


Fig. 34: Air Inflator Switch & Trim Bezel
Courtesy of GENERAL MOTORS CORP.

4. Remove the inflator retaining nut.
5. Remove the air inflator switch from the trim bezel.
6. Remove the rear quarter lower trim panel. Refer to **Trim Panel Replacement - Right Body Side** in Interior Trim.

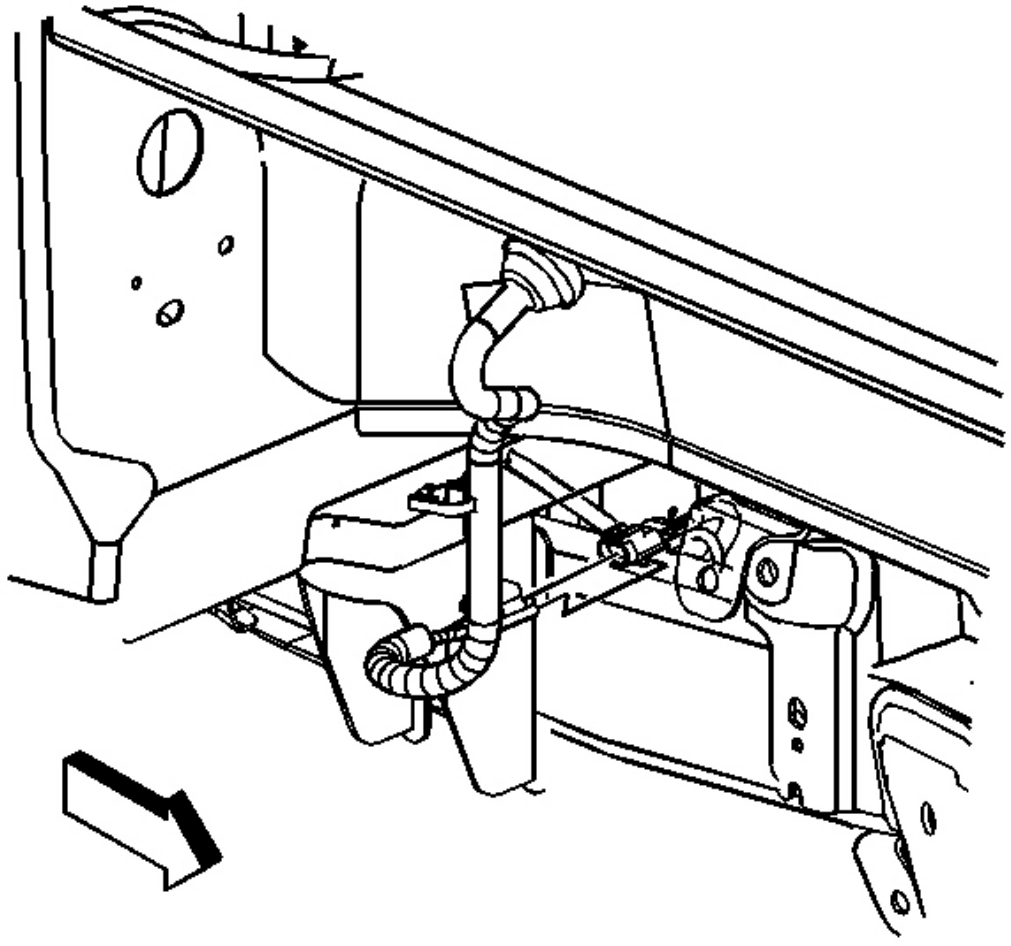


Fig. 35: Air Inflator Switch
Courtesy of GENERAL MOTORS CORP.

7. Remove the air inflator switch harness grommet from the body
8. Remove the air inflator switch from the vehicle.

Installation Procedure

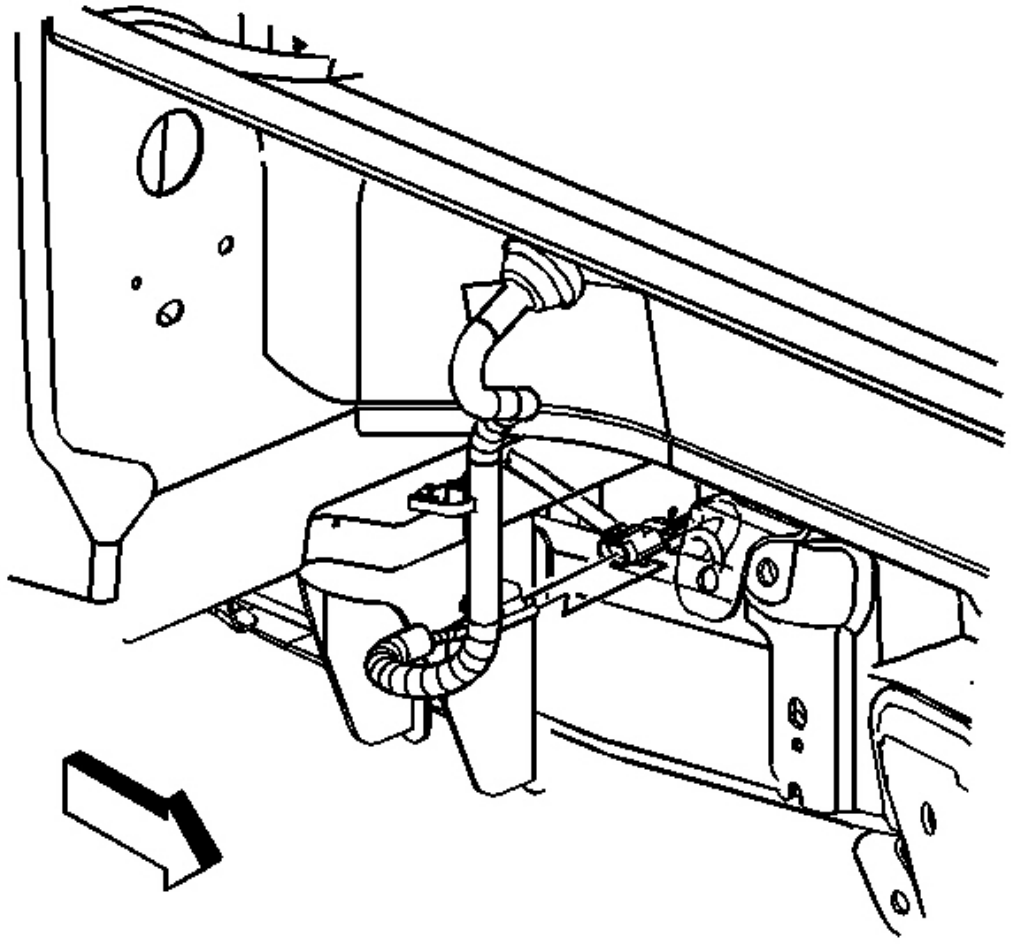


Fig. 36: Air Inflator Switch
Courtesy of GENERAL MOTORS CORP.

1. Install the air inflator switch and harness assembly to the vehicle.
2. Install the air inflator switch harness grommet to the body.
3. Install in the rear quarter lower trim panel. Refer to **Trim Panel Replacement - Right Body Side** in Interior Trim.

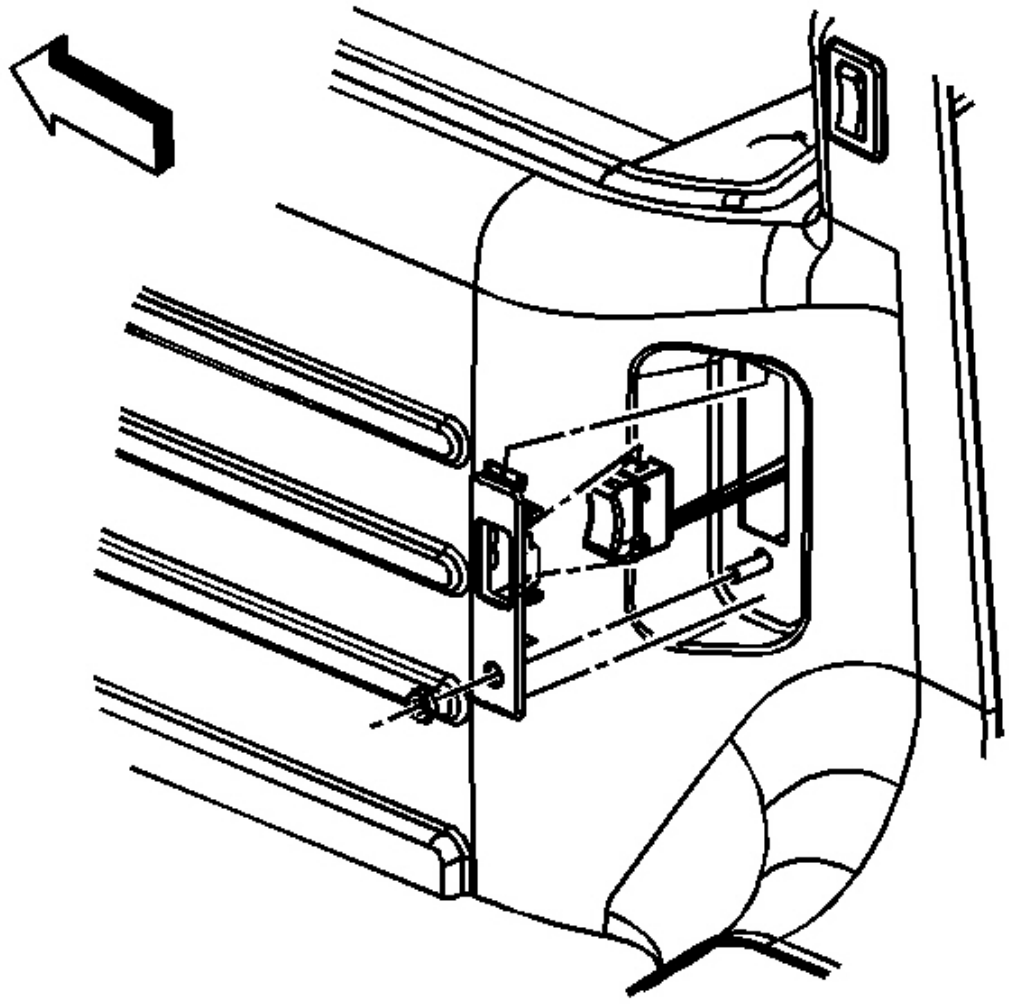


Fig. 37: Air Inflator Switch & Trim Bezel
Courtesy of GENERAL MOTORS CORP.

4. Install the air inflator switch to the trim bezel.
5. Install the inflator retaining nut.
6. Raise the vehicle.
7. Connect the air inflator switch harness and the air line to the air compressor.
8. Lower the vehicle.

AIR SPRING REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Depressurize the air suspension system. Refer to **Air Suspension Depressurization Procedure** .
2. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
3. Allow the rear axle to hang in the full rebound position.

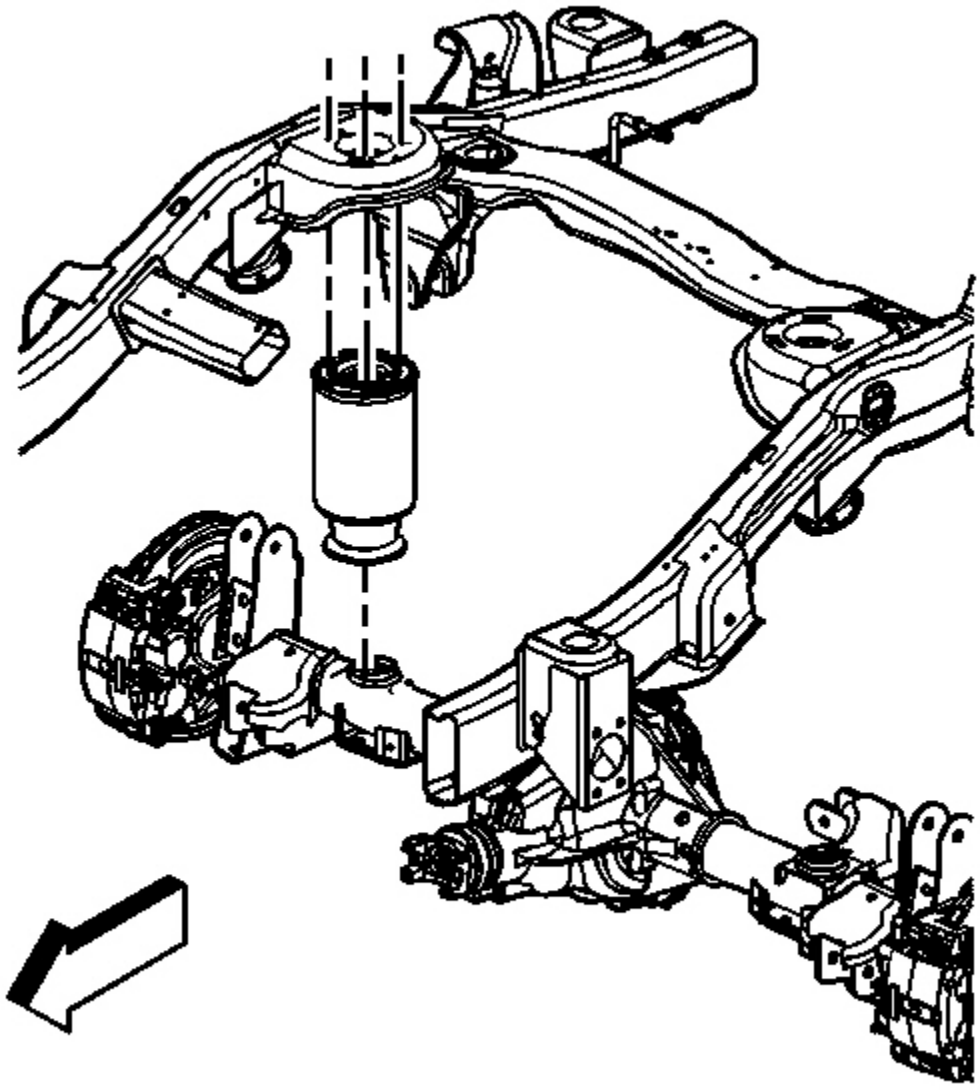


Fig. 38: Removing & Installing Air Spring
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: There is a raised feature on the outer rim of the air spring top plate that denotes the anti rotation peg position.

4. Depress the anti-rotation peg in the air spring top plate located in the upper spring seat.
5. With the anti-rotation peg depressed, rotate the air spring counterclockwise and remove the air spring

from the upper spring seat.

6. Remove the air spring from the vehicle.

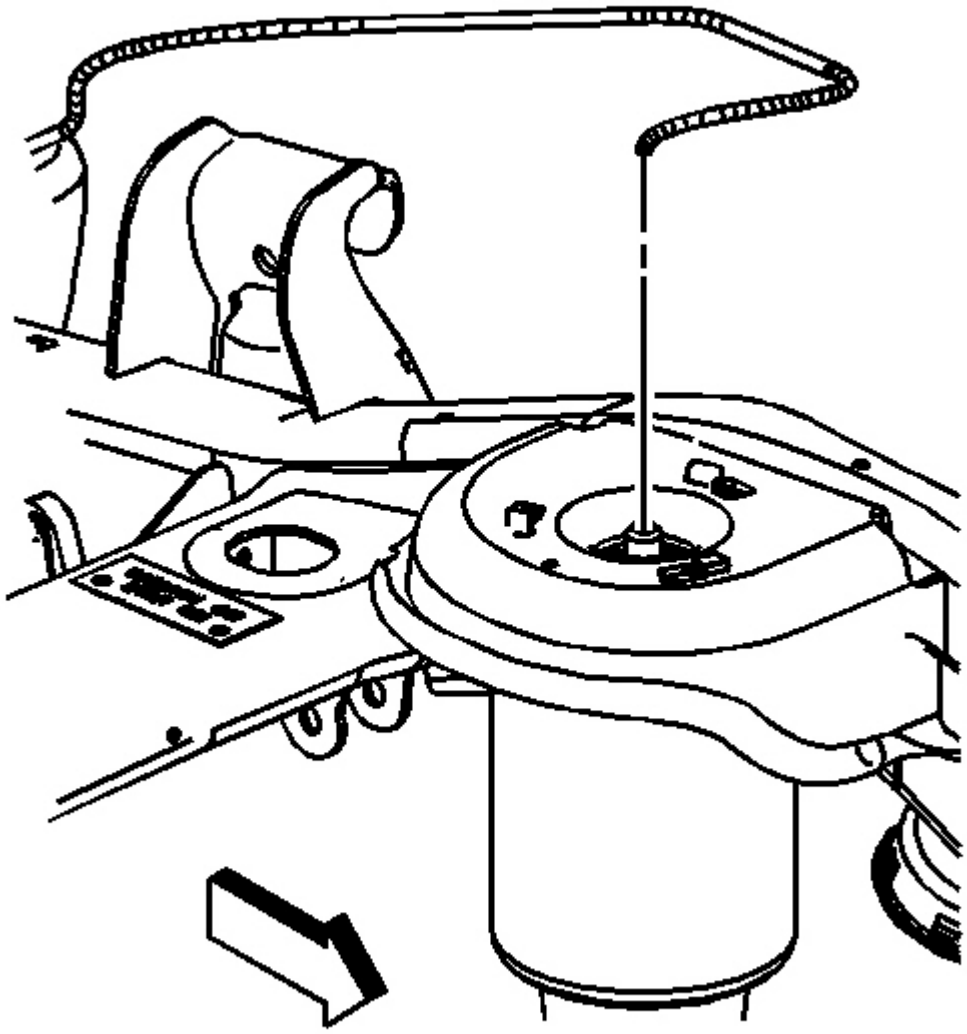


Fig. 39: Air Supply Line & Air Spring
Courtesy of GENERAL MOTORS CORP.

7. Disconnect the air supply line from the air spring. Refer to **Air Suspension Air Line Replacement** .

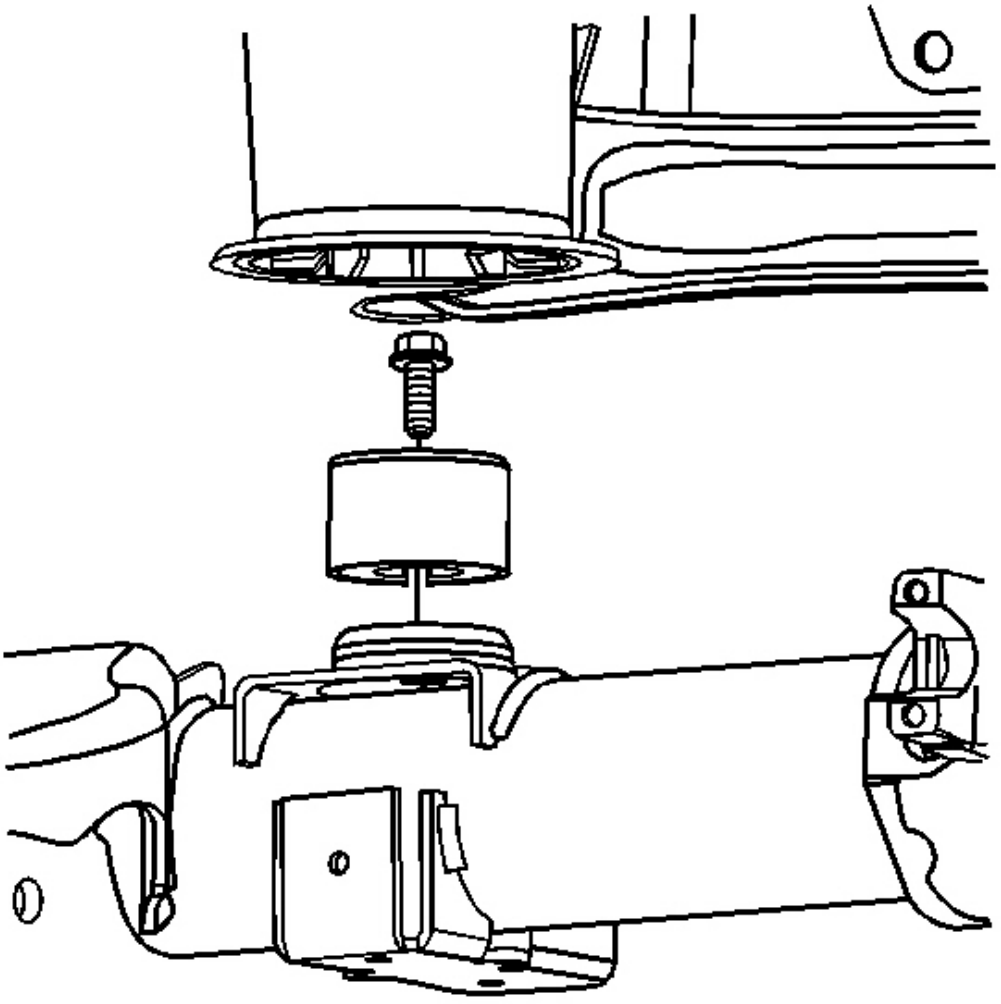


Fig. 40: Air Spring Support
Courtesy of GENERAL MOTORS CORP.

8. Remove the air spring support from the axle, if necessary.

Installation Procedure

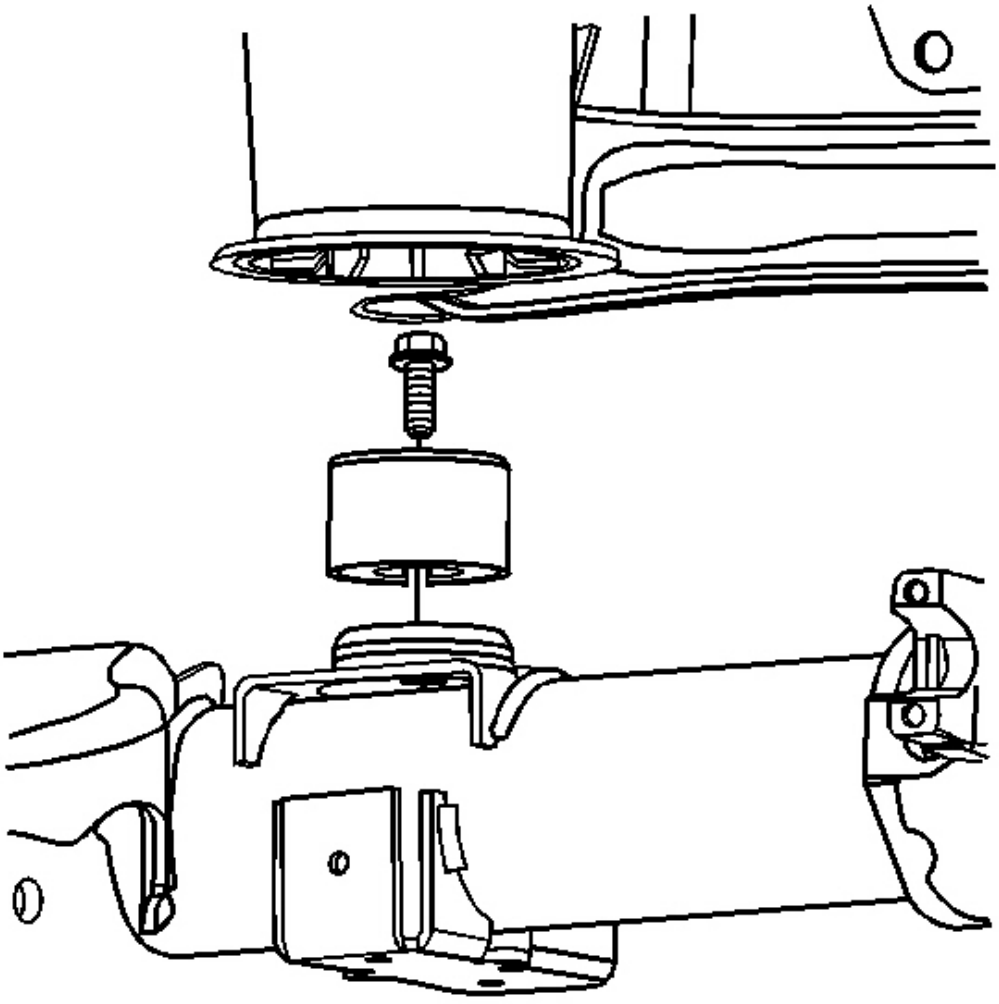


Fig. 41: Air Spring Support
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the air spring support to the axle.

   Tighten: Tighten the bolt to 22 N.m (16 lb ft).

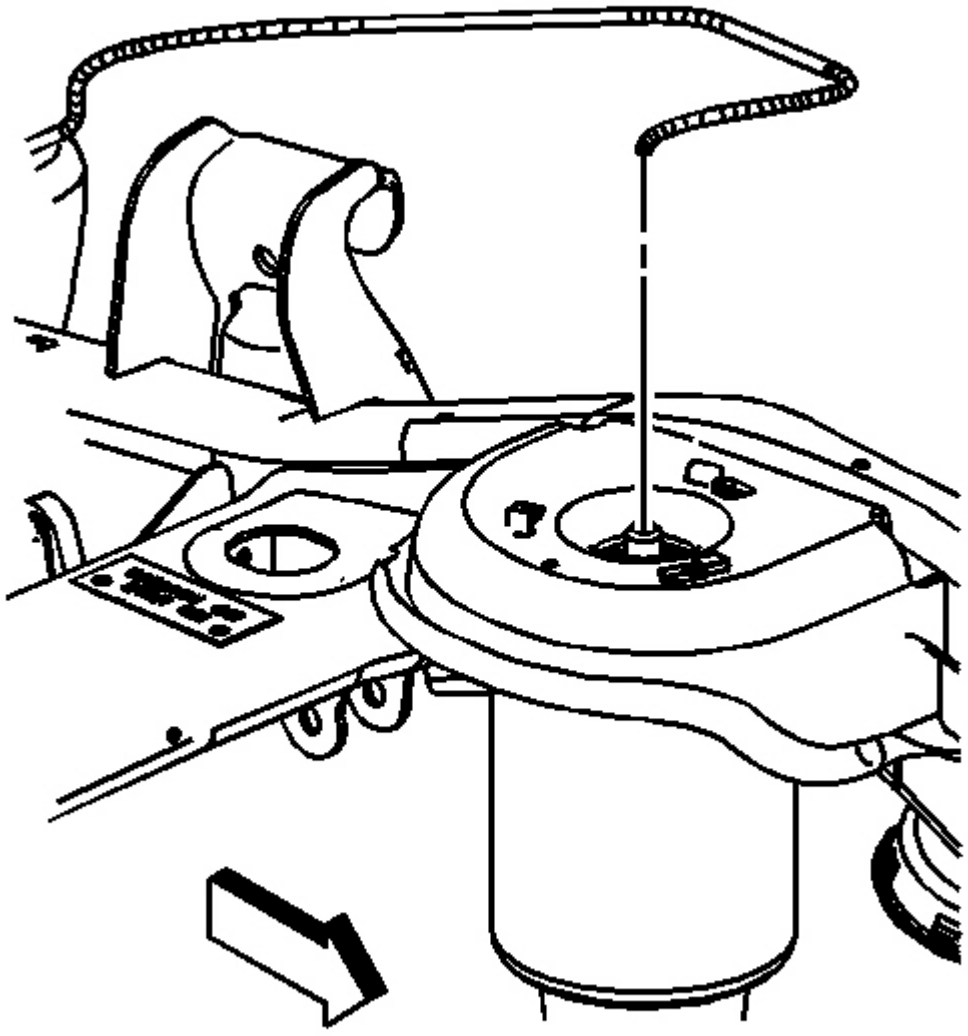


Fig. 42: Air Supply Line & Air Spring
Courtesy of GENERAL MOTORS CORP.

2. Install the air supply line to the air spring. Verify that the air supply line is fully seated. Refer to **Air Suspension Air Line Replacement** .

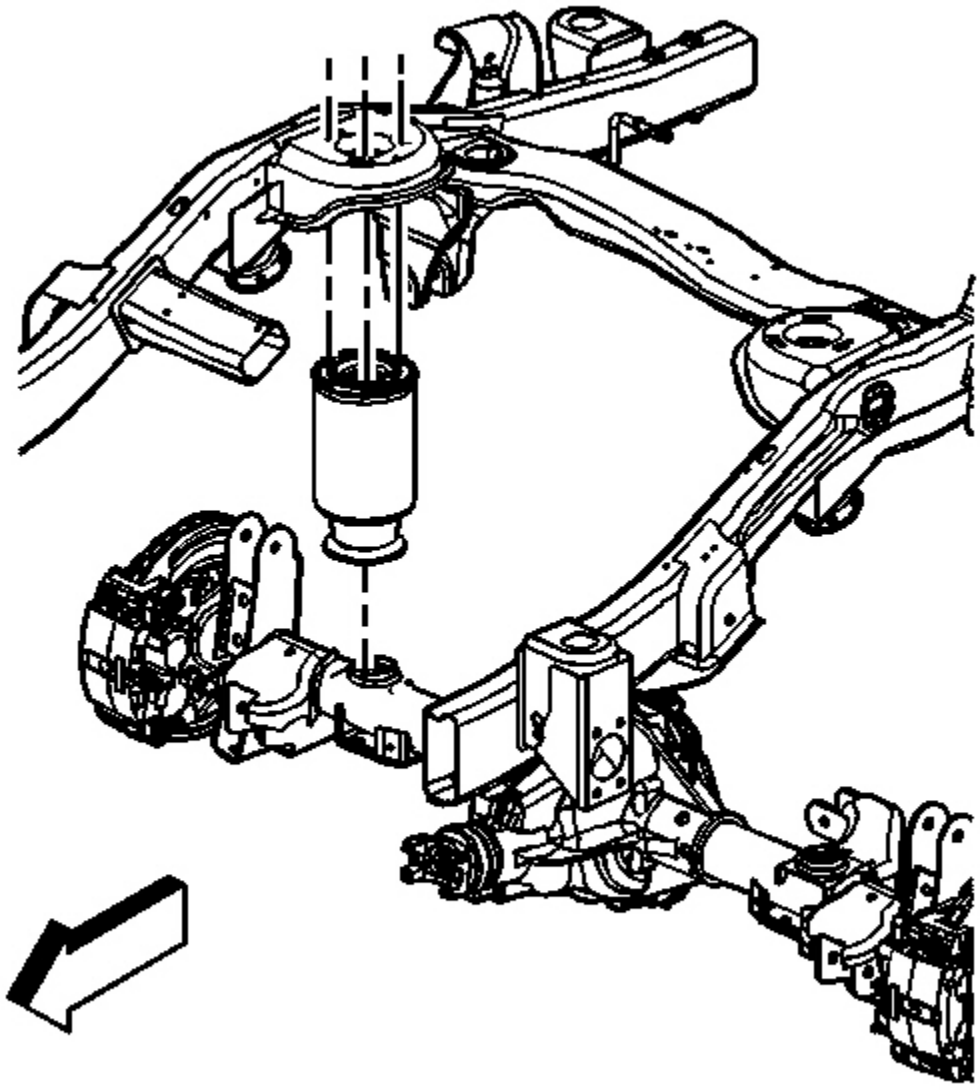


Fig. 43: Removing & Installing Air Spring
Courtesy of GENERAL MOTORS CORP.

3. Install the air spring to the vehicle.
4. Secure the air spring to the frame by aligning the mounting tabs with the keyhole slots in the upper spring seat.
5. Apply upward pressure to the air spring and rotate clockwise until the anti-rotation peg snaps into place.

IMPORTANT: If the rear axle was allowed to hang unsupported, lower the vehicle far enough to allow the air spring to be manually engaged to the support on the axle tube with minimal distortion of the air spring bladder. Ensure that the air spring is fully engaged to the axle support.

6. Pressurize the air springs. Refer to **Air Suspension Pressurization Procedure** .
7. Lower the vehicle completely.
8. Start the vehicle and run for approximately 2 minutes to verify that the air suspension system is functioning properly.
9. Verify the D-height. Refer to **Trim Height Specifications** in Suspension General Diagnosis.

AIR SUSPENSION AIR LINE REPLACEMENT

Removal Procedure

CAUTION: Do NOT remove an air supply pipe in an attempt to depressurize the air suspension. Always follow the Air Suspension Depressurization Procedure in Air Suspension. Failure to follow this procedure may cause personal injury or damage to the vehicle.

1. Depressurize the air suspension system. Refer to **Air Suspension Depressurization Procedure** .
2. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.

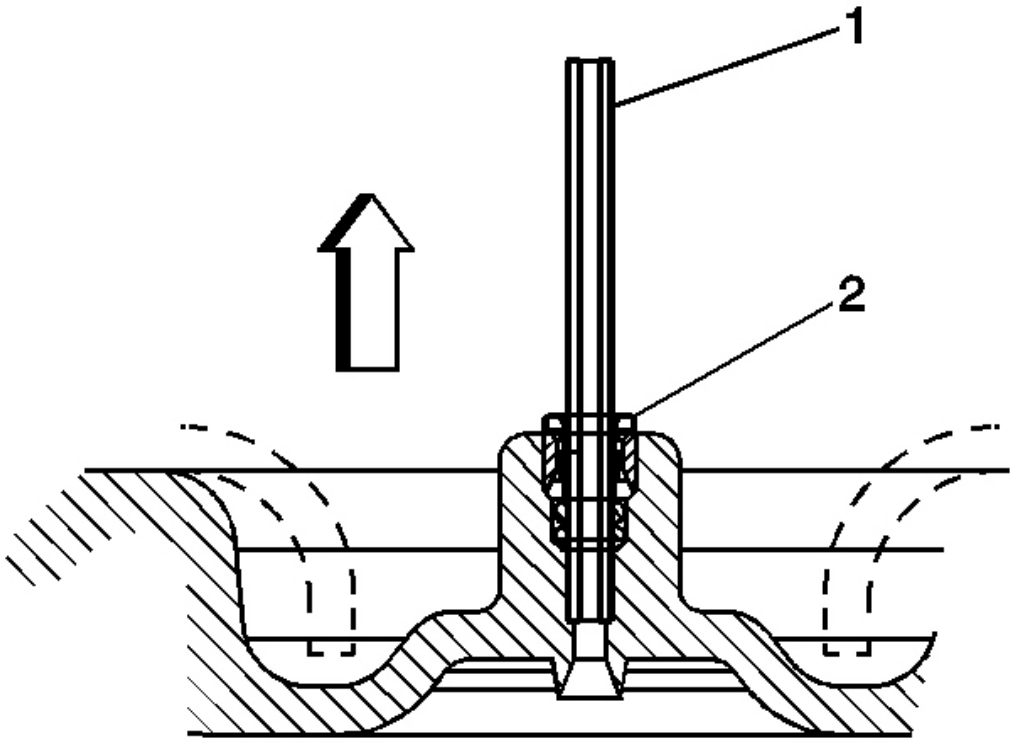


Fig. 44: Disconnecting Air Lines Procedure
Courtesy of GENERAL MOTORS CORP.

3. Disconnect all air lines using the following procedure. Air spring connection shown. All others are similar.
    1. Push the air supply line into the air spring connection and hold in place.
    2. Depress and hold the air supply line collet (2) down.
    3. Remove the air supply line (1) from the air spring.
4. For air lines that are integral to a wiring harness. Trim off air line at the wiring harness with a sharp cutting tool. Leave the remaining air line in the wiring harness.

Installation Procedure

IMPORTANT: Inspect the ends of all air supply pipes for deep scoring and sharp edges before reinstalling the pipe to the fitting. Replace any pipe that exhibits any of the above conditions.

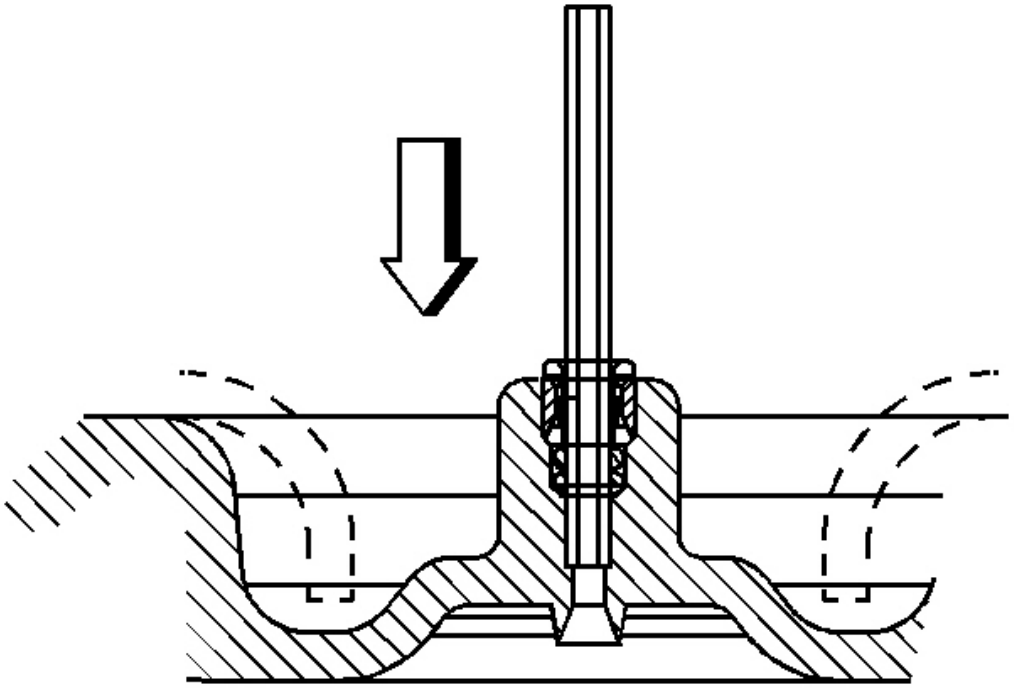


Fig. 45: Installing Air Line
Courtesy of GENERAL MOTORS CORP.

1. Install air line to the appropriate fitting until the line bottoms.

IMPORTANT: If the rear axle was allowed to hang unsupported, lower the vehicle far enough to allow the air spring to be manually engaged to the support on the axle tube with minimal distortion of the air spring bladder. Ensure that the air spring is fully engaged to the axle support.

2. Pressurize the air springs. Refer to **Air Suspension Pressurization Procedure** .
3. Lower vehicle.
4. Start the vehicle and run for approximately 2 minutes to verify that the air suspension system is functioning properly.

DESCRIPTION AND OPERATION

AIR SUSPENSION DESCRIPTION AND OPERATION

Air Suspension

The primary mission of the air suspension system is the following for the rear suspension under loaded and unloaded conditions:

- Keep vehicle visually level
- Maintain optimal ride height

The Air Suspension System consists of the following items:

- Air Suspension Compressor Assembly
- Air Suspension Module
- Electronically Controlled Air Suspension Relay
- Air Suspension Sensors
- Ride Height Switch
- Air Suspension Exhaust Valve
- Air Suspension Inflator switch and fill valve
- Air Suspension Pressure Sensor
- Air Suspension Inlet Valves
- Rear Air Springs

Compressor Assembly

The air compressor is a positive displacement air pump, powered by a 12 V DC permanent magnet motor. A thermal limit switch protects the compressor. The thermal limit switch is normally closed and provides a ground signal to the air suspension module. If there is an overtemperature condition the thermal limit switch will open and signals the air suspension module to deactivate the compressor relay. The compressor will stop running and a DTC will set. Intake air for the compressor is drawn through an intake filter and line that is attached to the fuel filler pipe in the left rear wheel area. The air compressor assembly is mounted to a bracket that is located under the rear center of the vehicle. The compressor air dryer is mounted next to the air compressor. It contains a moisture absorbing chemical that drys the compressed air before it is delivered to the rear air springs. Moisture is removed from the dryer and returned to the atmosphere when air is exhausted from the air springs during vehicle lowering.

Air Suspension Module

The air suspension module will conduct several self test at every ignition activation, while other test do not commence until wheel speed is detected at the wheel speed sensors. During self test if any of the module components are found to be malfunctioning a DTC will set and the corresponding telltale is activated. The telltale message that the air suspension module can display is SERVICE SUSPENSION SYSTEM. Each DTC consists of one current and one history DTC. History codes will be cleared after 100 consecutive malfunction free ignition cycles or with a scan tool. The air suspension module communicates with other modules in the vehicle via class 2. There is a standby feature in the air suspension module whereby downward leveling is possible for 30 minutes after the ignition has been turned off. This is to allow the vehicle to level after a load has been removed. The leveling function will be disabled when any door or liftgate is open or when the inflator is being used. To prevent energizing the electronically controlled air suspension relay or air suspension inlet valves during normal ride motions the air suspension module provides a calibrated delay before leveling the

vehicle.

Electronically Controlled Air Suspension Relay

The compressor is controlled by the air suspension module by the use of a relay. The relay and wiring are protected with a 60-amp fuse. The air suspension module will only activate the compressor relay when the engine is running.

Air Suspension Sensors

The rear air suspension sensors are potentiometers which detect height changes at the rear of the vehicle. The sensors relay the height changes to the air suspension module. The sensors are mounted to the frame at the rear wheel area on the left and right sides. The activation arm is attached to the upper control arms of the rear suspension.

Ride Height Switch

Extended ride height is used to increase vehicle ground clearance. When the ERH switch is activated the vehicle will raise 2 inches at the rear. The extended ride height will only occur if vehicle speed is less than 64 km/h (40 mph) with the liftgate and all doors closed with the engine running. When the switch is activated the switch LED will flash while the vehicle is transitioning to extended ride height. When the vehicle reaches extended ride height switch LED will be on continuously. The vehicle will return to normal height when the switch is activated again and the switch LED will go off. The vehicle will automatically return to normal height if vehicle speed increases over 64 km/h (40 mph) and the switch LED will turn off.

Air Suspension Exhaust Valve

The air suspension exhaust valve is used to exhaust air from the air springs and lower the vehicle. The air suspension exhaust valve is mounted on the head of the compressor. The air suspension exhaust valve is controlled by the air suspension module.

Air Suspension Inflator Switch and Fill Valve

The inflator system consist of a inflator hose to provide a means of inflating objects and a switch with a LED located in the rear compartment. The inflator will only function when the engine is running and the vehicle is in park. The switch LED will be illuminated with the inflator on. The inflator function will have priority over leveling functions.

Air Suspension Pressure Sensor

The air suspension system uses the air pressure sensor to monitor system pressure. The air suspension module uses that signal to determine if there is a leak in the system and to maintain a minimum air pressure in the system.

Air Suspension Inlet Valves

The air suspension system has two inlet valves. One for the right air spring and one for the left air spring. The valves are mounted to the valve block with the air suspension pressure sensor and is located next to the

compressor. The valves are activated and controlled independently by the air suspension module.

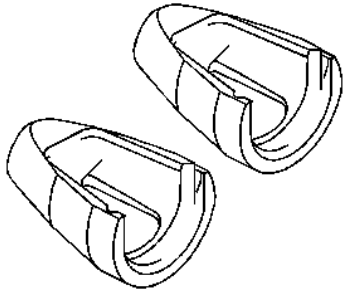
Rear Air Springs

The air springs are mounted in the frame in the same location were the coil spring is mounted for a vehicle without air suspension. Support pieces are affixed to the axle for the air springs.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/Description
	CH 47816 Suspension Position Calibration Blocks