

## SECTION : 8B

# SUPPLEMENTAL INFLATABLE RESTRAINTS (SIR)

**CAUTION :** *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.*

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## 8B – 2 SUPPLEMENTAL INFLATABLE RESTRAINTS (SIR)

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|   |       |  |       |
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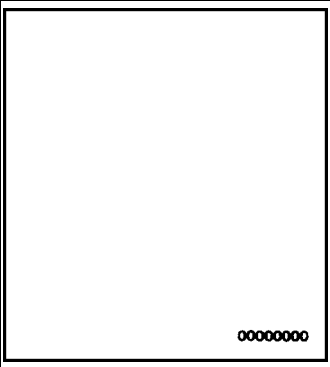

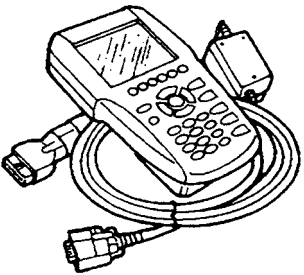
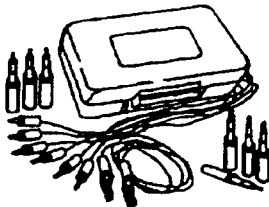
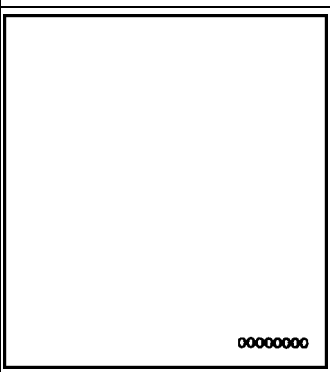
# SPECIFICATIONS

## FASTENER TIGHTENING SPECIFICATIONS

| Application  | N•m | Lb-Ft | Lb-In |
|--|-----|-------|-------|
| Clock Spring Mounting Screws                       | 4   | –     | 35    |
| Driver Airbag Module Mounting Bolts                | 8   | –     | 71    |
| Knee Bolster Mounting Bolts                        | 22  | 16    | –     |
| Passenger Airbag Bracket Lower Bolts/Nuts          | 16  | 12    | –     |
| Passenger Airbag Bracket Upper Nuts                | 8   | –     | 71    |
| Sensing and Diagnostic Module (SDM) Mounting Bolts | 12  | –     | 106   |

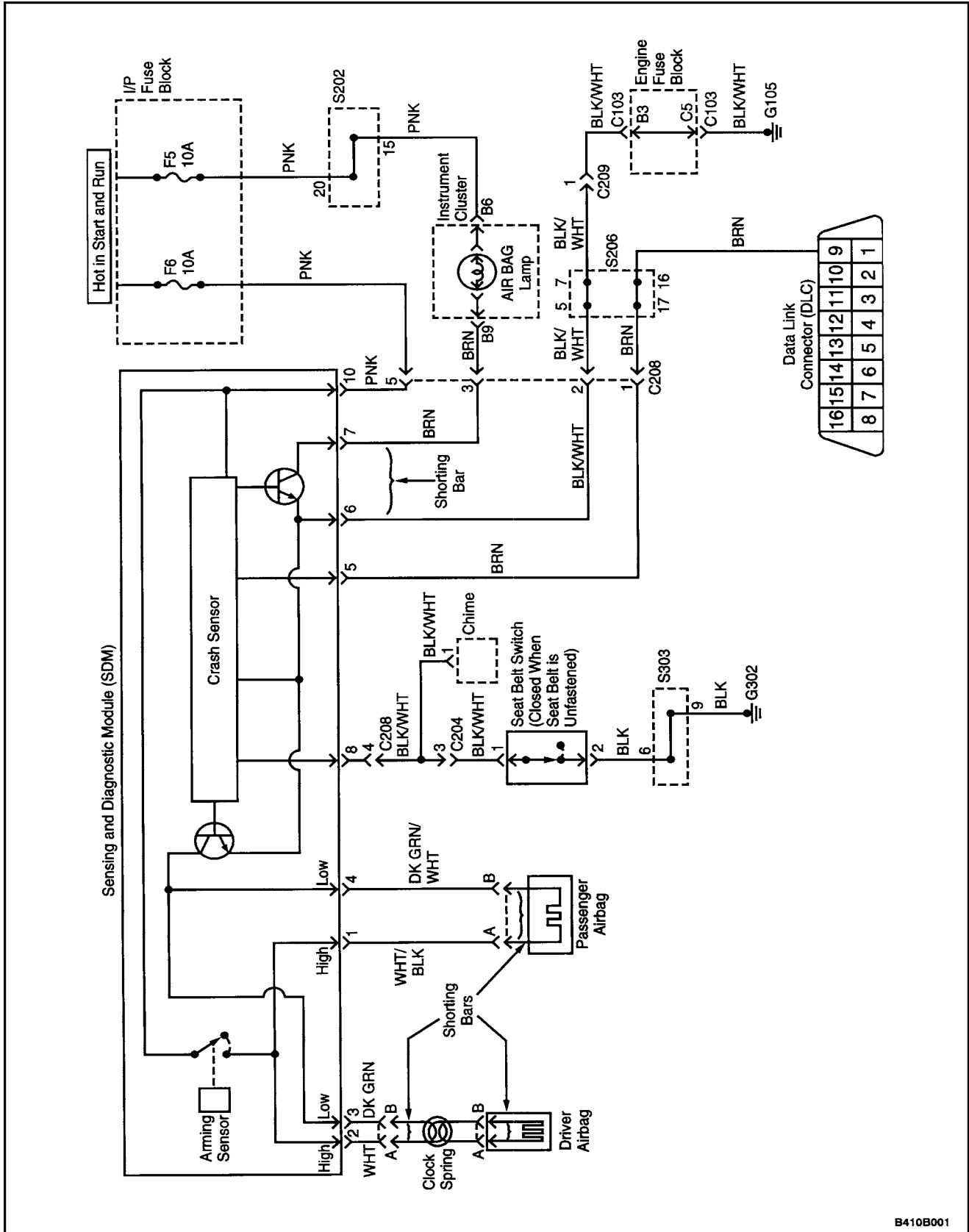
## SPECIAL TOOLS

### SPECIAL TOOLS TABLE

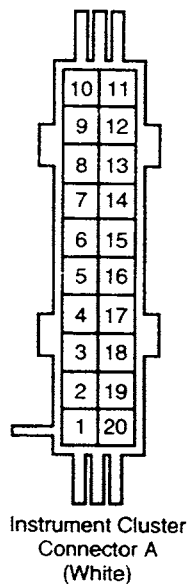
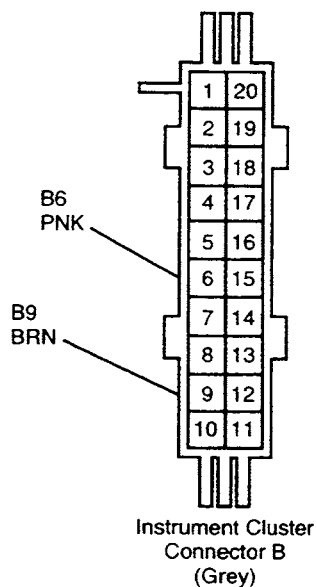
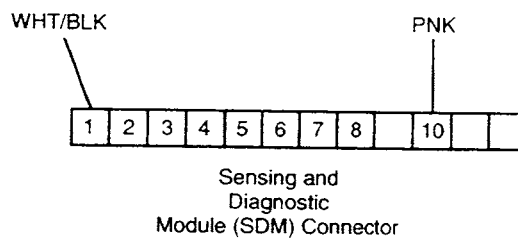
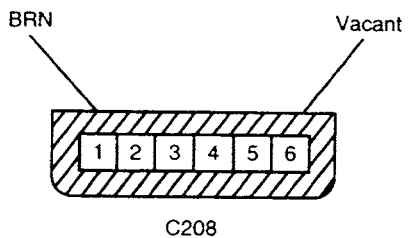
|   |                                   |  |   |
|---|-----------------------------------|--|---|
|  <p>00000000</p>  | <p>Deployment Tool</p>            |  <p>B410B012</p>  | <p>J-38715<br/>SIR Driver/Passenger<br/>Load Tool</p> |
|  <p>A410B026</p> | <p>Scanner 100</p>                |  <p>A410B027</p> | <p>Connector Test<br/>Adapter Kit</p>                 |
|  <p>00000000</p> | <p>Wiring Harness<br/>Checker</p> |  |   |

# SCHEMATIC AND ROUTING DIAGRAMS

## SUPPLEMENTAL INFLATABLE RESTRAINT SYSTEM

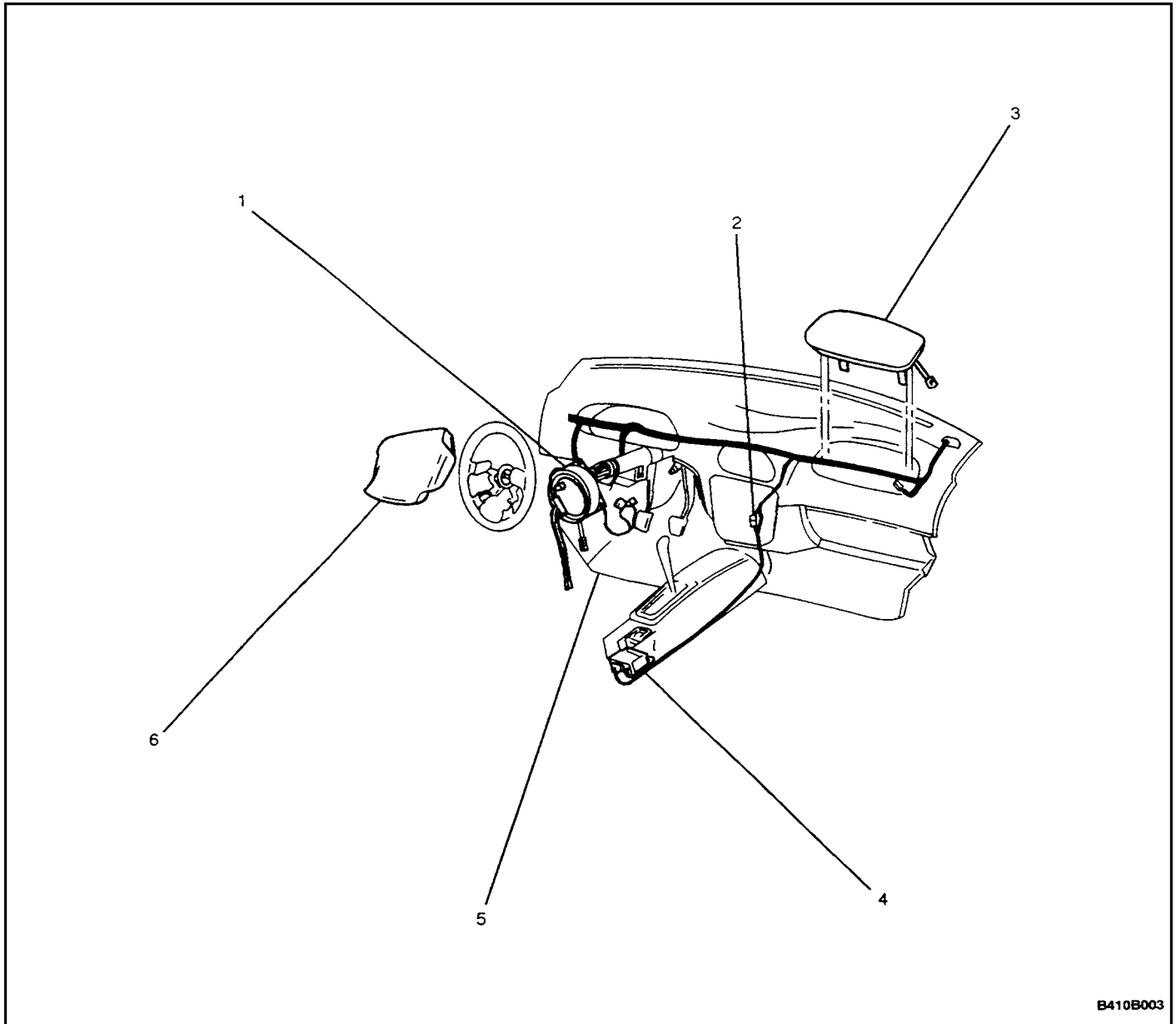


### CONNECTOR END VIEWS



## COMPONENT LOCATOR

### SIR COMPONENT AND WIRING LOCATION VIEW



B410B003

- |                     |  |
|---------------------|--|
| 1. Clock Spring     | 4. Sensing and Diagnostic Module (SDM) |
| 2. Connector C208   | 5. Data Link Connector (DLC)           |
| 3. Passenger Airbag | 6. Driver Airbag                       |

## DIAGNOSIS

### DIAGNOSTIC TROUBLE CODES (DTC)

The supplemental inflatable restraint (SIR) Diagnostic System Check must always be the starting point for any SIR system diagnosis. The Diagnostic System Check reveals diagnostic trouble codes (DTCs) through the use of a scan tool, and checks for proper AIRBAG warning indicator operation.

Two types of diagnostic trouble codes may be recorded:

1. Current diagnostic trouble codes represent malfunctions that are presently being detected. Current DTCs are stored in random access memory.
2. History DTC represent all malfunctions that were detected since the last time that history memory was cleared. History DTCs are stored in the electronically erasable programmable read only memory (EEPROM).

### SCAN TOOL DIAGNOSTICS

A scan tool can read serial data from terminal 9 of the data link connector (DLC). A specific replaceable cartridge must be attached to the scan tool before the scan tool can communicate with the sensing and diagnostic module (SDM) for the purpose of diagnostics. The scan tool is used to read diagnostic trouble codes (DTCs), and to clear some DTCs after a repair is completed. By design, certain codes cannot be cleared. To use the scan tool, turn the ignition OFF, connect the scan tool to the DLC, and turn the ignition ON. Follow the instructions in the scan tool manual. The SDM sends serial data from terminal 5 of the SDM to terminal 9 of the DLC.

### USE OF SPECIAL TOOLS

A scan tool is used to read and clear diagnostic trouble codes (DTCs). A connector adapter kit provides jumper wires and terminal adapters to make it easier to test small terminals. In diagnostic testing, a load tool is used as a substitute for the airbag modules. A wiring harness checker and a deployment tool are under development, and service bulletins will be issued if these tools become operational.

### SIR DIAGNOSTIC SYSTEM CHECK

**Notice :** If the vehicle interior has been exposed to extensive water intrusion such as water leaks, driving through high water, flooding, or other causes, the sensing and diagnostic module (SDM) and the SDM connector may need to be replaced. With the ignition OFF, inspect the area around the SDM, including the carpet. If any significant soaking or evidence of previous soaking is detected, the water must be removed, the water damage repaired, and the SDM and SDM connector must be replaced. Be-

fore attempting any of these repairs, the supplemental inflatable restraint (SIR) system must be disabled. Refer to "Disabling the SIR System" and "Sensing and Diagnostic Module (SDM)" in this section for instructions on how to disable the SIR system and replace the SDM.

The diagnostic procedures used in this section are designed to find and repair SIR system conditions. To get the best results, it is important to use the diagnostic charts and follow the sequence listed below.

1. Perform the SIR Diagnostic System Check. The SIR Diagnostic System Check must be the starting point of any SIR diagnostics. The SIR Diagnostic System Check reveals diagnostic trouble codes (DTCs) through the use of a scan tool, and checks for proper AIRBAG indicator operation.
2. Refer to the proper diagnostic chart as directed by the SIR Diagnostic System Check. The SIR Diagnostic System Check will lead to the correct chart to diagnose any SIR system malfunctions. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacement.
3. Repeat the SIR Diagnostic System Check after any repair or diagnostic procedures have been performed. Performing the SIR Diagnostic System Check after all repair or diagnostic procedures will ensure that the repair has been made correctly and that no other malfunctions exist.

#### Circuit Description

When the ignition is first turned ON, Ignition 1 voltage is applied from the airbag fuse to the SDM at input terminal 10. The SDM responds by flashing the AIRBAG indicator seven times and then turning it off while the SDM performs tests on the SIR system.

#### Diagnostic Aids

The order in which DTCs are diagnosed is very important. Failure to diagnose the DTCs in the order specified may result in extended diagnostic time, incorrect diagnosis and incorrect parts replacement.

#### Test Description

The number(s) below refer to step(s) on the diagnostic table.

3. This test will identify the stored DTCs and whether they are current or history. A history DTC indicates that the malfunction has been repaired or is intermittent.
6. This test differentiates between an indicator that will not come on and an indicator that stays on when it should be off.
7. See the first caution below.
9. See the cautions below.
10. This test will determine whether history DTCs are stored and will identify them.
11. A history DTC indicates that the malfunction has been repaired or is intermittent.

### SIR Diagnostic System Check

**CAUTION :** *The SDM can maintain sufficient voltage to deploy the airbags for 10 minutes after the ignition is OFF and the fuse has been removed. If the airbags are not disconnected, service cannot begin until 10 minutes have passed after disconnecting power to the SDM.*

**CAUTION :** *During service procedures, be very careful when handling the SDM. Never strike or jar the*

*SDM. Never power the SIR system when the SDM is not rigidly attached to the vehicle. All SDM mounting bolts must be carefully tightened, and the SDM arrow must be pointing toward the front of the vehicle to ensure proper operation of the SIR system. The SDM could be activated if it is powered when it is not rigidly attached to the vehicle, resulting in unexpected deployment and possible injury.*

| Step | Action   | Value(s) | Yes   | No  |
|------|--|----------|---|---|
| 1    | 1. Turn the ignition switch to ON.<br>2. Observe the AIRBAG indicator as the ignition is being turned ON.<br>Does the indicator flash seven times?   |          | Go to Step 2  | Go to Step 6  |
| 2    | Observe the AIRBAG indicator after it flashed seven times.<br>Does the indicator turn OFF?   |          | Go to Step 10   | Go to Step 3  |
| 3    | 1. Turn the ignition to LOCK and remove the key.<br>2. Connect the scan tool to the Data Link Connector (DLC). Follow the directions given in the scan tool manual.<br>3. Turn the ignition ON.<br>4. Request the supplemental inflatable restraint (SIR) diagnostic trouble code (DTC) display on the scan tool.<br>5. Record all DTCs, indicating each as either a current or a history DTC.<br>Are only history DTCs shown? |          | Refer to the DTC chart for any DTC that was set, and refer to the Diagnostic Aids for that specific DTC | Go to Step 4  |
| 4    | Check the recorded DTCs.<br>Are current DTCs 18, 24, or 51 set?  |          | Go to the DTC chart indicated by any of these three codes   | Go to Step 5  |
| 5    | Check the recorded DTCs.<br>Are there any other current DTCs shown?  |          | Diagnose the remaining current DTCs from lowest number to highest                                       | Refer to the DTC chart for any history DTC that was set, and refer to "Diagnostic Aids" for that specific DTC |
| 6    | Observe the AIRBAG indicator after the ignition has been turned ON.<br>Does the AIRBAG indicator stay on?  |          | Go to "AIRBAG Warning Lamp Stays on with Ignition Switch ON"  | Go to Step 7  |
| 7    | 1. Turn the ignition to LOCK and remove the key.<br>2. Temporarily disconnect the passenger airbag and the yellow clock spring connector on the steering column.<br>3. Check the AIRBAG indicator bulb and circuit.<br>Are the bulb and the bulb circuit in good condition?  |          | Go to Step 9  | Go to Step 8  |



| Step | Action   | Value(s) | Yes                                 | No  |
|------|--|----------|-------------------------------------|---|
| 8    | 1. Replace the bulb or repair the bulb circuit.<br>2. Connect all SIR system components, and ensure that all components are properly mounted.<br>Is the repair complete?   |          | Go to <i>Step 1</i>                 |   |
| 9    | 1. Turn the ignition to LOCK and remove the key.<br>2. Disconnect the passenger airbag and the yellow clock spring connector on the steering column.<br>3. Replace the SDM. The arrow must be pointing toward the front of the vehicle.<br>4. Reconnect all SIR system components, and ensure that all components are properly mounted.<br>Is the repair complete? |          | Go to <i>Step 1</i>                 |   |
| 10   | 1. Turn the ignition to LOCK and remove the key.<br>2. Connect the scan tool to the data link connector (DLC). Follow the directions given in the scan tool manual.<br>3. Turn the ignition to ON.<br>4. Request the SIR DTC display on the scan tool.<br>5. Record all history DTCs.<br>Are any SIR DTCs displayed?   |          | Go to <i>Step 11</i>                | System OK   |
| 11   | Turn the ignition to OFF.<br>Is DTC 71 set?  |          | Go to "DTC 71 Internal SDM Failure" | Refer to the DTC chart for any history DTC that was set, and refer to "Diagnostic Aids" for that specific DTC |

## SENSING AND DIAGNOSTIC MODULE (SDM) INTEGRITY CHECK

The following diagnostic chart must be followed when all circuitry outside the sensing and diagnostic module (SDM) has been found to operate properly, as indicated by following the appropriate diagnostic trouble code (DTC) chart or symptom chart. This chart verifies the need for SDM replacement.

### Circuit Description

When the SDM recognizes Ignition 1 voltage greater than 8.2 volts at terminal 10 of the SDM, the AIRBAG indicator is flashed seven times to verify operation. At this time the SDM performs turn-on tests followed by resistance measurement tests and continuous monitoring tests. When a malfunction is detected, the SDM sets a current DTC and illuminates the AIRBAG indicator. When the malfunction is no longer detected and/or the ignition switch is cycled, the SDM will clear current DTCs and move them to a histo-

ry file, except for DTCs 18, 24, 51, 53, and sometimes 71. DTCs 18, 24, 51, and 53 will not clear using a scan tool because these codes require replacement of the SDM. The SDM must be replaced only after the malfunction that set the DTC has been repaired.

### Test Description

The number(s) below refer to step(s) on the diagnostic table.

1. This test confirms a current malfunction. If no current malfunction is occurring, (history DTC set), refer to "Diagnostic Aids" for the appropriate DTC. The SDM should not be replaced for a history DTC except when directed.
2. This test checks for a malfunction introduced into the supplemental inflatable restraint (SIR) system during the diagnostic process. It is extremely unlikely that a malfunctioning SDM would cause a new malfunction to occur during the diagnostic process.
4. See the cautions below.

### Sensing and Diagnostic Module (SDM) Integrity Check

**CAUTION :** *The SDM can maintain sufficient voltage to deploy the airbags for 10 minutes after the ignition is OFF and the fuse has been removed. If the airbags are not disconnected, service cannot begin until 10 minutes have passed after disconnecting power to the SDM.*

**CAUTION :** *During service procedures, be very careful when handling the SDM. Never strike or jar the*

*SDM. Never power the SIR system when the SDM is not rigidly attached to the vehicle. All SDM mounting bolts must be carefully tightened, and the SDM arrow must be pointing toward the front of the vehicle to ensure proper operation of the SIR system. The SDM could be activated if it is powered when it is not rigidly attached to the vehicle, resulting in unexpected deployment and possible injury.*

| Step | Action  | Value(s) | Yes   | No                                    |
|------|---|----------|---|---------------------------------------|
| 1    | <ol style="list-style-type: none"> <li>Turn the ignition to LOCK and remove the key.</li> <li>Connect all supplemental inflatable restraint (SIR) system components, and ensure that all components are properly mounted.</li> <li>Ensure that the ignition switch has been OFF for at least 30 seconds.</li> <li>Observe the AIRBAG indicator as the ignition is turned ON.</li> </ol> <p>Does the indicator lamp flash seven times and then turn off?</p> |          | Clear the SIR system DTCs and go to "Diagnostic System Check" | Go to <i>Step 2</i>                   |
| 2    | <p>Using a scan tool, request the DTC display. Is the same DTC displayed that was previously occurring when the SIR Diagnostic System Check was previously performed?</p>   |          | Go to <i>Step 3</i>   | Go to the table for the DTC indicated |
| 3    | <ol style="list-style-type: none"> <li>Clear the SIR DTCs.</li> <li>Turn the ignition OFF for at least 30 seconds.</li> <li>Observe the AIRBAG indicator as the ignition is turned ON.</li> </ol> <p>Does the AIRBAG indicator flash seven times and then turn off?</p>   |          | System OK   | Go to <i>Step 4</i>                   |
| 4    | <ol style="list-style-type: none"> <li>Turn the ignition to LOCK and remove the key.</li> <li>Disconnect the passenger airbag and the yellow clock spring connector on the steering column.</li> <li>Replace the SDM. The arrow must be pointing toward the front of the vehicle.</li> <li>Connect all SIR system components, and ensure that all components are properly mounted.</li> </ol> <p>Is the repair complete?</p>                                |          | Clear the SIR system DTCs and go to "Diagnostic System Check" |                                       |