DESCRIPTION
Shifting from 1st to 5th is performed in combination with the ON and OFF operation of the shift solenoid valves S1, S2, SR, SL1 and SL2 which are controlled by the ECM. If an open or short circuit occurs in any of the shift solenoid valves, the ECM controls the remaining normal shift solenoid valve to allow the vehicle to be driven smoothly (See page AT-32).

MONITOR DESCRIPTION
These DTCs indicate an open or short in the shift solenoid valve S2 circuit. When there is an open or short circuit in any shift solenoid valve circuits, the ECM detects the problem and illuminates the MIL and stores the DTC. When the shift solenoid valve S2 is on, if the resistance is 8 Ω or less, the ECM determines that there is a short malfunction in the shift solenoid valve S2 circuit. When the shift solenoid valve S2 is off, if the resistance is 100 kΩ or more, the ECM determines that the shift solenoid valve S2 circuit is open (See page AT-32).

TYPICAL ENABLING CONDITIONS

**P0976: Range check (Low resistance)**
The monitor will run whenever the following DTCs are not present. None
Shift solenoid valve S2 ON

**P0977: Range check (High resistance)**
The monitor will run whenever the following DTCs are not present. None
Shift solenoid valve S2 OFF

TYPICAL MALFUNCTION THRESHOLDS

**P0976: Range check (Low resistance)**
Shift solenoid valve S2 resistance 8 Ω or less
P0977: Range check (High resistance)

<table>
<thead>
<tr>
<th>Component</th>
<th>Operating Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift solenoid valve S2 resistance</td>
<td>100 kΩ or more</td>
</tr>
</tbody>
</table>

COMPONENT OPERATING RANGE

<table>
<thead>
<tr>
<th>Component</th>
<th>Operating Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift solenoid valve S2 resistance</td>
<td>11 to 15 Ω at 20°C (68°F)</td>
</tr>
</tbody>
</table>

WIRING DIAGRAM

HINT:
The shift solenoid valve S2 is turned on/off normally when the shift lever is in the D position:

<table>
<thead>
<tr>
<th>Gearshift controlled by ECM</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift solenoid valve S2</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

1: INSPECT TRANSMISSION WIRE (S2)

(a) Disconnect the transmission wire connector from the transmission.

(b) Measure the resistance.

**Standard resistance**

<table>
<thead>
<tr>
<th>Tester Connection</th>
<th>Specified Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - Body ground</td>
<td>11 to 15 Ω at 20°C (68°F)</td>
</tr>
</tbody>
</table>

NG

Go to step 3

OK
2 CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - ECM)

(a) Connect the transmission wire connector to the transmission.
(b) Disconnect the ECM connector.
(c) Measure the resistance.

**Standard resistance**

<table>
<thead>
<tr>
<th>Tester Connection</th>
<th>Specified Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>E5-10 (S2) - Body ground</td>
<td>11 to 15 Ω at 20°C (68°F)</td>
</tr>
</tbody>
</table>

NG [REPAIR OR REPLACE HARNESS OR CONNECTOR]

OK

REPLACE ECM

3 INSPECT SHIFT SOLENOID VALVE S2

(a) Remove the shift solenoid valve S2.
(b) Measure the resistance.

**Standard resistance**

<table>
<thead>
<tr>
<th>Tester Connection</th>
<th>Specified Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solenoid Connector (S2) - Solenoid Body (S2)</td>
<td>11 to 15 Ω at 20°C (68°F)</td>
</tr>
</tbody>
</table>

(c) Connect the positive (+) lead to the terminal of the solenoid connector, and the negative (-) lead to the solenoid body.

OK: The solenoid makes an operating noise.

NG [REPLACE SHIFT SOLENOID VALVE S2]

OK

REPAIR OR REPLACE TRANSMISSION WIRE