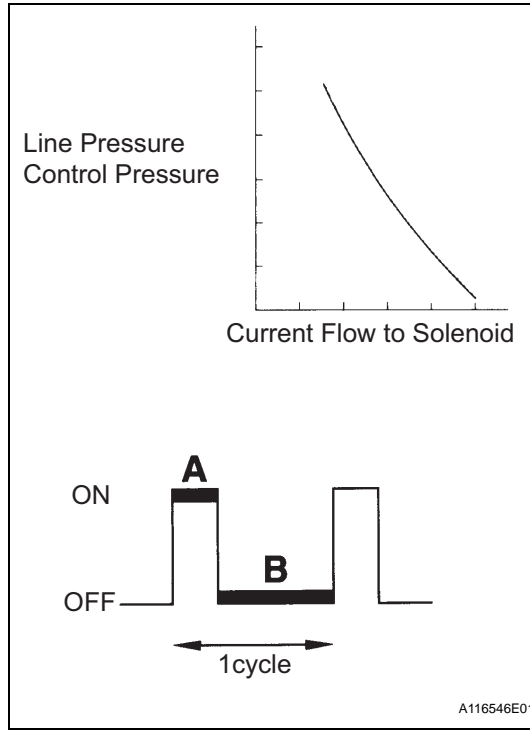


|            |              |  |
|------------|--------------|--|
| <b>DTC</b> | <b>P2716</b> | <b>Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)</b> |
|------------|--------------|--|

**DESCRIPTION**

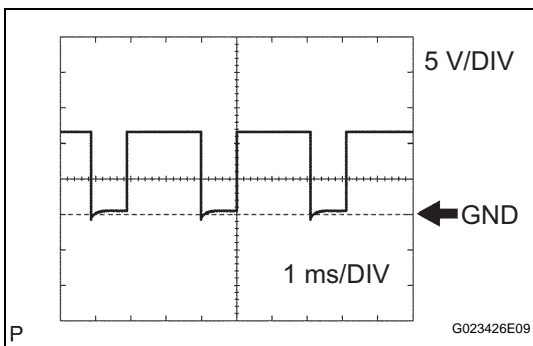


The linear solenoid valve (SLT) controls the transmission line pressure for smooth transmission operation based on signals from the throttle position sensor and the vehicle speed sensor. The ECM adjusts the duty cycle of the SLT solenoid valve to control the hydraulic line pressure coming from the primary regulator valve. Appropriate line pressure assures smooth shifting with varying engine outputs.

**Duty Ratio:**

The duty ratio is the ratio of the period of continuity in one cycle. For example, if A is the period of continuity in one cycle, and B is the period of non-continuity, then Duty Ratio =  $A / (A + B) \times 100 (\%)$ .

| DTC No. | DTC Detection Conditions   | Trouble Areas  |
|---------|--|--|
| P2716   | Open or short is detected in shift solenoid valve SLT circuit for 1 second or more while driving. (1-trip detection logic) | <ul style="list-style-type: none"> <li>Open or short in shift solenoid valve SLT circuit</li> <li>Shift solenoid valve SLT</li> <li>ECM</li> </ul> |



**1. Reference (Using an oscilloscope):**

Check the waveform between terminals SLT+ and SLT- of the ECM connector.

**Standard:**

Refer to the illustration.

| Item              | Content                     |
|-------------------|-----------------------------|
| Terminal          | SLT+ (E5-12) - SLT- (E5-13) |
| Tool setting      | 5 V/DIV<br>1 ms/DIV         |
| Vehicle condition | Engine idle speed           |

**MONITOR DESCRIPTION**

When an open or short is detected in the linear solenoid valve (SLT) circuit, the ECM interprets this as a fault. The ECM turns on the MIL and stores the DTC.

### MONITOR STRATEGY

|                             |   |
|-----------------------------|---|
| Related DTCs                | P2716: Shift solenoid valve SLT/Range check |
| Required sensors/Components | Shift solenoid valve SLT                    |
| Frequency of operation      | Continuous                                  |
| Duration                    | 1 second                                    |
| MIL operation               | Immediate                                   |
| Sequence of operation       | None  |

### TYPICAL ENABLING CONDITIONS

|   |              |
|---|--------------|
| The monitor will run whenever the following DTCs are not present. | None         |
| Solenoid current cut status                                       | Not cut      |
| Battery voltage   | 11 V or more |
| CPU command duty ratio to SLT                                     | 19 % or more |

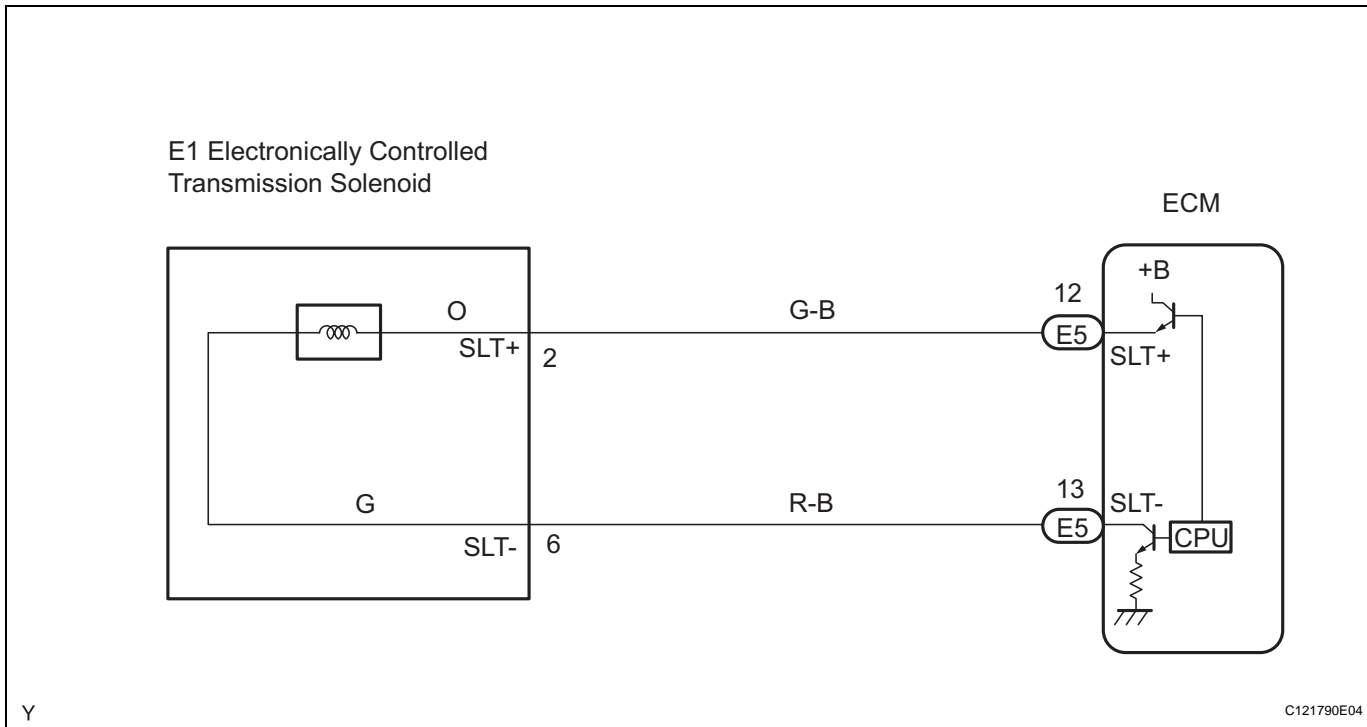
### TYPICAL MALFUNCTION THRESHOLDS

|                               |   |
|-------------------------------|---|
| Solenoid status (SLT) from IC | Fail (Open or short)<br>(Output signal duty ratio equal to 100 %) |
|-------------------------------|---|

### COMPONENT OPERATING RANGE

|                          |                 |
|--------------------------|-----------------|
| Output signal duty ratio | Less than 100 % |
|--------------------------|-----------------|

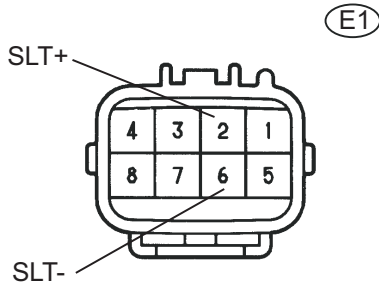
### WIRING DIAGRAM



**1 INSPECT TRANSMISSION WIRE (SLT)**

Transmission Wire Side:

(Connector Front View):



- (a) Disconnect the transmission wire connector from the transmission.
- (b) Measure the resistance.

**Standard resistance**

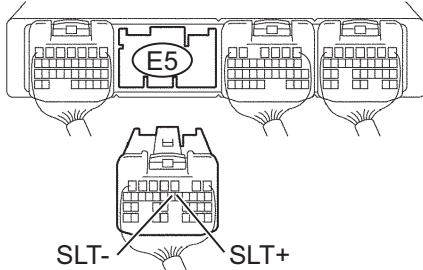
| Tester Connection      | Specified Condition         |
|------------------------|-----------------------------|
| 2 (SLT+) - 6 (SLT-)    | 5.0 to 5.6 Ω at 20°C (68°F) |
| 2 (SLT+) - Body ground | 10 kΩ or higher             |
| 6 (SLT-) - Body ground | 10 kΩ or higher             |

**NG** → **Go to step 3**

**OK**

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

ECM:



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

**Standard resistance**

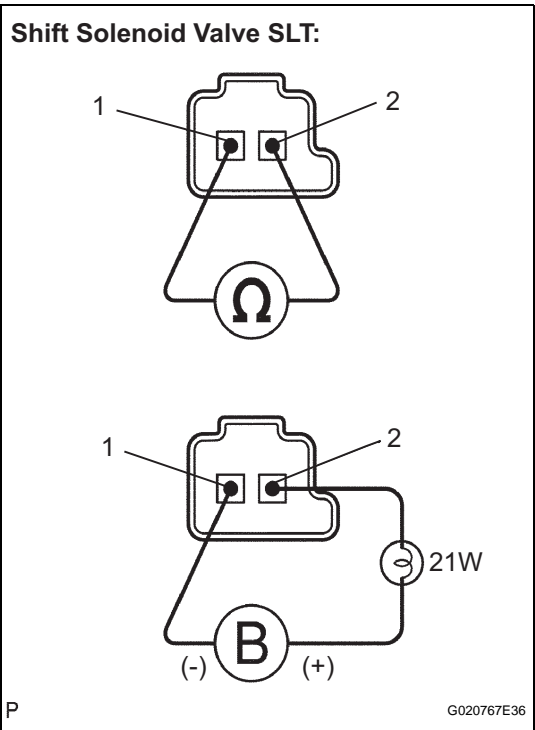
| Tester Connection           | Specified Condition         |
|-----------------------------|-----------------------------|
| E5-12 (SLT+) - E5-13 (SLT-) | 5.0 to 5.6 Ω at 20°C (68°F) |
| E5-12 (SLT+) - Body ground  | 10 kΩ or higher             |
| E5-13 (SLT-) - Body ground  | 10 kΩ or higher             |

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**REPLACE ECM**

**3 INSPECT SHIFT SOLENOID VALVE (SLT)**



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

**Standard resistance**

| Tester Connection | Specified Condition         |
|-------------------|-----------------------------|
| 1 - 2             | 5.0 to 5.6 Ω at 20°C (68°F) |

- (c) Connect the positive (+) lead with a 21 W bulb to terminal 2 and the negative (-) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.

**OK:**

The solenoid makes an operating sound.

**NG** **REPLACE SHIFT SOLENOID VALVE (SLT)**

**OK**

**REPAIR OR REPLACE TRANSMISSION WIRE**