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## 2009 CHEVROLET Avalanche SUT OEM Service and Repair Workshop Manual

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Powertrain Diagnostic Trouble Code (DTC) Type Definitions

**Scan Tool Reference**

Control Module References for scan tool information

**Circuit/System Verification**

1. Ignition On.
2. Verify the range selector lever cable adjustment is correct. Refer to Range Selector Lever Cable Adjustment.
   - **If the range selector lever cable adjustment is not OK**

     Adjust, repair or replace as necessary.
   - **If the range selector lever cable adjustment is OK**
3. Verify the scan tool the 9 V Reference 1 Circuit Status does not display Malfunction.
   - **If Malfunction is displayed**

     Refer to Circuit/System Testing.
   - **If Malfunction is not displayed**
4. Verify the scan tool the internal mode switch A/B/C/P/S signal circuit voltages are correct for Park, Reverse, Neutral, Drive and Manual Mode position. Refer to Transmission Internal Mode Switch Voltage.
   - **If the internal mode switch voltages are not OK**

     Refer to Circuit/System Testing.
   - **If the internal mode switch voltages are OK**
5. Operate the vehicle within the Conditions for Running the DTC. You may also operate the vehicle within the conditions that you observe from the Freeze Frame/Failure Records data.
6. Verify the DTC does not set.
   - **If the DTC sets**

     Refer to Circuit/System Testing.
   - **If the DTC does not set**
7. All OK.

**Circuit/System Testing**

- If less than the specified value, replace the K71 Transmission Control Module.

- **If less than 4.8 V**

1. Ignition Off, disconnect the harness connector at the K71 Transmission Control Module.
2. Test for infinite resistance between the internal mode switch P signal circuit terminal 23 and ground.
   - If less than infinite resistance, repair the short to ground on the circuit.
   - If infinite resistance
3. Test for less than 1 Ω in the internal mode switch P signal circuit end to end.
   - If 1 Ω or greater, repair the open/high resistance in the circuit.
   - If less than 1 Ω, replace the K71 Transmission Control Module.
4. Test for infinite resistance between the internal mode switch P signal circuit and the internal mode switch A/B/C/S signal circuits, at the X175 harness connector.
   - If less than infinite resistance on any circuit, repair the short between the 2 or more IMS signal circuits.
   - If infinite resistance, replace the K71 Transmission Control Module.

- **If between 4.8–5.2 V**

6. Perform the Component Testing.

**Component Testing**

1. Perform the Circuit/System Testing first.
2. Ignition Off.
3. Connect the X175 harness connector.
4. Remove the fluid pan from the T12 Automatic Transmission Assembly.
5. Disconnect the harness connector at the B15 Transmission Internal Mode Switch, ignition On.
6. Test for 8.3–9.4 V between the 9 V reference 1 circuit terminal 10 and ground.

- **If less than 8.3 V**

1. Ignition Off.
2. Disconnect the X176 connector, ignition On.

2. Disconnect the X176 connector.
3. Connect a 3 A fused jumper wire between the 9 V reference 1 circuit terminal 19 and the signal P circuit terminal 17, ignition On.
4. Verify the scan tool signal P parameter displays 4.8–5.2 V.
    - If greater than 5.2 V

      Replace the automatic transmission wiring harness replacement, electrical connector passage sleeve.
    - If between 4.8–5.2 V

      Replace the transmission control wiring harness.

- **If between 4.8–5.2 V**

9. Replace the B15 Transmission Internal Mode Switch.

**Repair Instructions**

Perform the Diagnostic Repair Verification after completing the repair.

- Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement
- Automatic Transmission Wiring Harness Replacement
- Manual Shift Shaft Position Switch Replacement
- Transmission Control Wiring Harness Replacement
- Perform the Transmission Service Fast Learn Procedure following all transmission related repairs.
- Refer to K71 Transmission Control Module: Programming and Setup

## Typical Scan Tool Data

**Internal Mode Switch A**

| Circuits | Short to Ground | Open | Short to Voltage |
|---|---|---|---|
| **Operating Conditions:** Ignition On<br>**Parameter Normal Range:** 9 V Reference Circuit = OK or Not Run. Internal Mode Switch A Signal Circuit 0.70–0.96 V or 1.68–2.38 V. | | | |
| 9 V Reference | Malfunction | Malfunction | Malfunction |
| Internal Mode Switch A | 0 V | 0 V | 4.8–5.2 V |

## Circuit/System Description

The internal mode switch indicates to the transmission control module (TCM) which gear position the vehicle operator has selected. The internal mode switch consists of 5 separate hall effect switches. Each hall effect switch is supplied a 9 V reference circuit and a signal circuit from the TCM. Each signal circuit for each gear selector position will have either a voltage reading of 0.70–0.96 V indicting On or 1.68–2.38 V indicating Off. The voltage values on each internal mode switch circuit will change and are dependent on the position of the gear selector. The state of each internal mode switch A/B/C/P/S signal circuit is displayed on the scan tool.

## Conditions for Running the DTC

Ignition voltage is between 9–32 V

## Conditions for Setting the DTC

**P182A**

TCM has detected the internal mode switch A signal circuit voltage is less than 0.7 V, for 1.75 s.

**P1838**

TCM has detected the internal mode switch A signal circuit voltage is greater than 2.38 V, for 1.75 s.

**P18B5**

TCM has detected the internal mode switch A signal circuit voltage is between 0.966–1.68 V, for 1.75 s.

**P18BA**