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2009 CHEVROLET Silverado 2500HD Regular Cab OEM Service and Repair Workshop Manual

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Circuit/System Verification

1. Perform the gear position sensor learn procedure.
 - **If the gear position sensor learn was not successful**
Refer to Circuit/System Testing.
 - **If the gear position sensor learn was successful**
2. All OK.

Circuit/System Testing

WARNING

Warning

Refer to [Hot Exhaust System Warning](#).

1. NOTE

Note

You must perform the Circuit/System Verification first.

Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the B227 Gear Position Sensor. It may take up to 2 minutes for all vehicle systems to power down.

2. Test for less than $10\ \Omega$ between the low reference circuit terminal 4 and ground.
 - **If $10\ \Omega$ or greater**
 1. Disconnect the X3 harness connector at the K20 Engine Control Module.
 2. Test for less than $2\ \Omega$ in the circuit end to end.
 - If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - If less than $2\ \Omega$, replace the K20 Engine Control Module.
 - **If less than $10\ \Omega$**
3. Ignition ON.
4. Test for 4.8–5.2 V between the 5 V reference circuit terminal 1 and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V

3. Ignition OFF.

4. Test for less than 2 Ω in the signal circuit 1 end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , test or replace the K20 Engine Control Module.

◦ **If less than 1%**

8. Verify the scan tool Gate Select Position Sensor parameter duty cycle is greater than 99%.

◦ **If 99% or less**

1. Ignition OFF, disconnect the X2 harness connector at the K20 Engine Control Module.

2. Test for infinite resistance between the signal circuit 2 terminal 2 and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, test or replace the K20 Engine Control Module.

◦ **If greater than 99%**

9. Install a 3 A fused jumper wire between the signal circuit 2 terminal 2 and ground.

10. Verify the scan tool Gate Select Position Sensor parameter duty cycle is less than 1%.

◦ **If 1% or greater**

1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the K20 Engine Control Module, ignition ON.

2. Test for less than 1 V between the signal circuit 2 terminal 2 and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V

3. Ignition OFF.

4. Test for less than 2 Ω in the signal circuit 2 end to end.

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , test or replace the K20 Engine Control Module.

◦ **If less than 1%**

5. Verify the scan tool Gear Shift Position Sensor parameter duty cycle is $10\% \pm 2\%$.
6. Set duty cycle switch to 20%, then 30% and so on through 90%.
7. Verify the scan tool Gear Shift Position Sensor parameter duty cycle matches the duty cycle for each switch position on the vehicle signal generator $\pm 2\%$.
 - **If the Gear Shift Position Sensor parameter does not match vehicle signal generator duty cycle $\pm 2\%$**
Replace the K20 Engine Control Module.
 - **If the Gear Shift Position Sensor parameter matches the vehicle signal generator duty cycle**
8. Repeat the above test, changing only the J-38522-A vehicle signal generator Red test lead to the signal circuit 2 terminal 2 at the B227 Gear Position Sensor wire harness connector.
9. Verify the scan tool Gate Select Position Sensor parameter duty cycle matches the duty cycle for each switch position on the vehicle signal generator $\pm 2\%$.
 - **If the Gate Select Position Sensor parameter does not match vehicle signal generator duty cycle $\pm 2\%$**
Replace the K20 Engine Control Module.
 - **If the Gate Select Position Sensor parameter does match vehicle signal generator duty cycle**
10. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Gear Position Sensor Learn](#)
- [Gear Position Sensor Replacement](#)
- [Disassembled Views](#)
- [Transmission Disassemble](#)
- [Transmission Assemble](#)
- [Control Module References](#) for replacement, programming and setup.

Callout	Component Name
1	<p>Counter Gear Bearing</p> <p>Procedure</p> <p>Use the DT-51076 <i>installer</i> and a mallet to install the bearing.</p> <p>Special Tools</p> <p>DT-51076 <i>Bearing and Gear Installer</i></p> <p>For equivalent regional tools, refer to Special Tools.</p>
2	<p>Counter Gear Front Bearing</p> <p>Procedure</p> <p>Use the DT-5590 <i>driver</i> and a hydraulic press to install the bearing.</p> <p>Special Tools</p> <p>DT-5590 <i>Bearing and Seal Driver</i></p> <p>For equivalent regional tools, refer to Special Tools.</p>