

## DTC C0327

### Circuit Description

The transfer case shift control module has four encoder channels, P, C, A, and B, which are supplied 5 volts each. The four encoder channels each run to a switch located inside the encoder/motor assembly. When a particular encoder channel is active the switch is closed and 5 volts flows through the encoder signal return circuit. If the module wants to request motor position a low side driver pulls the voltage low on the encoder signal return and the corresponding channel circuit indicating motor position.

The transfer case shift control module supplies 5 volts on all encoder channels, thus as these channels are pulled to ground, the module can interpret the location of the transfer case shift position.

This DTC detects an open, high resistance, or a short to voltage, in the encoder signal return circuit, or an open, high resistance, or short to voltage in the encoder channel circuits.

### Conditions for Running the DTC

- The ignition is ON.
- The system voltage is 9-18 volts.

### Conditions for Setting the DTC

The transfer case shift control module reads back a high voltage when a low voltage is expected, or low voltage when a high voltage is expected on the encoder channel circuits, or the encoder signal return circuit.

### Action Taken When the DTC Sets

- All motor activity will stop.
- All the transfer case shift control switch mode indicators will be commanded OFF.
- The SERVICE 4WD indicator will be latched on for the remainder of the current ignition cycle.
- If a new mode is requested while the DTC is present either current or history, the indicator for the mode requested will flash for 15 seconds and then go out.

### Conditions for Clearing the DTC

- The transfer case shift control module will clear the DTC if the condition for setting the DTC no longer exists.
- A history DTC will clear after 33 consecutive ignition cycles without a fault present.
- History DTCs can be cleared using a scan tool.

### Test Description

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The numbers below refer to the step numbers on the diagnostic table.

2. This step determines if 2 or more of the 5 volts encoder signal circuits are shorted together.
3. This step tests for proper voltage on the 4 encoder signal circuits.
4. This step tests for a short to voltage, open, or high resistance on the encoder low reference circuit.
5. This step determines which encoder signal circuits are shorted together.
6. This step determines if any of the encoder signal circuits have an open, or high resistance condition.
7. This step determines if a binding shift detent lever shaft is causing the DTC.

Step	Action	Value (s)	Yes	No
<i>Schematic Reference:</i> <a href="#">Transfer Case Control Schematics</a>				
<i>Connector End View Reference:</i> <a href="#">Transfer Case Control Connector End Views</a>				
1	Did you perform the Diagnostic System Check - Transfer Case?	--	Go to <a href="#">Step 2</a>	Go to <a href="#">Diagnostic System Check - Transfer Case</a>
<a href="#">2</a>	<ol style="list-style-type: none"> <li>1. Set the parking brake.</li> <li>2. Raise the vehicle on a hoist.</li> <li>3. Disconnect the connector at the transfer case.</li> <li>4. Turn the ignition ON, with the engine OFF.</li> <li>5. Install a scan tool.</li> <li>6. While monitoring the encoder channels on the scan tool, short to ground each of the encoder channel circuits on the module side of the harness with a jumper wire.</li> </ol> <p>Do more than one of the four encoder channels indicate OFF when each encoder channel circuit is individually shorted to ground?</p>	--	Go to <a href="#">Step 5</a>	Go to <a href="#">Step 3</a>
<a href="#">3</a>	<p>At the transfer case connector, using a digital multimeter (DMM), test the encoder signal circuits on the module side of the harness.</p> <p>Are the voltages within the specified range?</p>	4.3-4.7 V	Go to <a href="#">Step 4</a>	Go to <a href="#">Step 6</a>
<a href="#">4</a>	<p>With the ignition in the OFF position, test the encoder low reference circuit for a short to ground, short to voltage, open, or high resistance. Refer to <a href="#">Circuit Testing</a> and <a href="#">Wiring Repairs</a> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to <a href="#">Step 11</a>	Go to <a href="#">Step 7</a>
	<ol style="list-style-type: none"> <li>1. Disconnect C1 and C2 from the transfer case shift control module.</li> </ol>			

5	<p>2. Using a DMM, test for 2 or more encoder signal circuits being shorted together. Refer to <a href="#">Circuit Testing</a> and <a href="#">Wiring Repairs</a> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to <a href="#">Step 11</a>	Go to <a href="#">Step 10</a>
6	<p>Test the suspect circuits for a short to ground, short to voltage, open, or high resistance. Refer to <a href="#">Circuit Testing</a> and <a href="#">Wiring Repairs</a> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	--	Go to <a href="#">Step 11</a>	Go to <a href="#">Step 10</a>
7	<p>1. Remove the encoder motor. 2. Inspect the shift detent lever shaft for a binding condition. Refer to <a href="#">Transfer Case Motor/Encoder Replacement</a> .</p> <p>Did the shift detent lever shaft bind?</p>	--	Go to <a href="#">Step 8</a>	Go to <a href="#">Step 9</a>
8	<p>Remove the transfer case for disassembly and repair. Refer to <a href="#">Transfer Case Disassemble</a> .</p> <p>Did you complete the repair?</p>	--	Go to <a href="#">Step 11</a>	--
9	<p>Replace the encoder motor. Refer to <a href="#">Transfer Case Motor/Encoder Replacement</a> .</p> <p>Did you complete the repair?</p>	--	Go to <a href="#">Step 11</a>	--
10	<p>Replace the transfer case shift control module. Refer to <a href="#">Transfer Case Shift Control Module Replacement</a> .</p> <p>Did you complete the repair?</p>	--	Go to <a href="#">Step 11</a>	--
11	<p>1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.</p> <p>Does the DTC set?</p>	--	Go to <a href="#">Step 1</a>	System OK