

2007 Chevrolet Tahoe

2007 TRANSMISSION Transfer Case - NVG 246-NP8 - Avalanche, Escalade, Suburban, Tahoe & Yukon

DTC C0321

Circuit Description

The transfer case shift control module controls the transfer case lock solenoid.

The transfer case lock solenoid is released by being energized. This is accomplished by grounding the lock solenoid control circuit during gears shifts, and in the AUTO 4WD mode. Locking action is applied when power or ground are taken away from the lock solenoid, the transfer case motor is prevented from moving. The system is capable of providing a 2HI, 4HI and 4LO lock-up without the need of additional vehicle power to hold the transfer case in these positions.

This DTC detects an open lock solenoid coil, open motor lock control circuit, or an open motor lock feed circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC C0321 01: Transfer Case Lock Short to Battery

DTC C0321 06: Transfer Case Lock Short to Ground or Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Transfer Case Lock	C0321 06	C0321 06	C0321 01	-

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 tries to unapply, turn OFF the lock solenoid by grounding the motor control circuit.
- If the module does not sense the battery voltage at the motor lock control circuit prior to applying the motor lock, the DTC sets.
- Transfer Case Lock output reads back as a high voltage when a low voltage is expected.

Action Taken When the DTC Sets

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- All shifting is disabled.
- The SERVICE 4WD indicator remains illuminated for the remainder of the current ignition cycle.

Conditions for Clearing the DTC

- The transfer case shift control module will clear the DTC if the condition for setting the DTC is not currently present.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- History DTCs can be cleared using a scan tool.

Test Description

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

- 2:** Listen for an audible click when the encoder motor brake operates. Command both the ON and OFF states. Repeat the commands as necessary.
- 3:** This step tests for voltage at the lock solenoid feed side of the encoder motor lock solenoid.
- 4:** This step verifies that the lock solenoid battery positive circuit is not shorted to power, shorted to ground, or have high resistance.
- 5:** This step determines if the encoder motor lock solenoid is faulty by checking the internal resistance.
- 6:** This step tests the encoder motor brake solenoid for an internal short to ground.
- 7:** This step tests the control circuit of the encoder motor brake for a short to voltage or an open.
- 8:** This step determines if a corroded or damaged connector in the encoder motor harness is the cause.

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Step	Action	Values	Yes	No
Schematic Reference: <u>Transfer Case Control Schematics</u>				
Connector End View Reference: <u>Transfer Case Control Connector End Views</u>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	1. Install a scan tool. 2. Turn the ignition ON, with the engine OFF. 3. Apply the Park brake and put the transmission in Neutral. 4. With the scan tool, command the transfer case lock control ON and OFF. Do you hear the encoder motor lock click when turned ON and OFF with each command?	-	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
	1. Turn the ignition ON with the engine			

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3	OFF. 2. Using a DMM, measure the battery positive voltage circuit of the transfer case lock solenoid. Is the voltage within the specified range?	12.5-14.5 V	Go to Step 5	Go to Step 4
4	Inspect the lock solenoid battery positive circuit for an open, a short to ground, or a high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u>. Did you find and correct the condition?	-	Go to Step 10	Go to Step 5
5	1. Disconnect the transfer case encoder motor connector. 2. Check the internal resistance of the lock solenoid. Is the resistance within the specified values?	15-25 ohms	Go to Step 6	Go to Step 9
6	At the encoder motor pigtail check the 8 lock solenoid windings for an internal short to ground, by probing the lock solenoid control with a DMM and taking the other lead to ground. Did the DMM indicate a short to ground?	-	Go to Step 9	Go to Step 7
7	1. Disconnect the transfer case shift control module. 2. With a DMM, test the lock solenoid control circuit for a short to ground, a short to voltage or a high resistance. Did you find and correct the condition?	-	Go to Step 11	Go to Step 8
8	Check all connectors for corrosion or damage. Refer to <u>Connector Repairs</u>. Did you find and correct the condition?	-	Go to Step 11	Go to Step 10
9	Replace the encoder motor. Refer to <u>Transfer Case Encoder Motor Replacement</u>. Perform the Clutch Reset Procedure. Refer to <u>Transfer Case High/Low Clutch Reset</u>. Did you complete the repair?	-	Go to Step 11	-
10	Replace the transfer case shift control module. Refer to <u>Control Module References</u> for replacement, setup, and programming. Perform the Clutch Reset Procedure. Refer to <u>Transfer Case High/Low Clutch Reset</u>. Did you complete the repair?	-	Go to Step 11	-
	1. Use the scan tool in order to clear the			

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11	DTCs.	-		
	2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text.			
	Does the DTC set?		Go to Step 2	System OK