1999 - 2002 Corvette: Service Bulletin: DTC P0757 Set, SES Lamp Illuminated, Poor Performance of Transmission, Transmission Slipping

Number: 01-07-30-038
Subject: DTC P0757 Set, SES Lamp Illuminated, Poor Performance of Transmission, Transmission Slipping (Clean Transmission Valve Body and Case Oil Passages of Debris)
Model Year:

1999-2002 Chevrolet Camaro, Corvette
1999-2002 Pontiac Firebird
1999-2002 Chevrolet and GMC C/K Pickup and Utility Models (Silverado, Sierra, Suburban, Tahoe, Yukon, Yukon XL)
1999-2002 Chevrolet and GMC G-Van Models (Express, Savana)
1999-2002 Chevrolet and GMC M/L-Van Models (Astro, Safari)
1999-2002 Chevrolet and GMC S/T Pickup and Utility Models (S-10, Sonoma, Blazer, Jimmy)
2002 Chevrolet and GMC S/T Utility Models (New Style) (TrailBlazer, Envoy)
1999 Cadillac Escalade
1999-2002 Oldsmobile Bravada

Condition

Some customers may comment on any of the following conditions:

- The SES lamp is illuminated.
- No 3rd and 4th gear.
- The transmission does not shift correctly.
- The transmission feels like it shifts to Neutral or a loss of drive occurs.
- The vehicle free wheels above 48 km/h (30 mph). High RPM needed to overcome the free wheeling.

Cause

The most likely cause is chips or debris plugging the bleed orifice of the 2-3 shift valve. This will cause the transmission to stay in 2nd gear and return to 1st gear when and/or if the PCM attempts a 3-4 shift.

DTC P0757 code may also be set if the 2-3 shift valve were stuck or hung-up in its bore. Inspect the 2-3 shift valve and the 2-3 shuttle valve for free movement or damage and clean the valves, the bore and the valve body passages.

Correction
The 1-2 and 2-3 shift solenoid valves (also called A and B solenoids) are identical devices that control the movement of the 1-2 and 2-3 shift valves (the 3-4 shift valve is not directly controlled by a shift solenoid).

The solenoids are normally-open (not energized electrically) exhaust valves that work in combination to shift the transmission into four different forward gears. Opening and closing the exhaust valves within the solenoids redirect the transmission fluid, hydraulically moving shift valves and the corresponding shifting of the transmission gears.

The PCM energizes (turns On) or de-energizes (turns Off) each solenoid by either grounding or removing the ground to the solenoid through a quad driver (switch) within the PCM. This allows current flow through the coil winding of the solenoid which causes movement of the internal plunger, blocking or opening an internal orifice.

The 2-3 shift solenoid (SS) valve controls the fluid flow acting on the 2-3 shift valves.

The vehicle speed sensor (VSS) assembly provides vehicle speed information to the PCM. The VSS assembly is a permanent magnet (PM) generator. The PM generator produces a pulsing AC voltage as rotor teeth on the transmission

output shaft pass through the sensor's magnetic field. The AC voltage level and the number of pulses increase as the speed of the vehicle increases. Output voltage varies with speed from a minimum of 0.5 volts at 100 RPM of the transmission output shaft to more than 100 volts at 8000 RPM of the transmission output shaft. The PCM uses the pulsing voltage to determine vehicle speed. The PCM uses the vehicle speed signal to determine shift timing and TCC scheduling.

Estimated gear ratio is calculated by the PCM, using the estimated torque converter turbine speed (estimated turbine speed is calculated from engine speed and engine torque) divided by the transmission output speed (VSS). The estimated gear ratio is displayed on the Tech 2 as a range of 0.00:1 to 8.00:1.

Gear	1-2 Shift Solenoid	2-3 Shift Solenoid	Gear Ratio
1	ON	ON	3.059:1
2	OFF	ON	1.625:1
3	OFF	OFF	1.00:1
4	ON	OFF	.696:1

P0757 will be set, stored within the PCM, when the PCM has detected an incorrect shift pattern when both of the following occur:

- The PCM commands third gear for 1 second or more.
- The engine torque is 68-542 N·m(50-400 lb ft).
- The engine speed is greater than 1.44 times the TCC slip speed.
- The PCM then computes the estimated gear ratio and then compares the estimated gear ratio with what the third gear ratio should be (1.00:1). If the computed gear ratio is in the range of 1.575:1 to 1.825:1, the PCM has determined the transmission is not in 3 rd gear. It is, in fact, in second gear hydraulically.
- All conditions are met for more than 2 seconds.

AND

- The PCM commands fourth gear for 1 second or more.
- The engine torque is 0-542 N·m(0-400 lb ft).
- The engine speed is greater than 1.13 times the TCC slip speed.
- The PCM then computes the estimated gear ratio and compares the estimated gear ratio with the expected fourth gear ratio (.696:1). If the computed gear ratio is in the range of 1.8:1 to 3.26:1, the PCM has determined the transmission is not in 4th gear. It is, in fact, in first or second gear hydraulically.
- All conditions are met for more than 2 seconds.

The PCM then takes the following actions:

- Records the operating conditions when the DTC was set, so it may be retrieved with the Tech 2 from the Freeze frame and Failure Records.
- Illuminates the malfunction indicator lamp (MIL).
- Commands 3rd gear.
- Commands maximum line pressure.
- Will not allow TCC engagement.
- Freezes transmission shift adapt functions.
- Stores the P0757 as a history trouble code when the ignition is shut off.

Step	Action	Value(s)	Yes	No
1	Did you perform the Powertrain Diagnostic System Check?	Go to Step 2	Go to Diagnostic System Check - Engine Controls in Engine Controls	
2	1.	Go to Step 3	Go to Diagnostic	

			Aids		
	2. 3. 4. Did you detect a 1-2-2-1 shift pattern?				
3	1. Inspect the shift solenoid/ hydraulic circuit	Go to step 4			

		for the following conditions: 0. Debris/ Chips in the oil passages 0. Debris/ Chips restricting oil flow in the passage's of the case or through the spacer plate gasket into the valve body 0. A cracked, broken or leaking 2-3 shift so				

	lenoid 0. A 2-3 shift valve which is stuck or hung up in the valve body bore 0. A 2-3 shuttle valve which is stuck or hung up in its bore Clean and inspect the valves and bores of the valve body as well as the transmission case for debris or contamination. Did you find and correct the				

	condition?				
4	Perform the following procedure in order to verify the repair: 1. Select DTC. 2. Select Clear Info. 3. Road test the vehicle in D4 range, only if traffic and road conditions permit. Hold the throttle at 40% and accelerate to 64 km/h (40 mph). 4. Select	System OK	Go to Step 1		

	Specific DTC. 5. Enter DTC P0757. Has the test run and passed?			

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