



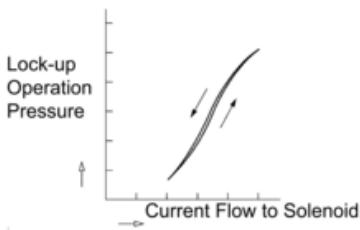
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Model Year: 2009	Model: Corolla	Doc ID: RM000000W8D043X
Engine Family: 2ZR-FE	Body Type: 4Dr. Sedan	VDS: BL40E BU40E BU42E
Title: U341E AUTOMATIC TRANSMISSION / TRANSAXLE: AUTOMATIC TRANSMISSION SYSTEM: P2757: Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU) (2009 Corolla)		

SYSTEM DESCRIPTION

DTC	P2757	Torque Converter Clutch Pressure Control Solenoid Performance (Shift Solenoid Valve SLU)
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SYSTEM DESCRIPTION



The ECM uses the signals from the throttle position sensor, turbine (input) speed sensor, vehicle speed sensor and crankshaft position sensor to monitor the engagement condition of the lock-up clutch.

Then the ECM compares the engagement condition of the lock-up clutch with the lock-up schedule in the ECM memory to detect mechanical problems of shift solenoid valve SLU, valve body and torque converter clutch.

DTC No.	DTC Detection Condition	Trouble Area
P2757	Lock-up does not occur when driving in lock-up range or lock-up remains ON in lock-up OFF range. (2-trip detection logic)	<ul style="list-style-type: none"> • Shift solenoid valve SLU remains open or closed • Valve body is blocked • Shift solenoid valve SLU • Torque converter clutch • Automatic transaxle (clutch, brake or gear etc.) • Line pressure is too low

MONITOR DESCRIPTION

Torque converter lock-up is controlled by the ECM based on the speed sensor (NT), engine rpm (NE), engine load, engine coolant temperature, vehicle speed, transmission fluid temperature, and gear selection. The ECM determines the lock-up status of the torque converter by comparing the engine rpm (NE) to the input turbine rpm (NT). The ECM calculates the actual

transmission gear by comparing input turbine rpm (NT) to output shaft speed. When conditions are appropriate, the ECM requests lock-up by applying the control voltage to shift solenoid valve SLU. When SLU is turned on, it applies pressure to the lock-up relay valve and locks the torque converter clutch.

If the ECM detects no lock-up after lock-up has been requested or if it detects lock-up when it is not requested, the ECM interprets this as a fault in shift solenoid valve SLU or lock-up system performance. The ECM turns on the MIL and stores the DTC.

Example:

When either of the following is met, the system judges it as a malfunction.

- There is a difference in the rotations of the input side (engine speed) and output side (input turbine speed) of the torque converter when the ECM commands lock-up.
(Engine speed is at least 100 rpm greater than input turbine speed.)
- There is no difference in the rotations of the input side (engine speed) and output side (input turbine speed) of the torque converter when the ECM commands lock-up off.
(The difference between engine speed and input turbine speed is less than 35 rpm.)

MONITOR STRATEGY

Related DTCs	P2757: Shift solenoid valve SLU/OFF malfunction Shift solenoid valve SLU/ON malfunction
Required sensors/Components	Shift solenoid valve SLU, Speed sensor (NT), Crankshaft position sensor (NE), Engine coolant temperature sensor (ECT)
Frequency of operation	Continuous
Duration	OFF malfunction: 3.5 seconds ON malfunction: 1.8 seconds
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following conditions are common to OFF malfunction and ON malfunction.

The monitor runs whenever the following DTCs are not present.	None
Time after shifting N to D	4.5 seconds or more
ECT (Engine Coolant Temperature)	60°C (140°F) or more
Transmission shift position	D
ECM selected gear	3rd or 4th

Vehicle speed	15.5 mph (25 km/h) or more
Shift solenoid valve S1 circuit	No circuit malfunction
Shift solenoid valve S2 circuit	No circuit malfunction
Shift solenoid valve SLU circuit	No circuit malfunction
ECT sensor circuit	No circuit malfunction
Electronic Throttle Control System (if applicable)	No circuit malfunction
Speed sensor (NT) circuit	No circuit malfunction
Speed sensor (SPD) circuit	No circuit malfunction

OFF malfunction:

ECM lock-up command	ON
Duration time from lock-up on command	3 seconds or more
Actual gear	3rd or 4th

ON malfunction:

ECM lock-up command	OFF
Throttle valve opening angle	8 % or more
Vehicle speed	Less than 37.3 mph (60 km/h)
Actual gear	3rd
Calculated load value	22 % or more

TYPICAL MALFUNCTION THRESHOLDS

OFF malfunction:

Engine speed - Input (turbine) speed (NE - NT)	100 rpm or more
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[ON malfunction]

2 detections are necessary per driving cycle.

1st detection: Temporary flag ON

2nd detection: Pending fault code ON

Vehicle speed must be under 6.2 mph (10 km/h) once before 2nd detection.

ON malfunction:

Difference between engine speed and Input (turbine) speed	Less than 35 rpm
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INSPECTION PROCEDURE

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

1. PERFORM ACTIVE TEST

- (a) Warm up the engine.
- (b) Turn the ignition switch off.
- (c) Connect the Techstream to the DLC3.
- (d) Turn the ignition switch to ON.
- (e) Turn on the Techstream.
- (f) Select the item: "Powertrain / Engine and ECT / Active Test".
- (g) According to the display on the Techstream, perform the Active Test.

Tester Display	Test Part	Control Range	Diagnostic Note
Activate the Lock Up	<p>[Test Details]</p> <p>Control the shift solenoid SLU to set the automatic transaxle to the lock-up condition.</p> <p>[Vehicle Condition]</p> <p>Vehicle Speed: 60 km/h (36 mph) or more, and 4th gear</p>	ON/OFF	Possible to check the SLU operation.

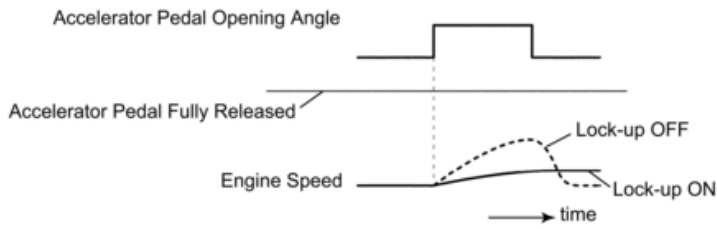
HINT:

- This test can be conducted when the vehicle speed is 60 km/h (36 mph) or more.
- This test can be conducted in the 4th gear.

- (h) Lightly depress the accelerator pedal and check that the engine speed does not change abruptly.

HINT:

- When changing the accelerator pedal opening angle while driving, if the engine speed does not change, lock-up is on.
- Slowly release, but not fully, the accelerator pedal in order to decelerate. (Fully releasing the pedal will close the throttle valve and lock-up may be turned off.)



PROCEDURE

1. CHECK OTHER DTCS OUTPUT (IN ADDITION TO DTC P2757)

- (a) Connect the Techstream to the DLC3.
- (b) Turn the ignition switch to ON and the Techstream main switch on.
- (c) Select the item: "Powertrain / Engine and ECT / Trouble Codes".
- (d) Read the DTCs using the Techstream.

Result:

Result	Proceed to
P2757	A
P2757 and other DTCs	B

HINT:

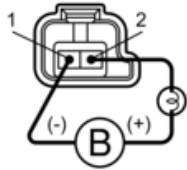
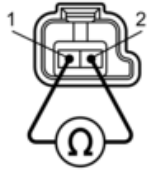
If any other codes besides "P2757" are output, perform the troubleshooting for those DTCs first.

B [▶ GO TO DTC CHART](#)

A
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2. INSPECT SHIFT SOLENOID VALVE SLU

Shift Solenoid Valve SLU:



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- (a) Remove the shift solenoid valve SLU.
- (b) Measure the resistance according to the value(s) in the table below.

Standard resistance:

Tester Connection	Condition	Specified Condition
1 - 2	20°C (68°F)	5.0 to 5.6 Ω

- (c) Connect the positive (+) lead with a 21 W bulb to terminal 2 and negative (-) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.

OK:

The solenoid makes an operating sound.

NG ▶ [REPLACE SHIFT SOLENOID VALVE SLU](#)

OK
▼

3. INSPECT TRANSMISSION VALVE BODY ASSEMBLY

OK:

There are no foreign objects on each valve and they operate smoothly.

NG ▶ [REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY](#)

OK



4.	INSPECT TORQUE CONVERTER CLUTCH ASSEMBLY
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OK:

The torque converter clutch operates normally.

NG	▶ REPLACE TORQUE CONVERTER CLUTCH ASSEMBLY
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OK	▶ REPAIR OR REPLACE AUTOMATIC TRANSAXLE ASSEMBLY
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