

DTC	P0741	TORQUE CONVERTER CLUTCH SOLENOID PERFORMANCE (SHIFT SOLENOID VALVE DSL)
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SYSTEM DESCRIPTION

The ECM uses the signals from the throttle position sensor, Air-flow meter, turbine (input) speed sensor, intermediate (counter) shaft 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 a mechanical problems of the shift solenoid valve DSL, valve body and torque converter clutch.

DTC No.	DTC Detection Condition	Trouble Area
P0741	Lock-up does not occur when driving in lock-up range (normal driving at 85 km/h [53 mph]), or lock-up remains ON in lock-up OFF range (2-trip detection logic)	<ul style="list-style-type: none">• Shift solenoid valve DSL remains open or closed• Valve body is blocked• Shift solenoid valve DSL• Torque converter clutch• Automatic transaxle (clutch, brake or gear etc.)• Line pressure is too low• ECM

MONITOR DESCRIPTION

Torque converter lock-up is controlled by the ECM based on speed sensor (NT), speed sensor (NC), engine rpm, engine load, engine temperature, vehicle speed, transmission 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 counter gear rpm (NC). When conditions are appropriate, the ECM requests "lock-up" by applying control voltage to shift solenoid DSL. When the DSL is turned on, solenoid DSL 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 the shift solenoid valve DSL or lock-up system performance. The ECM will turn on the MIL and store the DTC.

Example:

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

- There is a difference in rotation between before and after torque converters even when the ECM commands lock-up.
(Engine speed is at least 75 rpm greater than input turbine speed.)
- There is no difference in rotation between before and after torque converters even when the ECM commands lock-up off.
(The difference between engine speed and input turbine speed is less than 35 rpm.)

INSPECTION PROCEDURE

HINT:

Performing the Intelligent Tester II Active Test allows relay, Vacuum Switching Valve (VSV), actuator and other items to be operated without removing any parts. Performing the Active Test early in troubleshooting is one way to shorten labor time. The Data List can be displayed during the Active Test.

- (a) Warm up the engine.
- (b) Turn the ignition switch off.
- (c) Connect the Intelligent Tester II to the DLC3.
- (d) Turn the ignition switch to the ON position.
- (e) Turn on the tester.
- (f) Clear the DTC.
- (g) Select the item "Diagnosis / OBD·MOBD / Power train / Engine and ECT / Active Test / Control the Lock Up".
- (h) Follow the instructions on the tester and read the Active Test.

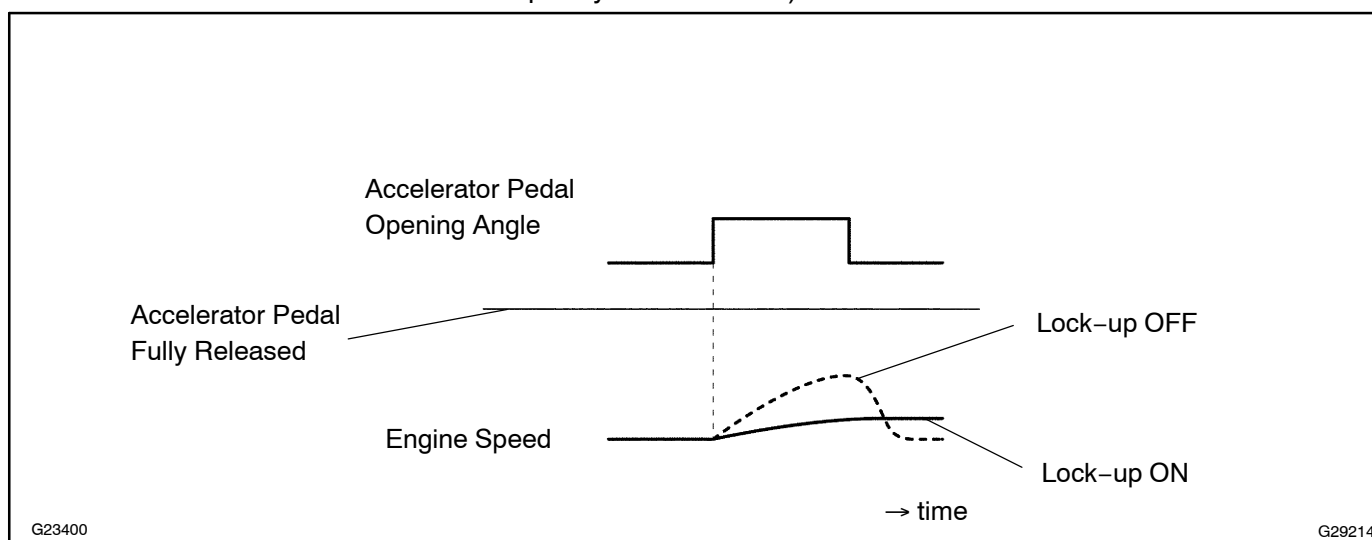
Item	Test Details	Diagnostic Note
Control the Lock Up	[Test Details] Control the shift solenoid DSL to set the automatic transaxle to the lock-up condition. [Vehicle Condition] Vehicle Speed: 58 km/h (36 mph) or more	Possible to check the DSL operation.

HINT:

- This test can be conducted when the vehicle speed is 58 km/h (36 mph) or more.
 - This test can be conducted with the 3rd or O/D gear.
- (i) 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.)



1 CHECK OTHER DTCs OUTPUT (IN ADDITION TO DTC P0741)

- Connect the Intelligent Tester II to the DLC3.
- Turn the Ignition switch to the ON position.
- Turn on the tester.
- Select the Item "Powertrain/Engine and ECT/DTC/Current or Pending".
- Read the DTCs using the Intelligent Tester II.

Result:

Display (DTC output)	Proceed to
Only "P0741" is output	A
"P0741" and other DTCs	B

HINT:

If any other codes besides "P0741" is output, perform the troubleshooting for those DTCs first.

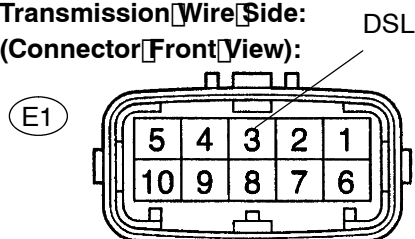
NG

GO TO RELEVANT DTC CHART
(SEE PAGE 05-783)

A

2 INSPECT TRANSMISSION WIRE (DSL)

Transmission Wire Side:
(Connector Front View):



C54864

- Disconnect the Transmission wire connector from the transaxle.
- Measure the resistance according to the value(s) in the table below.

Standard:

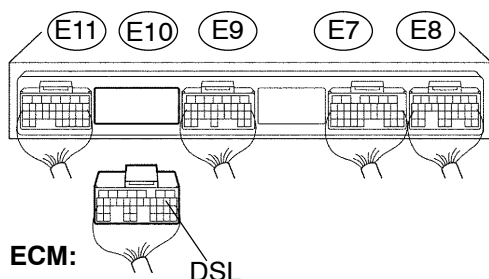
Tester Connection	Specified Condition
3 - Body Ground	20 °C (68 °F)
	11 to 13 Ω

NG

Go to step 4

OK

3 CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - ECM)



P C82158

C91565

- Connect the Transmission wire connector.
- Disconnect the ECM connector.
- Measure the resistance according to the value(s) in the table below.

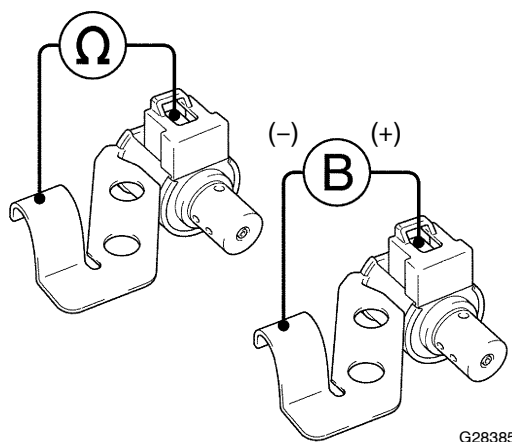
Standard:

Tester Connection	Specified Condition
E10 - 9 (DSL) - Body Ground	20 °C (68 °F)
	11 to 13 Ω

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REPAIR OR REPLACE HARNESS OR CONNECTOR (SEE PAGE 01-32)

OK

4 INSPECT SHIFT SOLENOID VALVE (DSL)**Shift Solenoid Valve DSL:**

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

Standard:

Tester Connection	Specified Condition 20°C (68°F)
Solenoid Connector (DSL) – Solenoid Body (DSL)	11 to 13 Ω

- (c) Connect positive (+) lead to the terminal of solenoid connector, negative (-) lead to the solenoid body.

OK:

The solenoid valve makes an operating noise.

NG**REPLACE SHIFT SOLENOID VALVE (DSL)****OK****5 CHECK TRANSMISSION WIRE (SEE PAGE 01-32)****OK:**

The connectors and pins are securely installed.

There is no open or short on the wire harness.

NG

REPAIR OR REPLACE TRANSMISSION WIRE
 (See Pub. No. RM864E, page 40-23)

OK**6 INSPECT TRANSMISSION VALVE BODY ASSY (See chapter 2 in the problem symptoms table) (SEE PAGE 05-766)****OK:**

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

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REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSY
 (See Pub. No. RM864E, page 40-26)

OK**7 INSPECT TORQUE CONVERTER CLUTCH ASSY (See Pub. No. RM864E, page 40-19)****OK:**

The torque converter clutch operates normally.

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REPLACE TORQUE CONVERTER CLUTCH ASSY

OK**REPAIR AUTOMATIC TRANSAXLE ASSY (See Pub. No. RM864E, page 40-7)**