DTC	P0761	SHIFT SOLENOID "C" PERFORMANCE (SHIFT SOLENOID VALVE S3)

SYSTEM DESCRIPTION

The ECM uses signals from the output shaft speed sensor and input speed sensor to detect the actual gear position (1st, 2nd, 3rd, 4th, 5th or 6th gear).
Then the ECM compares the actual gear with the shift schedule in the ECM memory to detect mechanical problems of the shift solenoid valves and valve body.

DTC No.	DTC Detection Condition	Trouble Area
P0761	S3 stuck ON malfunction*1: When the ECM directs the gearshift to switch to 5th or 6th gear, the engine overruns (clutch slips). The ECM determines there is a malfunction when either of the following conditions is met: (a) When the ECM directs the gearshift to switch to 4th gear, the actual gear is shifted to 3rd. (b) When the ECM directs the gearshift to switch to 5th gear, the engine overruns (clutch slips).	• Shift solenoid valve S3 remains open • Valve body is blocked • Automatic transmission (clutch, brake or gear, etc.) • ECM
↑	S3 stuck OFF malfunction*2: Shifting to 1st, 2nd, and 3rd gears is impossible. The ECM determines there is a malfunction when the following conditions are both met: (a) When the ECM directs the gearshift to switch to 1st gear, the actual gear is shifted to 3rd. (b) When the ECM directs the gearshift to switch to 6th gear, the actual gear is shifted to 6th.	• Shift solenoid valve S3 remains closed • Valve body is blocked • Automatic transmission (clutch, brake or gear, etc.) • ECM

HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

ECM command gearshift	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under S3 stuck ON malfunction	↑	↑	↑	3rd	N*	N*
*2: Actual gear position under S3 stuck OFF malfunction	3rd	4th	4th	4th	5th	6th

N*: Neutral

- Gear position during fail–safe operation:
If any malfunction is detected, the ECM changes into the fail–safe mode to shift into the gear positions as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under fail safe mode when S3 stuck ON malfunction	↑	↑	↑	3rd	3rd	3rd
*2: Actual gear position under fail safe mode when S3 stuck OFF malfunction	3rd	4th	4th	4th	5th	6th

MONITOR DESCRIPTION

This DTC indicates "stuck ON malfunction" or "stuck OFF malfunction" of the shift solenoid valve S3.
The ECM commands gear shifts by turning the shift solenoid valves "ON/OFF". When the gear position commanded by the ECM and the actual gear position are not same, the ECM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0761: Shift solenoid valve S3/OFF malfunction Shift solenoid valve S3/ON malfunction
Required sensors/Components	Shift solenoid valve S3
Frequency of operation	Continuous
Duration	OFF malfunction (A), (B) and ON malfunction (A) 0.4 sec. ON malfunction (B) 3 sec. ON malfunction (C) 1 sec.
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The following items are common to all conditions below.

The monitor will run whenever this DTC is not present.	See page 05–621
Turbine speed sensor circuit	Not circuit malfunction
Output speed sensor circuit	Not circuit malfunction
Shift solenoid valve S1 circuit	Not circuit malfunction
Shift solenoid valve S2 circuit	Not circuit malfunction
Shift solenoid valve S3 circuit	Not circuit malfunction
Shift solenoid valve S4 circuit	Not circuit malfunction
Shift solenoid valve SR circuit	Not circuit malfunction
Shift solenoid valve SL1 circuit	Not circuit malfunction
Shift solenoid valve SL2 circuit	Not circuit malfunction
ECT (Engine coolant temperature) sensor circuit	Not circuit malfunction
KCS sensor circuit	Not circuit malfunction
ETCS (Electric throttle control system)	Not system down
Transmission range	"D"
ECT	40°C (104°F) or more
Spark advance from Max. retard timing by KCS control	0° CA or more
Engine	Starting

OFF malfunction (A)

ECM selected gear	2nd
Vehicle speed	2 km/h (1.2 mph) or more
Output speed	2nd → 1st down shift point or more
Throttle valve opening angle	6.5% or more at 2,000 rpm (Conditions vary with engine speed)

OFF malfunction (B)

ECM selected gear	6th
Vehicle speed	2 km/h (1.2 mph) or more
Throttle valve opening angle	6.5% or more at 2,000 rpm (Conditions vary with engine speed)

ON malfunction (A)

ECM selected gear	4th
Vehicle speed	2 km/h (1.2 mph) or more
Throttle valve opening angle	6.5% or more at 2,000 rpm (Conditions vary with engine speed)

ON malfunction (B)

Current ECM selected gear	5th
Last ECM selected gear	4th
Vehicle speed (During transition from 4th to 5th gear)	Less than 100 km/h (62.2 mph)

ON malfunction (C)

ECM selected gear	5th
Engine speed – Turbine speed (NE – NT) (After transition to 5th gear)	Less than 150 rpm
Vehicle speed (After transition to 5th gear)	Less than 100 km/h (62.2 mph)

TYPICAL MALFUNCTION THRESHOLDS

[OFF malfunction]

Both of the following conditions are met: OFF malfunctions (A) and (B)

OFF malfunction (A)

Turbine speed/Output speed (NT/NO)	0.93 or more and 1.07 or less (This means actual gear is 3rd)

OFF malfunction (B)

Turbine speed/Output speed (NT/NO)	0.50 or more and 0.64 or less (This means actual gear is 6th)

[ON malfunction]

One of the following conditions is met: ON malfunctions (A), (B) and (C)

ON malfunction (A)

Turbine speed/Output speed (NT/NO)	1.23 or more and 1.48 or less (This means actual gear is 3rd)

ON malfunction (B)

Turbine speed – Output speed x 4th gear ratio (NT–NO x 4th gear ratio)	1,000 rpm or more

ON malfunction (C)

Turbine speed – Output speed x 5th gear ratio (NT–NO x 5th gear ratio)	1,000 rpm or more

INSPECTION PROCEDURE

HINT:

Performing the ACTIVE TEST using the hand–held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as the first step of troubleshooting is one method to shorten labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

(a) Warm up the engine.
(b) Turn the ignition switch off.
(c) Connect the hand–held tester together with the CAN VIM (controller area network vehicle interface module) to the DLC3.
(d) Turn the ignition switch to the ON position.
(e) Push the ”ON” button of the hand–held tester.
(f) Clear the DTC.
(g) Select the item ”DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST/SHIFT”.
(h) According to the display on tester, perform the ”ACTIVE TEST”.

HINT:

While driving, the shift position can be forcibly changed with the hand–held tester.

Comparing the shift position commanded by the ACTIVE TEST with the actual shift position enables you to confirm the problem (see page 05–643).

Item	Test Details	Diagnostic Note
SHIFT	[Test Details] Operate the shift solenoid valve and set the each shift position by yourself. [Vehicle Condition] • IDL: ON • Less than 50 km/h (31 mph) [Others] • Press ”→” button: Shift up • Press ”←” button: Shift down	Possible to check the operation of the shift solenoid valves.

HINT:

- This test can be conducted when the vehicle speed is 50 km/h (31 mph) or less.
- The 4th to 5th and 5th to 6th up–shiftings must be performed with the accelerator pedal released.
- The 6th to 5th and 5th to 4th down–shiftings must be performed with the accelerator pedal released.
- Do not operate the accelerator pedal for at least 2 seconds after shifting and do not shift successively.
- The shift position commanded by the ECM is shown in the DATA LIST/SHIFT display on the hand–held tester.
- The shift solenoid valve S3 is turned on/off normally when the shift lever is in the D position:

ECM command gearshift	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S3	ON	ON	ON	OFF	OFF	OFF

1	CHECK OTHER DTCS OUTPUT(IN ADDITION TO DTC P0761)

(a) Connect the hand–held tester to the DLC3.
(b) Turn the ignition switch to the ON position and push the hand–held tester main switch ON.
(c) Select the item "DIAGNOSIS/ENHANCED OBD II/DTC INFO/CURRENT CODES".
(d) Read the DTCs using the hand–held tester.

Result:

Display (DTC output)	Proceed to
Only "P0761" is output	A
"P0761" and other DTCs	B

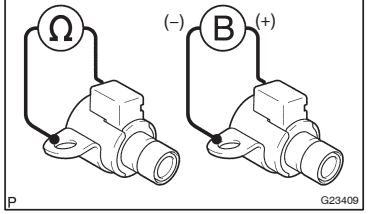
HINT:
If any other codes besides "P0761" are output, perform troubleshooting for those DTCs first.

B → GO TO RELEVANT DTC CHART (SEE PAGE 05–650)

A

2	INSPECT SHIFT SOLENOID VALVE(S3)

Shift Solenoid Valve S3:



(a) Remove the shift solenoid valve S3.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition 20°C (68°F)
Solenoid Connector (S3) – Solenoid Body (S3)	11 to 15 Ω

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

OK:
The solenoid makes an operating noise.

NG → REPLACE SHIFT SOLENOID VALVE(S3)

OK

3	INSPECT TRANSMISSION VALVE BODY ASSY(See chapter 2 in the problem symptoms table) (SEE PAGE 05–630)

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

NG → REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSY (SEE PAGE 40–32)

OK

4	INSPECT TORQUE CONVERTER CLUTCH ASSY (SEE PAGE 40–26)

OK:
The torque converter clutch operates normally.

NG → REPLACE TORQUE CONVERTER CLUTCH ASSY

OK

REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSY (SEE PAGE 40–16)