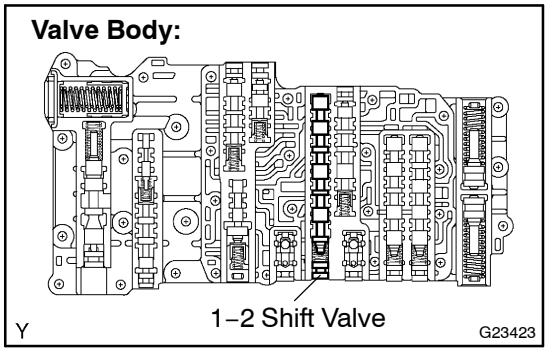
DTC P0781 1–2 SHIFT (1–2 SHIFT VALVE)



SYSTEM DESCRIPTION

The 1–2 shift valve performs shifting to 1st gear and other gears.

DTC No.	DTC Detection Condition	Trouble Area
P0781	1–2 shift valve malfunction: Shifting to 2nd and 4th gears is impossible. When the ECM directs the gearshift to switch to 5th or 6the gear, the engine overruns (clutch slips). (2–trip detection logic) (a) and (b), or (a) and (c) (a) When the ECM directs the gearshift to switch to 2nd gear, the actual gear is shifted to 1st. (b) When the ECM directs the gearshift to switch to 4th gear, the actual gear is shifted to 3rd. (c) When the ECM directs the gearshift to switch to 5th gear, the engine overruns (clutch slips).	• Valve body is blocked up or stuck (1–2 shift valve) • 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
Actual gear position under malfunction	↑	1st	↑	3rd	N*	N*

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
Actual gear position under fail safe mode	↑*1	1st*1	↑	3rd	3rd	3rd

*1: Under engine braking, downshifting to 1st or 2nd gear is prohibited.

MONITOR DESCRIPTION

This DTC indicates that the 1–2 shift valve in the valve body is locked in the direction the spring compresses. The ECM commands gear shifts by turning the shift solenoid valves ”ON/OFF” and switching oil pressure to the valves in the valve body.

The ECM calculates the ”actual” transmission gear by comparing the signals from the input speed sensor (NT) and the output speed sensor (SP2). The ECM can detect many mechanical problems in the shift solenoids, valve body, and the transmission clutches, brakes, and gears. If the ECM detects that the actual gear position and the commanded gear position are different, it will illuminate the MIL and store the DTC .

INSPECTION PROCEDURE

1	CHECK OTHER DTCS OUTPUT(IN ADDITION TO DTC P0781)

(a) Connect the Intelligent Tester II to the DLC3.
(b) Turn the ignition switch to the ON position.
(c) Turn on the tester.
(d) Select the item ”Power train / Engine and ECT / DTC / Current or Pending”.
(e) Read the DTCs using the Intelligent Tester II.

Result:

Display (DTC output)	Proceed to
Only ”P0781” is output	A
”P0781” and other DTCs	B

HINT:
If any other codes besides ”P0781” are output, perform troubleshooting for those DTCs first.

B → **GO TO RELEVANT DTC CHART (SEE PAGE 05–560)**

A

2	PERFORM ACTIVE TEST BY INTELLIGENT TESTER II

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 / Powertrain / Engine and ECT / Active Test / Control the Shift Position".
(h) Follow the instructions on the tester and read the Active Test.
HINT:
While driving, the shift position can be forcibly changed with the Intelligent Tester II.
Comparing the shift position commanded by the ACTIVE TEST with the actual shift position enables you to confirm the problem (see page 05–553).

Item	Test Details	Diagnostic Note
Control the Shift Position	[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 Status) display on the Intelligent Tester II.
- Gear positions in the event of a solenoid valve mechanical problem:

Tester command gear shift	1st	2nd	3rd	4th	5th	6th
Actual gear position under malfunction	↑	1st	↑	3rd	N*	N*

N*: Neutral
OK:
Gear position changes in accordance with the tester command.

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

OK

3	CLEAR THE DTC AND RUNNING TEST

(a) Clear the DTC, and check DTC again after conducting the "MONITOR DRIVE PATTERN FOR ECT TEST" (see page 05–537).

OK:

No DTC code

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

OK

END