

DTC P0781 1-2 Shift (1-2 Shift Valve)

for Preparation [Click here](#)

DESCRIPTION

The 1-2 shift valve performs shifting to 1st gear and other gears. When shifting to 2nd and 4th gears is impossible, or when the ECM directs the transmission to switch to 5th or 6th gear and the engine overruns (clutch slips), this DTC is stored.

DTC Code	DTC Detection Condition	Trouble Area
P0781	Conditions (a) and (b), or (a) and (c) are met (2-trip detection logic*1, 1-trip detection logic*2): (a) When the ECM directs the transmission to switch to 2nd gear, the actual gear is shifted to 1st. (b) When the ECM directs the transmission to switch to 4th gear, the actual gear is shifted to 3rd. (c) When the ECM directs the transmission to switch to 5th gear, the engine overruns (clutch slips).	<ul style="list-style-type: none">Valve body is blocked or stuck (1-2 shift valve)Shift solenoid valve SLT remains open or closedAutomatic transmission (clutch, brake, gear, etc.)

*1: w/ OBD

*2: w/o OBD

HINT:

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

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

N*: Neutral

- Gear position during fail-safe operation:
If any malfunction is detected, the ECM enters fail-safe mode and performs gear shifts as shown in the table below.

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th
Actual gear position under fail-safe mode	1st*	1st*	3rd	3rd	3rd	3rd

1st*: 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 with the spring compressed.

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, 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 DTC OUTPUT (IN ADDITION TO DTC P0781)

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the intelligent tester on.
- Enter the following menus: Powertrain / Engine and ECT / DTC.
- Read the DTCs using the tester.

Result

Result	Proceed to
Only P0781 is output	A
P0781 and other DTCs are output	B

HINT:

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

B

GO TO DTC CHART ([Click here](#))

A

2.PERFORM ACTIVE TEST USING INTELLIGENT TESTER (RUNNING TEST)

CAUTION:

This test should always be performed with at least 2 people.

NOTICE:

- Perform the test while the ATF temperature is between 50 and 80°C (122 and 176°F).
- Perform the test with the A/C turned off.

HINT:

Using the intelligent tester 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.

- Warm up the engine.
- Turn the engine switch off.
- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the intelligent tester on.
- Enter the following menus: Powertrain / Engine and ECT / Active Test.
- According to the display on the tester, perform the Active Test.

HINT:

While driving, the shift position can be forcibly changed with the intelligent tester.

Engine and ECT

Tester Display	Test Part	Control Range	Diagnostic Note
Control the Shift Position	Operate shift solenoid valves and set each shift position	<ul style="list-style-type: none"> • Press "→" button: Shift up • Press "←" button: Shift down 	Possible to check operation of the shift solenoid valves. [Vehicle Condition] 50 km/h (30 mph) or less

HINT:

- This test can be conducted when the vehicle speed is 50 km/h (30 mph) or less.
- The 4th to 5th and 5th to 6th up-shifts must be performed with the accelerator pedal released.
- The 6th to 5th and 5th to 4th down-shifts 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 display on the tester.
- Gear positions in the event of a solenoid valve mechanical problem:

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

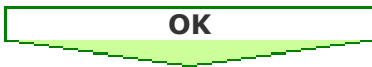
N*: Neutral

OK:

Gear position changes in accordance with the tester command.



REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY ([Click here](#))



3.PERFORM ACTIVE TEST USING INTELLIGENT TESTER (SHIFT SOLENOID VALVE SLT)

NOTICE:

- Perform the test while the ATF temperature is between 50 and 80°C (122 and 176°F).
- Be careful to prevent the hose of SST from interfering with the exhaust pipe.
- Perform the test with the A/C off.

HINT:

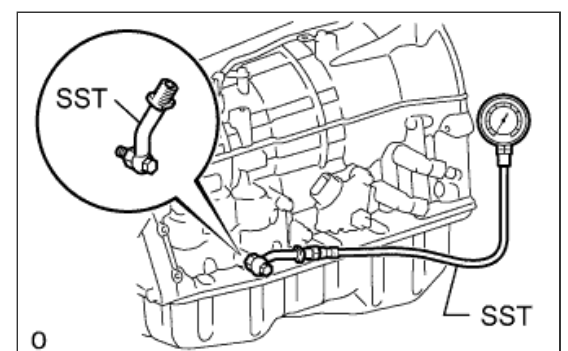
Using the intelligent tester to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active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

- Remove the test plug from the transmission case and connect SST.

SST

09992-00095 (09992-00231, 09992-00271)

- Connect the intelligent tester to the DLC3.
- Start the engine and warm it up.
- Measure the line pressure with SST.
- Turn the intelligent tester on.



f. Enter the following menus: Powertrain / Engine and ECT / Active Test.

g. According to the display on the tester, perform the Active Test.

h. Measure the line pressure.

Engine and ECT

Tester Display	Test Part	Control Range	Diagnostic Note
Activate the Solenoid (SLT)*	Operate shift solenoid valve SLT and raise line pressure	ON or OFF HINT: <ul style="list-style-type: none"> • OFF: Line pressure up (when Active Test "Activate the Solenoid (SLT)" performed, ECM commands shift solenoid valve SLT to turn off) • ON: No action (normal operation) 	[Vehicle Condition] <ul style="list-style-type: none"> • Vehicle stopped • Engine idling

HINT:

*: Activate the Solenoid (SLT) in the Active Test is performed to check the line pressure changes by connecting SST to the automatic transmission, which is used in the Hydraulic Test ([Click here](#)) as well. Note that the pressure values in the Active Test and Hydraulic Test are different.

OK:

The line pressure changes as specified when performing the Active Test.

NG → REPLACE SHIFT SOLENOID VALVE SLT ([Click here](#))

OK

4.CLEAR DTC AND PERFORM RUNNING TEST

a. Clear the DTC ([Click here](#)).

b. Check for the DTC again after conducting the Monitor Drive Pattern ([Click here](#)).

OK:

No DTC code output.

NG → REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY ([Click here](#))

OK

END

