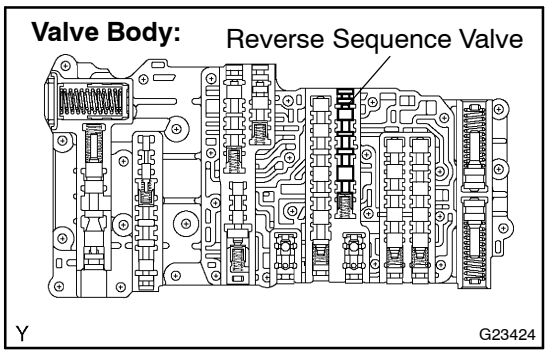
DTC P0729 GEAR 6 INCORRECT RATIO



SYSTEM DESCRIPTION

The ECM uses signals from the output speed sensor SP2 and input speed sensor NT 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, valve body or automatic transmission (clutch, brake or gear, etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0729	6th gearshift malfunction: The ECM determines there is a malfunction when both of the following conditions are met: (2–trip detection logic) (a) When the ECM directs the gearshift to switch to 5th gear, the actual gear is also shifted to 5th. (b) When the ECM directs the gearshift to switch to 6th gear, the actual gear is shifted to 4th.	• Valve body is blocked up or stuck (reverse sequence 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	↑	↑	↑	↑	↑	4th

- 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	↑	↑	↑	3rd	3rd	3rd

MONITOR DESCRIPTION

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 DTC indicates that the reverse sequence valve is locked in the direction the spring stretches and that shifting to the 6th gear is impossible.

INSPECTION PROCEDURE

1	CHECK OTHER DTCS OUTPUT (IN ADDITION TO DTC P0729)

(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 "P0729" is output	A
"P0729" and other DTCs	B

HINT:
If any other codes besides "P0729" 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 gearshift	1st	2nd	3rd	4th	5th	6th
Actual gear position under malfunction	↑	↑	↑	↑	↑	4th

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