DTC	P2740/38	TRANSMISSION FLUID TEMPERATURE SENSOR ”B” CIRCUIT

DTC	P2742/38	TRANSMISSION FLUID TEMPERATURE SENSOR ”B” CIRCUIT LOW INPUT

DTC	P2743/38	TRANSMISSION FLUID TEMPERATURE SENSOR ”B” CIRCUIT HIGH INPUT

CIRCUIT DESCRIPTION

ATF (Automatic Transmission Fluid) temperature sensor No.2 is on the transmission and just in front of the oil cooler inlet pipeline.

If TCM detects the abnormally high temperature of ATF by this sensor, it draws driver’s attention by illuminating the warning lamp.

HINT:

- The temperature of ATF easily rises when towing, climbing hills and in traffic, etc.
- If the ATF temperature sensor No.2 becomes short–circuited, the signal that indicates the ATF temperature is 150°C (302°F) or higher is input in TCM.

Vehicle conditions when sensor is normal and when the sensor is short–circuited are indicated in the table below.

ATF temperature Sensor No.2 State	Detection Condition	Symptom	Recovery Condition
Sensor is normal	• AT fluid temp. more than 150°C (302°F).	• AT Oil Temp. warning light remains on	• AT fluid temp. less than 135°C (275°F). *2
	• AT fluid temp. more than 130°C (266°F).	• Shift point too high.	• AT fluid temp. less than 110°C (230°F).
	When the conditions (a) and (b) are satisfied. (a) AT fluid temp. more than 130°C (266°F). (b) Engine coolant temp. more than 95°C (203°F).	• Lock–up at 3rd gear. *1	• AT fluid temp. less than 110°C (230°F) *2 and engine coolant temp. less than 95°C (203°F).
Sensor is short–circuited	• Any conditions.	• AT Oil Temp. warning light remains on • Shift point too high.	• Symptoms still occur
	• Engine coolant temp. more than 95°C (203°F).	• Lock–up at 3rd gear. *1	• Symptoms still occur

HINT:

*1: When AT fluid temperature is normal, transmission locks up at 5th gear with the shift lever in D position and at 4th gear with the shift lever in 4 position.

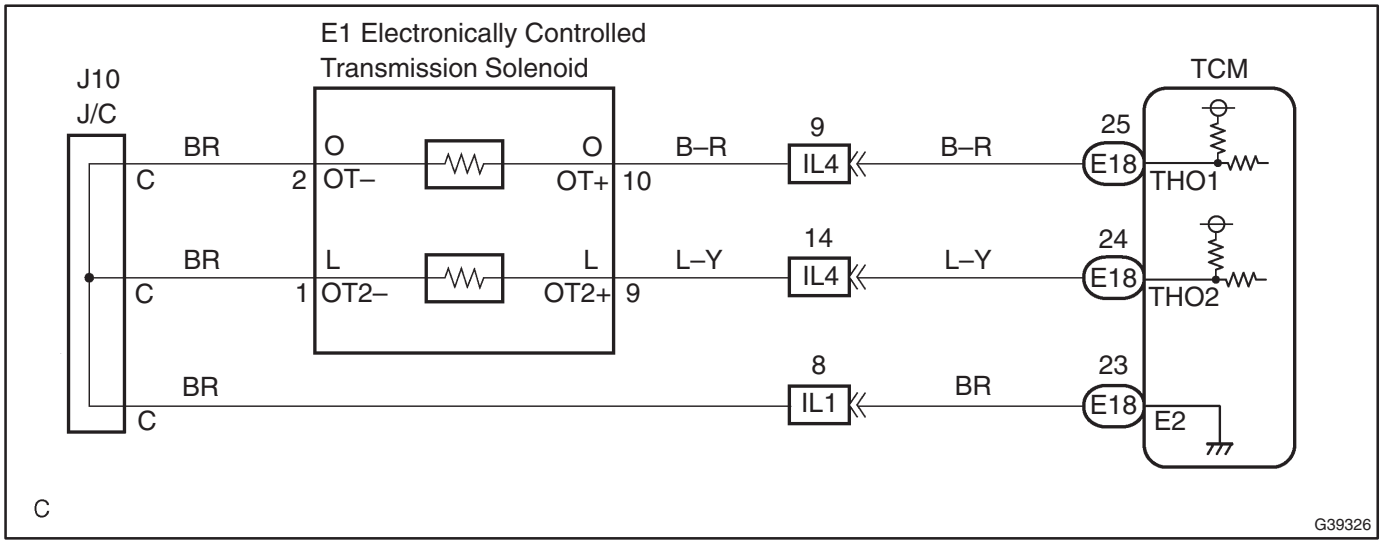
*2: When AT fluid temperature is in normal range, it decreases to less than 135°C (275°F) within 5 minutes with the shift lever in P or N position in an idling state.

DTC No.	DTC Detecting Condition	Trouble Area
P2740/38	(a) and (b) are detected momentarily within 0.5 sec. when neither P2742 nor P2743 is detected (1–trip detection logic) (a) ATF temperature sensor No.2 resistance is less than 25 Ω (b) ATF temperature sensor No.2 resistance is more than 156 kΩ HINT: Within 0.5 sec. the malfunction switches from (a) to (b) or from (b) to (a)	• Open or short in ATF temperature sensor No.2 circuit • Transmission wire (ATF temperature sensor No.2) • TCM
P2742/38	ATF temperature sensor No.2 resistance is less than 25 Ω for 0.5 sec. or more (1–trip detection logic)	• Short in ATF temperature sensor No.2 circuit • Transmission wire (ATF temperature sensor No.2) • TCM
P2743/38	ATF temperature No.2 sensor resistance is more than 156 kΩ when 15 minutes or more after the engine start DTC is detected for 0.5 sec. or more (1–trip detection logic)	• Open in ATF temperature sensor No.2 circuit • Transmission wire (ATF temperature sensor No.2) • TCM

MONITOR DESCRIPTION

The Automatic Transmission Fluid (ATF) temperature sensor converts ATF temperature to an electrical resistance value. Based on the resistance, the TCM determines the ATF temperature, and the TCM detects an open or short in the AFT temperature circuit. If the resistance value of the ATF temperature is less than 25 Ω or more than 156 kΩ, the TCM interprets this as a fault in the ATF sensor or wiring. The TCM will turn on the MIL and store the DTC.

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Using the Intelligent Tester II Data List allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the Data List early in troubleshooting is one way to shorten labor time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

(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) Select the item "Enter / Power train / ECT / Data List".
(g) Follow the instructions on the tester and read the Data List.

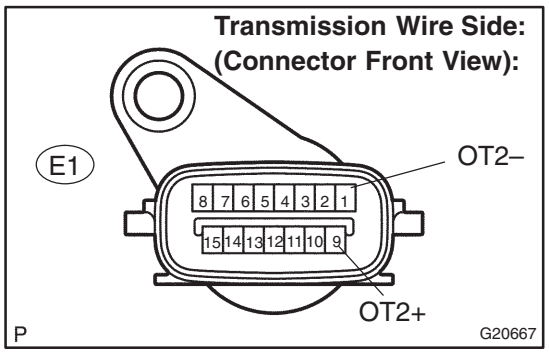
Item	Measurement Item/ Range (display)	Normal Condition
A/T Oil Temperature 2	ATF Temp. Sensor Value/ min.: –40°C (–40°F) max.: 215°C (419°F)	• After Stall Test; Approx. 80°C (176°F) • Equal to ambient temperature when cold soak

HINT:

When DTC P2742 is output and Intelligent Tester II output is 150°C (302°F) or more, there is a short circuit.
When DTC P2743 is output and Intelligent Tester II output is –40°C (–40°F), there is an open circuit.
Measure the resistance between terminal THO2 (OT2) and body ground.

Temperature Displayed	Malfunction
–40˚C (–40˚F)	Open circuit
150˚C (302˚F) or more	Short circuit

1	INSPECT TRANSMISSION WIRE(ATF TEMPERATURE SENSOR)



(a) Disconnect the transmission wire connector from the transmission.
(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
1 (OT2–) – 9 (OT2+)	25 Ω to 156 kΩ
1 (OT2–) – Body ground	10 kΩ or higher
9 (OT2+) – Body ground	10 kΩ or higher

HINT:

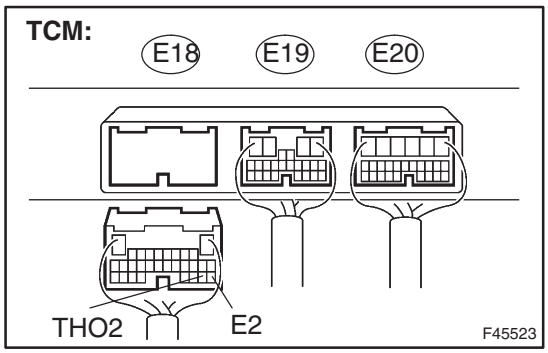
If the resistance is out of the specified range with either the ATF temperature shown in the table below, the driveability of the vehicle may decrease.

ATF Temperature	Specified Condition
20°C (68°F)	3 to 4 kΩ
110°C (230°F)	0.22 to 0.28 kΩ

NG → **REPAIR OR REPLACE TRANSMISSION WIRE (SEE PAGE 40–68)**

OK

2	CHECK HARNESS AND CONNECTOR(TRANSMISSION WIRE – TCM)



(a) Connect the transmission wire connector to the transmission.

(b) Disconnect the TCM connectors.

(c) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition
E18 – 24 (THO2) – E18 – 23 (E2)	25 Ω to 156 kΩ

(d) Measure the resistance according to the value(s) in the table below.

Standard (Check for short):

Tester Connection	Specified Condition
E18 – 24 (THO2) – Body ground	10 kΩ or higher
E18 – 23 (E2) – Body ground	↑

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (SEE PAGE 01–36)**

OK

REPLACE TCM