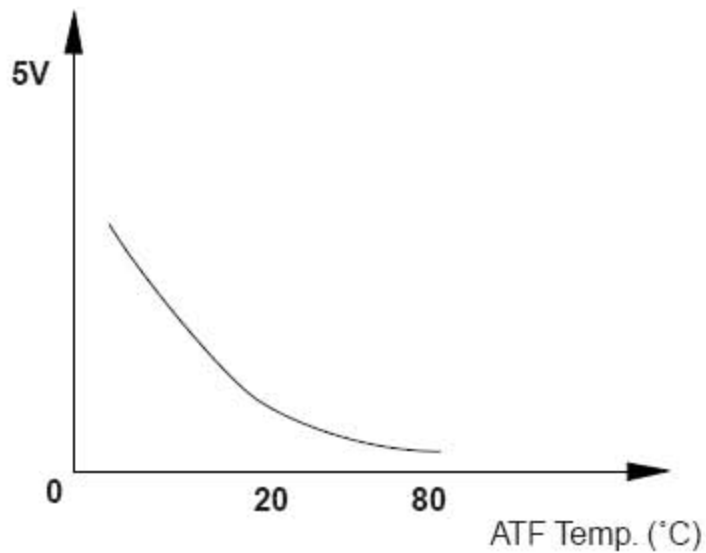
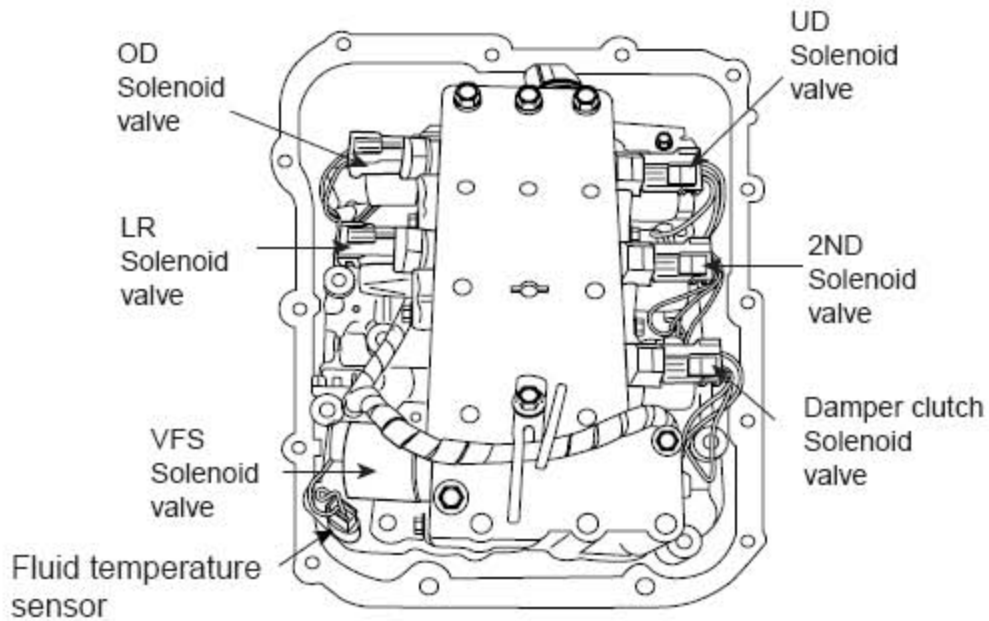


P0712 FLUID(OIL) TEMPERATURE SENSOR CIRCUIT - LOW

COMPONENT LOCATION



GENERAL DESCRIPTION

The automatic TRANSAXLE fluid(ATF) temperature sensor is installed in the Valve Body. This sensor uses a thermistor whose resistance changes according to the temperature changes. The TCM supplies a 5V reference voltage to the sensor, and the output voltage of the sensor changes when the ATF temperature varies. The automatic TRANSAXLE fluid(ATF) temperature provides very important data for the TCM's control of the Torque Converter Clutch, and is also used for many other purposes.

DTC DESCRIPTION

This DTC code is set when the ATF temperature output voltage is lower than a value generated by thermistor resistance, in a normal operating range, for approximately 1 second or longer. The TCM regards the ATF temperature as fixed at a value of 80 C(176 F).

DTC DETECTING CONDITION

Item	Detecting Condition	Possible cause
DTC Strategy	• Check for Voltage range	<ul style="list-style-type: none"> • Sensor signal circuit is short to ground • Faulty sensor • Faulty PCM
Enable Conditions	• Engine state = RUN	
Threshold Value	• voltage <0.07V	
Diagnostic Time	• more than 1sec	
Fail Safe	<ul style="list-style-type: none"> • Learning control and Intelligent shift are inhibited • Fluid temperature is regarded as 80 C(176 F) 	

SPECIFICATION

TEMP.[C(F)]	Resistance(kΩ)	TEMP.[C(F)]	Resistance(kΩ)
-40(-40 F)	139.5	80(176 F)	1.08
-20(-4 F)	47.7	100(212 F)	0.63
0(32 F)	18.6	120(248 F)	0.38
20(68 F)	8.1	140(284 F)	0.25
40(104 F)	3.8	160(320 F)	0.16
60(140 F)	1.98		

MONITOR SCANTOOL DATA

- 1). Connect scantool to data link connector(DLC).
- 2). Engine "ON".
- 3). Monitor the "TRANSAXLE FLUID TEMPERATURE SENSOR" parameter on the scan tool.

Specification : Increasing Gradually

1.2 CURRENT DATA	
× FLUID TEMP. SENSOR	81 °C
THROTTLE P. SENSOR	12.9 %
CRK POSITION SNSR	807 rpm
INPUT SPEED SNSR	784 rpm
OUTPUT SPEED SNSR	0 rpm
VEHICLE SPEED	0 Km/h
L&RSV DUTY	0.0 %
UDSV DUTY	100.0%

FIX SCRNM FULL PART GRPH HELP

FIG.1)

1.2 CURRENT DATA	
× FLUID TEMP. SENSOR	-40 °C
THROTTLE P. SENSOR	12.9 %
CRK POSITION SNSR	807 rpm
INPUT SPEED SNSR	784 rpm
OUTPUT SPEED SNSR	0 rpm
VEHICLE SPEED	0 Km/h
L&RSV DUTY	0.0 %
UDSV DUTY	0.0 %

signal circuit open

FIX SCRNM FULL PART GRPH HELP

FIG.2)

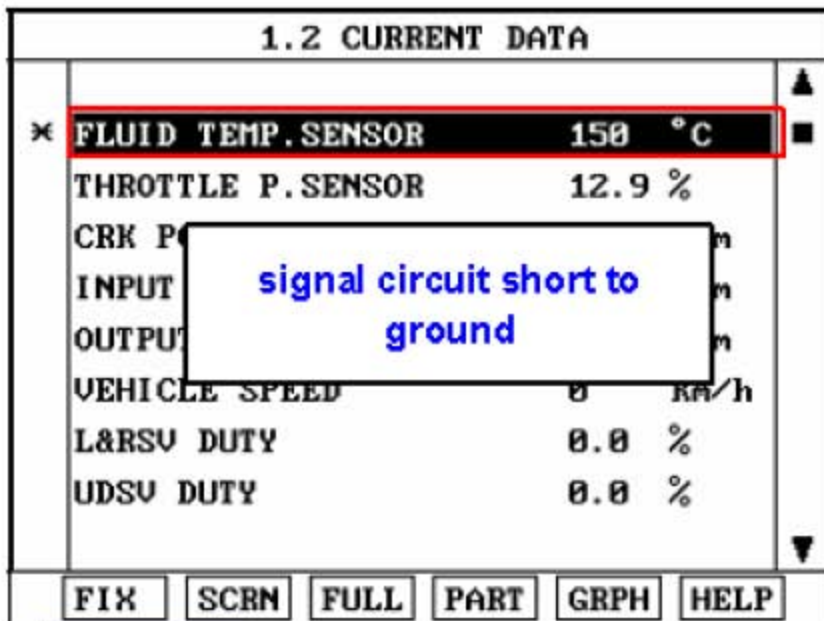


FIG.3)

FIG.1) Normal

FIG.2) Signal harness Open

FIG.3) Signal harness Short

4). Does "TRANSAXLE FLUID TEMPERATURE SENSOR " follow the reference data?

YES

- ▶ Fault is intermittent caused by poor contact in the sensor's and/or TCM(PCM)'s connector or was repaired and TCM(PCM) memory was not cleared. Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration or damage. Repair or replace as necessary and go to "Verification of Vehicle Repair" procedure.

NO

- ▶ Go to "Terminal & connector inspection" procedure.

TERMINAL & CONNECTOR INSPECTION

- 1). Many malfunctions in the electrical system are caused by poor harness and terminals. Faults can also be caused by interference from other electrical systems, and mechanical or chemical damage.
- 2). Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage.

3). Has a problem been found?

YES

▶ Repair as necessary and go to "Verification of vehicle Repair" procedure.

NO

▶ Go to "Component inspection" procedure.

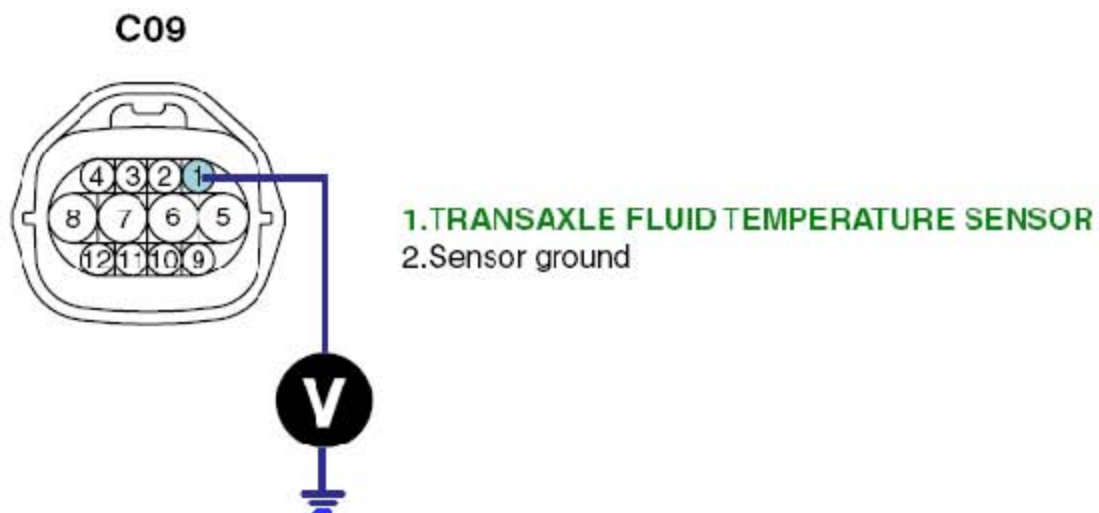
SIGNAL CIRCUIT INSPECTION

1). Ignition "ON" & Engine "OFF".

2). Disconnect the "TRANSAXLE FLUID TEMPERATURE SENSOR" connector.

3). Measure the voltage between terminal "1" of the "TRANSAXLE FLUID TEMPERATURE SENSOR" harness connector and chassis ground.

Specification : Approx. 5 V



4). Is voltage within specifications?

YES

▶ Go to "Component Inspection" procedure.

NO

▶ Check for short to ground in harness. Repair as necessary and Go to "Verification of Vehicle Repair" procedure.

COMPONENT INSPECTION

- 1). CHECK "TRANSAXLE FLUID TEMPERATURE SENSOR"
 - A). Ignition "OFF".
 - B). Disconnect the "TRANSAXLE FLUID TEMPERATURE SENSOR" connector.
 - C). Measure the resistance between terminals "1" and "2" of the "TRANSAXLE FLUID TEMPERATURE SENSOR".

Specification : Refer to "Reference data"



[REFERENCE DATA]

TEMP.[C(F)]	Resistance(kΩ)	TEMP.[C(F)]	Resistance(kΩ)
-40(-40 F)	139.5	80(176 F)	1.08
-20(-4 F)	47.7	100(212 F)	0.63
0(32 F)	18.6	120(248 F)	0.38
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60(140 F)	1.98		

D) Is resistance within specifications?

YES

- ▶ Go to "CHECK PCM/TCM " as below.

NO

- ▶ Replace "TRANSAXLE FLUID TEMPERATURE SENSOR" as necessary and Go to "Verification of Vehicle Repair" procedure.

2). CHECK TCM

- A). Ignition "ON" & Engine "OFF".
- B). Connect "TRANSAXLE FLUID TEMPERATURE SENSOR" connector.
- C). Install scan tool and select a SIMU-SCAN.

D). Simulate voltage (0→5V) to "TRANSAXLE FLUID TEMPERATURE SENSOR" signal circuit.

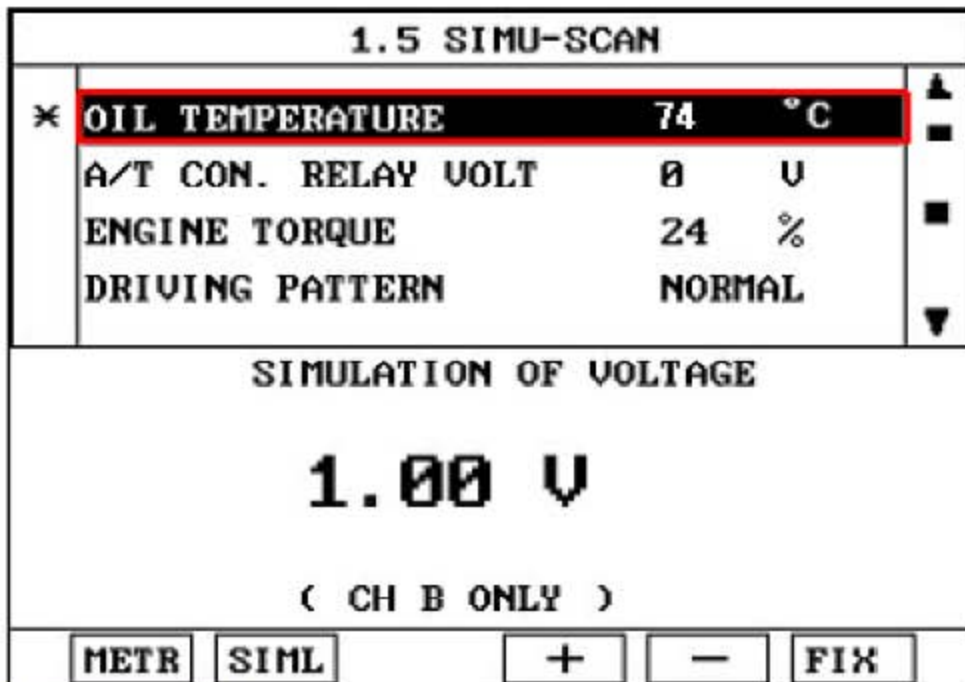


FIG.1)

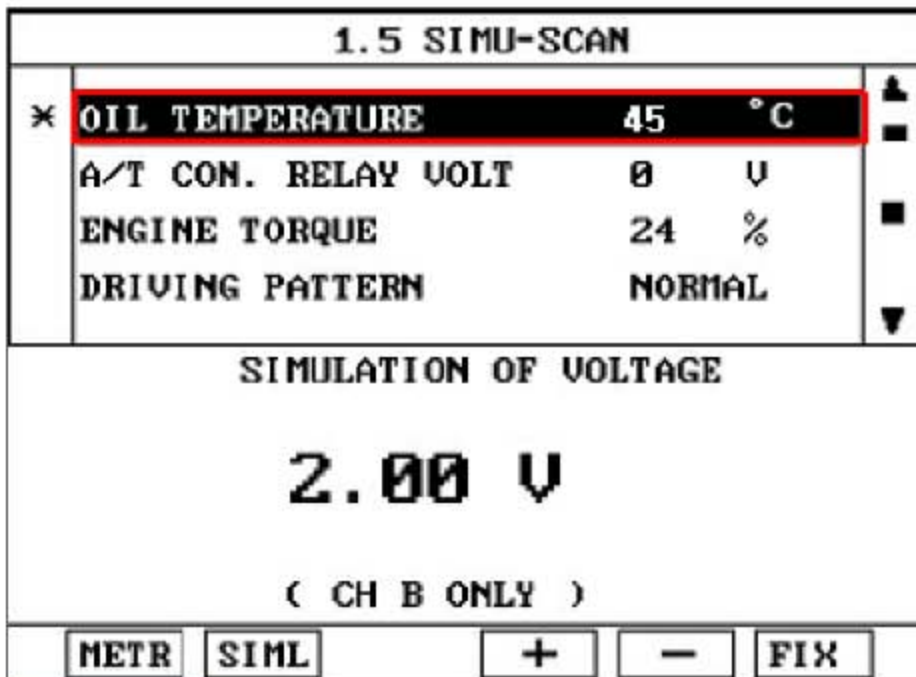


FIG.2)

FIG.1) INPUT 1.00V → 74°C

FIG.2) INPUT 2.00V → 45°C

The values are subject to change according to vehicle model or conditions.

E) Is FLUID TEMP. SENSOR signal value changed according to simulation voltage?

YES

- ▶ Thoroughly check connectors for looseness, poor connection, bending, corrosion, contamination, deterioration, or damage. Repair or replace as necessary and then go to "Verification of Vehicle Repair" procedure.

NO

- ▶ Substitute with a known-good PCM/TCM and check for proper operation. If the problem is corrected, replace PCM/TCM as necessary and then go to "Verification of Vehicle Repair" procedure.

VERIFICATION OF VEHICLE REPAIR

After a repair, it is essential to verify that the fault has been corrected.

- 1). Connect scantool and select "Diagnostic Trouble Codes(DTCs)" mode.
- 2). Using a scantool, Clear DTC.
- 3). Operate the vehicle within DTC Enable conditions in General information.
- 4). Are any DTCs present?

YES

- ▶ Go to the applicable troubleshooting procedure.

NO

- ▶ System performing to specification at this time.