Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM10000000290ZU
Model Year Start: 2023	**Model:** Prius	**Prod Date Range:** [12/2022 -]
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM (for HEV Model): P053011; Refrigerant Pressure Sensor Circuit Short to Ground; 2023 - 2024 MY Prius [12/2022 -]		

DTC	**P053011**	**Refrigerant Pressure Sensor Circuit Short to Ground**

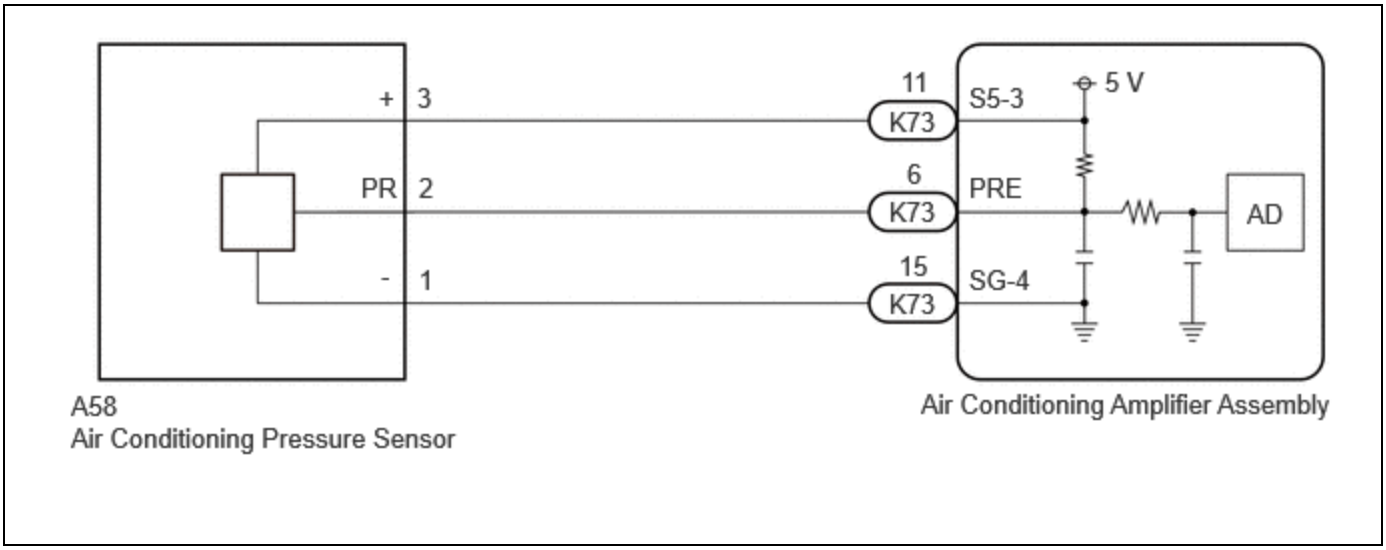
DESCRIPTION

The air conditioning pressure sensor, which is installed to the high pressure side pipe to detect refrigerant pressure, sends a refrigerant pressure signal to the air conditioning amplifier assembly. The air conditioning amplifier assembly converts this signal to a pressure value according to the sensor characteristics and uses it to control the compressor.

This DTC is stored if refrigerant pressure on the high pressure side is extremely low.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MEMORY	DTC OUTPUT FROM	PRIORITY
P053011	Refrigerant Pressure Sensor Circuit Short to Ground	Diagnosis Condition: Ignition switch ON Malfunction: Short (GND) in air conditioning pressure sensor circuit Detection Time: Continuously for 4 seconds or more	• Refrigerant volume • Air conditioning pressure sensor • Harness or connector • Air conditioning amplifier assembly	Memorized	Air Conditioner	A

WIRING DIAGRAM



PROCEDURE

1.	**CHECK COMPARE REFRIGERANT GAS PRESSURE VALUES SHOWN ON GTS AND MANIFOLD GAUGE SET**

Pre-procedure1

(a) Install a manifold gauge set.

HINT:

for HFC-134a(R134a): Click here INFO

for HFO-1234yf(R1234yf): Click here INFO

Procedure1

(b) Compare the values displayed in the Data List and on the manifold gauge.

Body Electrical > Air Conditioner > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Regulator Pressure Sensor	Air conditioning pressure sensor	-32.768 to 32.767 MPaG	Actual refrigerant pressure displayed	• Refrigerant line (gas leak etc.) • Air conditioning pressure sensor circuit malfunction

Body Electrical > Air Conditioner > Data List

TESTER DISPLAY
Regulator Pressure Sensor

RESULT	PROCEED TO
Data List value and manifold gauge set value do not match	A
Data List value matches manifold gauge set value	B

Post-procedure1

(c) None

B **INSPECT REFRIGERANT PRESSURE WITH MANIFOLD GAUGE SET**

for HFC-134a(R134a): Click here INFO

for HFO-1234yf(R1234yf): Click here INFO

A

2.	READ VALUE USING GTS (REGULATOR PRESSURE SENSOR)

(a) Read the Data List according to the display on the GTS.

Body Electrical > Air Conditioner > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Regulator Pressure Sensor	Air conditioning pressure sensor	-32.768 to 32.767 MPaG	Actual refrigerant pressure displayed	• Refrigerant line (gas leak etc.) • Air conditioning pressure sensor circuit malfunction

Body Electrical > Air Conditioner > Data List

TESTER DISPLAY
Regulator Pressure Sensor

OK:
Disconnecting the A58 connector of the air conditioning pressure sensor causes the Data List value to change.

RESULT	PROCEED TO
Regulator pressure sensor value changes	A

RESULT	PROCEED TO
Regulator pressure sensor value does not change	B

B ▶ **GO TO STEP 5**

A ▼

3.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING PRESSURE SENSOR - POWER SOURCE)**

Pre-procedure1

(a) Disconnect the A58 air conditioning pressure sensor connector.

Procedure1

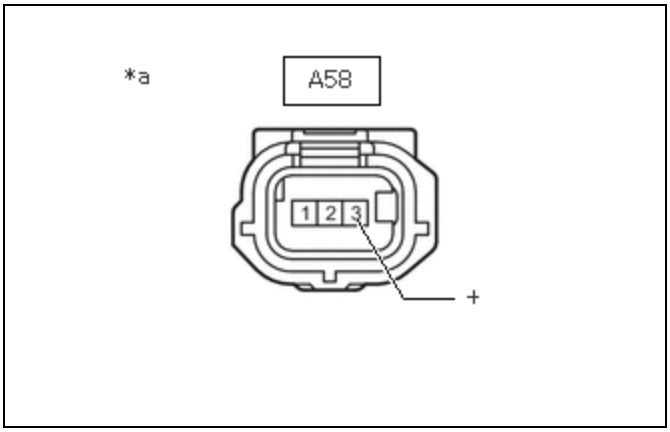
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(A58)
Click Connector(A58)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-3 (+) - Body ground	Ignition switch ON	4.75 to 5.25 V	V



*a	Front view of wire harness connector (to Air Conditioning Pressure Sensor)

Result:

PROCEED TO
OK
NG

Post-procedure1

(c) None

OK ▶ **REPLACE AIR CONDITIONING PRESSURE SENSOR**

INFO

NG

▼

4.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING AMPLIFIER ASSEMBLY - AIR CONDITIONING PRESSURE SENSOR)**

Pre-procedure1

(a) Disconnect the A58 air conditioning pressure sensor connector.

(b) Disconnect the K73 air conditioning amplifier assembly connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A58,K73)
Click Connector(A58)
Click Connector(K73)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-3 (+) - K73-11 (S5-3)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

INFO

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

5.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING PRESSURE SENSOR - BODY GROUND)**

Pre-procedure1

(a) Disconnect the A58 air conditioning pressure sensor connector.

Procedure1

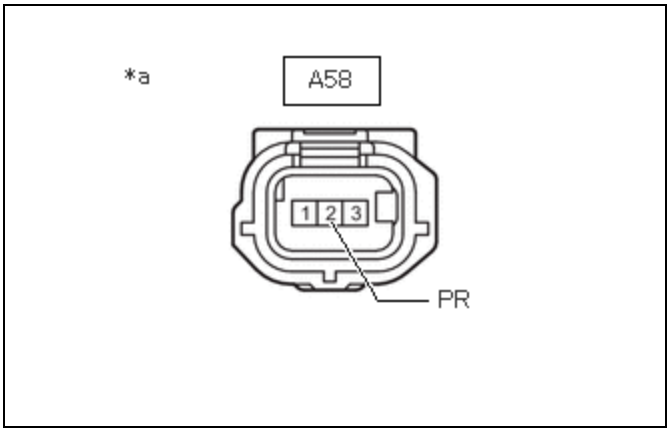
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(A58)
Click Connector(A58)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-2 (PR) - Body ground	Ignition switch ON	3.0 to 5.25 V	V



*a	Front view of wire harness connector (to Air Conditioning Pressure Sensor)

Result:

PROCEED TO
OK
NG

Post-procedure1

(c) None

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**
INFO

NG
▼

6.	**CHECK HARNESS AND CONNECTOR (AIR CONDITIONING PRESSURE SENSOR - AIR CONDITIONING AMPLIFIER ASSEMBLY)**

Pre-procedure1

(a) Disconnect the A58 air conditioning pressure sensor connector.

(b) Disconnect the K73 air conditioning amplifier assembly connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A58,K73)
Click Connector(A58)
Click Connector(K73)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-2 (PR) or K73-6 (PRE) - Other terminals and body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**
INFO

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**