Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM10000000290ZV
Model Year Start: 2023	**Model:** Prius	**Prod Date Range:** [12/2022 -]
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM (for HEV Model): P053015; Refrigerant Pressure Sensor Circuit Short to Battery or Open; 2023 - 2024 MY Prius [12/2022 -]		

DTC	**P053015**	**Refrigerant Pressure Sensor Circuit Short to Battery or Open**

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.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MEMORY	DTC OUTPUT FROM	PRIORITY
P053015	Refrigerant Pressure Sensor Circuit Short to Battery or Open	Diagnosis Condition: Ignition switch ON Malfunction: Open or short (+B) in air conditioning pressure sensor circuit Detection Time: Continuously for 4 seconds or more	• Air conditioning pressure sensor • Harness or connector • Air conditioning amplifier assembly	Memorized	Air Conditioner	A

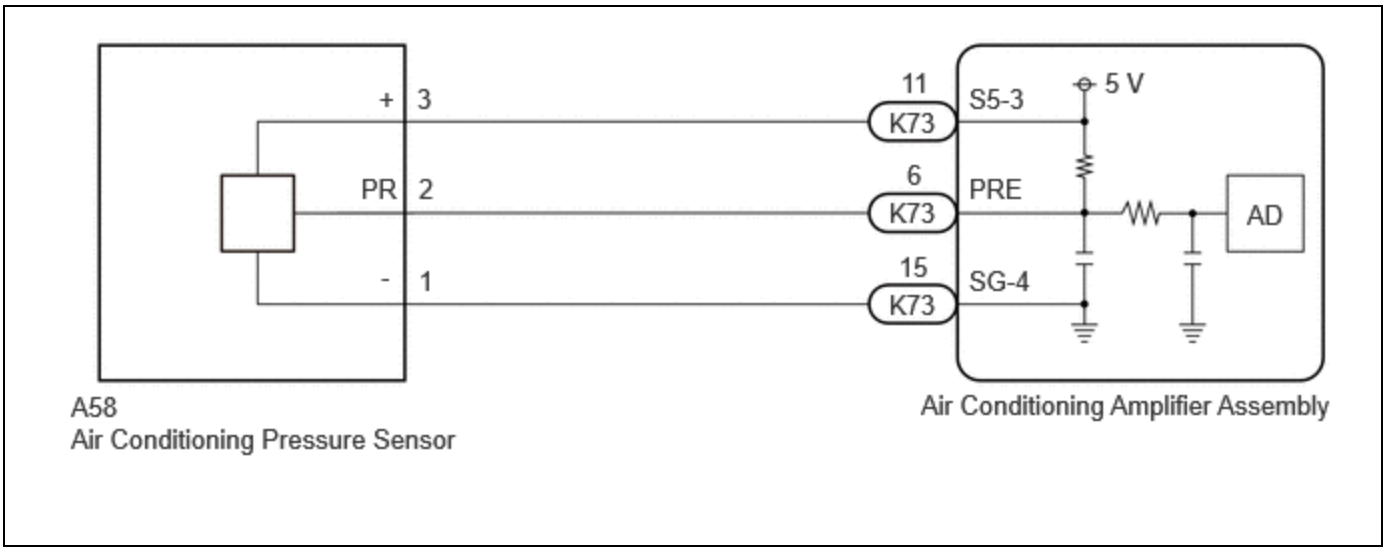
DTC Detection Condition Combination Table

		VEHICLE CONDITION	
		PATTERN 1	PATTERN 2
Diagnosis Condition	Ignition switch ON	○	○
Malfunction	Open in air conditioning pressure sensor circuit	○	-
	Short (+B) in air conditioning pressure sensor circuit	-	○
Detection Time		Continuously for 4 seconds or more	Continuously for 4 seconds or more
Trip Count		1 trip	1 trip

HINT:

If the conditions of either of these patterns are detected, a DTC will be stored.

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

If DTC P05347A is output at the same time, perform troubleshooting for DTC P05347A first.

Click here INFO

HINT:

If a connector is disconnected or not installed correctly, securely connect it and check for DTCs.

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

Standard Resistance:

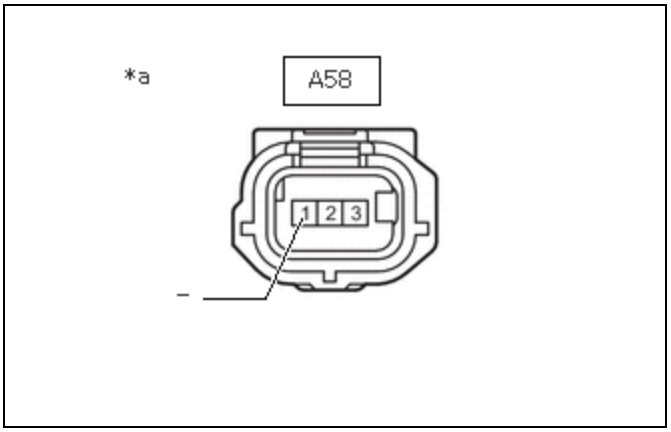
EWD INFO

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

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-1 (-) - Body ground	Always	Below 1 Ω	Ω

Result:

PROCEED TO
OK
NG



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

Post-procedure1

(c) None

NG ▶ **GO TO STEP 8**

OK ▼

3.	**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:

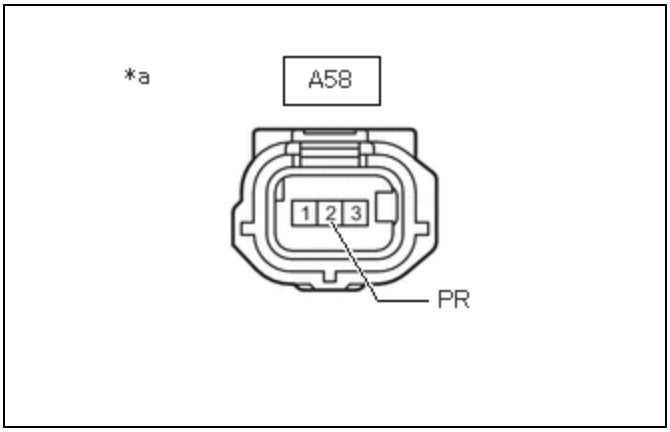
EWD INFO

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

Result:

RESULT	PROCEED TO
A58-2 (PR) - Body ground is more than 5.25 V	A
A58-2 (PR) - Body ground is more than or equal to 3.0 and less than or equal to 5.25 V	B
A58-2 (PR) - Body ground is less than 3.0 V	C



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

Post-procedure1

(c) None

B ▶ **GO TO STEP 5**

C ▶ **GO TO STEP 7**

A

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
A58-2 (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**

5.	CHECK AIR CONDITIONING AMPLIFIER ASSEMBLY (INTERNAL CIRCUIT RESISTANCE)

Pre-procedure1

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

Procedure1

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

Standard Resistance:

EWD INFO

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

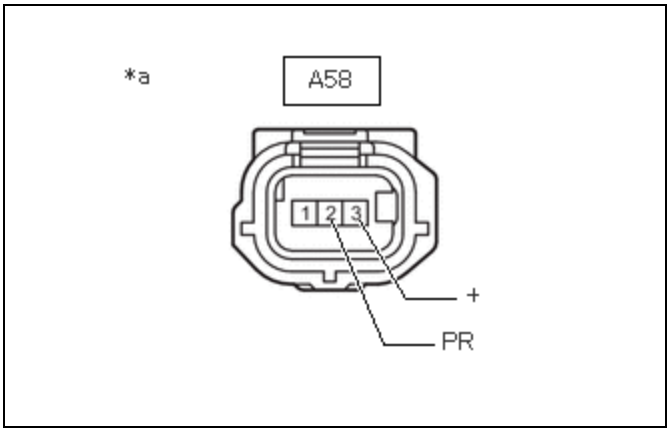
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A58-3 (+) - A58-2 (PR)	Ignition switch off	180 to 220 kΩ	kΩ

HINT:

After turning the ignition switch off, wait at least 30 seconds before performing the measurement.

Result:

PROCEED TO
OK
NG



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

Post-procedure1

(c) None

OK ▶ **REPLACE AIR CONDITIONING PRESSURE SENSOR**

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) - A58-3 (+)	Always	10 kΩ or higher	kΩ
K73-6 (PRE) - K73-11 (S5-3)	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

INFO

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

7.	**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
A58-2 (PR) - K73-6 (PRE)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

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

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

8.	**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
A58-1 (-) - K73-15 (SG-4)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

OK ▶ **REPLACE AIR CONDITIONING AMPLIFIER ASSEMBLY**

INFO

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