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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HEATING / AIR CONDITIONING: AIR CONDITIONING SYSTEM (for PHEV Model): B149887; A/C Inverter Local Missing Message; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**B149887**	**A/C Inverter Local Missing Message**

DESCRIPTION

The hybrid vehicle control ECU and compressor with motor assembly communicate via direct line. Compressor control is stopped and this DTC is stored if communication information is cut off or abnormal information is received.

This DTC is also detected if high-voltage power supplied from the inverter with converter assembly to the compressor control circuit is shut off.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	MEMORY	DTC OUTPUT FROM	PRIORITY	NOTE
B149887	A/C Inverter Local Missing Message	Diagnosis condition: Ignition switch ON (READY) Malfunction status: • Error or open in communication line between the hybrid vehicle control ECU and compressor with motor assembly • High-voltage power source shut off Detection time: Continuously for 20 seconds or more Trip: 1 trip detection logic	• Harness or connector • HV air conditioning wire • Compressor with motor assembly • Hybrid vehicle control ECU • Battery state sensor assembly	Come on	Memorized	Air Conditioner	A	SAE Code: B1498

DTC Detection Condition Combination Table

		VEHICLE CONDITION		
		PATTERN 1	PATTERN 2	PATTERN 3
Diagnosis Condition	READY ON	○	○	○

		VEHICLE CONDITION		
		PATTERN 1	PATTERN 2	PATTERN 3
Malfunction	Error in communication line between the hybrid vehicle control ECU and compressor with motor assembly	○	-	-
	Open in communication line between the hybrid vehicle control ECU and compressor with motor assembly	-	○	-
	High-voltage power source shut off	-	-	○
Detection Time		Continuously for 20 seconds or more	Continuously for 20 seconds or more	Continuously for 20 seconds or more
Trip Count		1 trip	1 trip	1 trip

HINT:

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

MONITOR DESCRIPTION

This DTC is also detected if high-voltage electricity supplied from the inverter with converter assembly to the compressor control circuit is shut off.

This DTC will be stored as a history DTC.

MONITOR STRATEGY

Related DTCs	B1498: A/C Inverter Local Missing Message
Required Sensors/Components (Main)	Compressor with motor assembly
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	20 seconds
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever the following DTCs are not stored	U0293 (Lost Communication With Hybrid/EV Powertrain Control Module)
Battery voltage	10 V or higher

TYPICAL MALFUNCTION THRESHOLDS

Communication line between compressor with motor assembly and hybrid vehicle control ECU assembly	Error

CONFIRMATION DRIVING PATTERN

HINT:

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

Click here INFO

1. Connect the GTS to the DLC3.
2. Turn the ignition switch to ON.
3. Turn the GTS on.
4. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
5. Turn the ignition switch off and wait for at least 30 seconds.
6. Turn the ignition switch to ON. [A].
7. Turn the GTS on.
8. Wait 20 seconds or more.[B]
9. Enter the following menus: Body Electrical / Air Conditioner / Trouble Codes [C].
10. Read the pending DTCs.

HINT:

- If a pending DTC is output, the system is malfunctioning.
- If a pending DTC is not output, perform the following procedure.

11. Enter the following menus: Body Electrical / Air Conditioner / Utility / All Readiness.
12. Input the DTC: B149887.
13. Check the DTC judgment result.

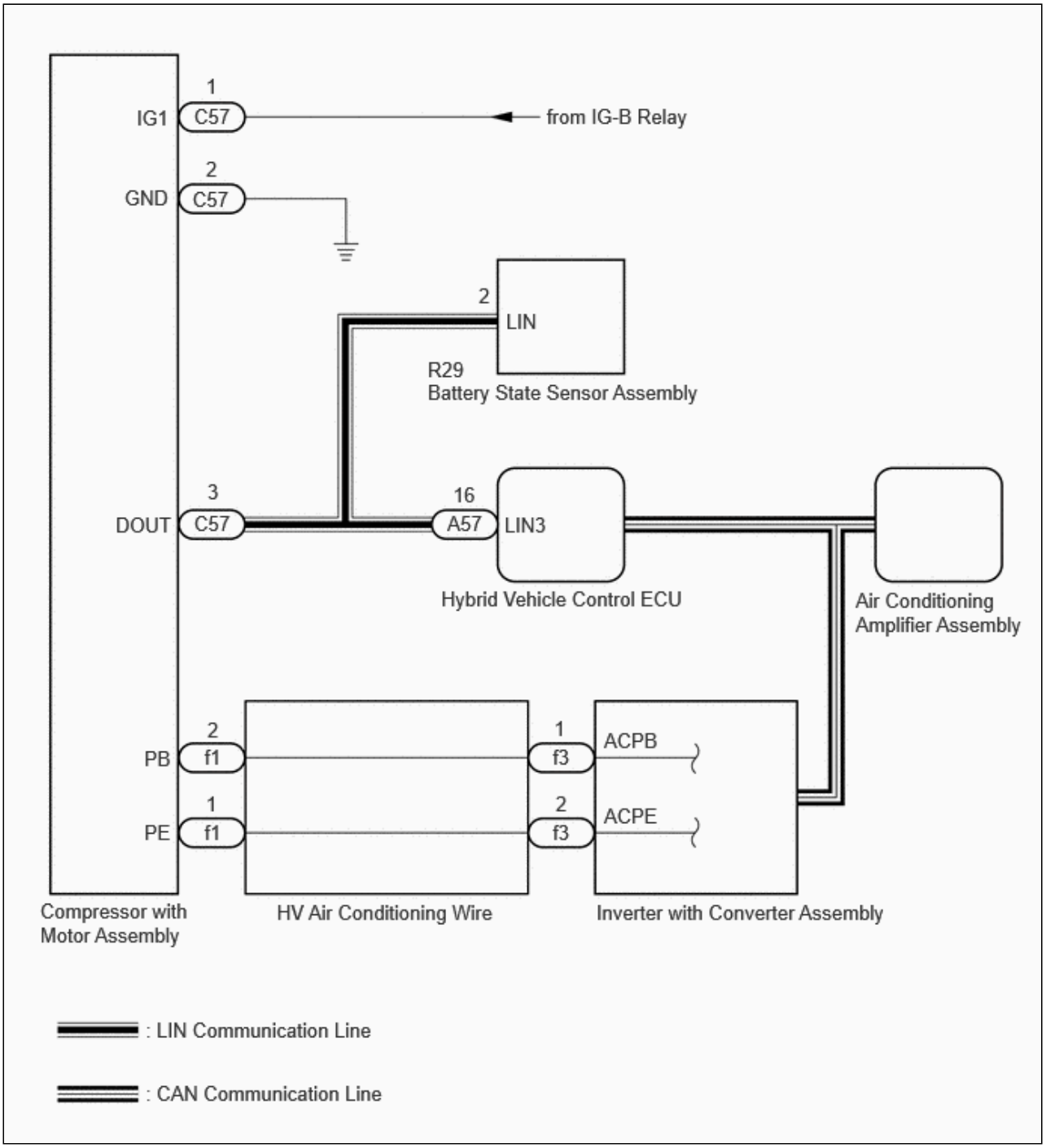
GTS DISPLAY	DESCRIPTION
NORMAL	◦ DTC judgment completed ◦ System normal
ABNORMAL	◦ DTC judgment completed ◦ System abnormal
INCOMPLETE	◦ DTC judgment not completed ◦ Perform driving pattern after confirming DTC enabling conditions

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system is malfunctioning.
- If the judgment result is INCOMPLETE, perform steps [A] through [C] again.
- [A] to [C]: Normal judgment procedure.

  The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
- When clearing the permanent DTCs, do not disconnect the cable from the auxiliary battery terminal or attempt to clear the DTCs during this procedure, as doing so will clear the universal trip and normal judgment histories.

WIRING DIAGRAM



CAUTION / NOTICE / HINT

CAUTION:

- Before inspecting the high-voltage system, take safety precautions such as wearing insulated gloves and removing the service plug grip to prevent electrical shocks. After removing the service plug grip, put it in your pocket to prevent other technicians from accidentally reconnecting it while you are working on the high-voltage system.

  Click here INFO
- Do not touch the high-voltage connectors or terminals for 10 minutes after the service plug grip is removed.

  Click here INFO

NOTICE:

- After turning the ignition switch off, waiting time may be required before disconnecting the cable from the negative (-) auxiliary battery terminal. Therefore, make sure to read the disconnecting the cable from the negative (-) auxiliary battery terminal notices before proceeding with work.

- Before disconnecting battery:

  Click here INFO
- Automatic learning chart:

  Click here INFO

- Inspect the fuses for circuits related to this system before performing the following procedure.
- The hybrid control system and air conditioning system output DTCs separately. Perform troubleshooting for the hybrid control system first if DTCs for both systems are output simultaneously.

  Click here INFO
- The air conditioning system uses the CAN communication system. Inspect the communication functions by following How to Proceed with Troubleshooting. Troubleshoot the air conditioning system after confirming that the communication systems are functioning properly..

  Click here INFO

PROCEDURE

1.	**CHECK FOR DTC (HYBRID CONTROL)**

(a) Check for DTCs.

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
P058A01 and P162B87 are not output	A
P058A01 or P162B87 is output	B

B ▶ **GO TO STEP 7**

A ▼

2.	**CHECK HARNESS AND CONNECTOR (COMPRESSOR WITH MOTOR ASSEMBLY - AUXILIARY BATTERY AND BODY GROUND)**

CAUTION:

Do not disconnect the connector on the high-voltage side.

NOTICE:

As other DTCs will be stored when the ignition switch is turned to ON with the connector disconnected, be sure to clear the DTCs after the inspection.

Pre-procedure1

(a) Disconnect the C57 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

Procedure1

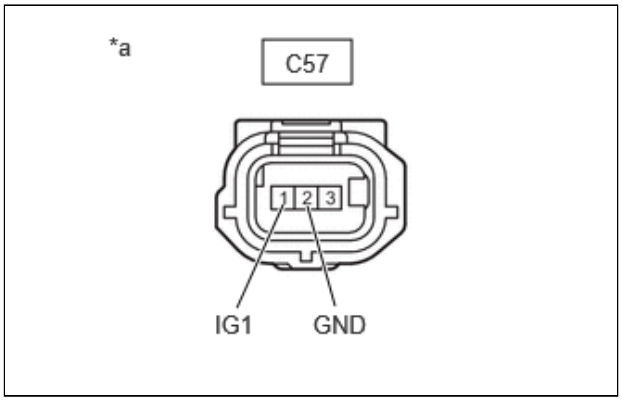
(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(C57)
Click Connector(C57)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C57-1 (IG1) - Body ground	Ignition switch ON	11 to 14 V	V



*a	Front view of wire harness connector (to Compressor with Motor Assembly)

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

Standard Resistance:

EWD INFO

Click Location & Routing(C57)
Click Connector(C57)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C57-2 (GND) - Body ground	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

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

OK ▼

3.	**CHECK HARNESS AND CONNECTOR (COMPRESSOR WITH MOTOR ASSEMBLY - HYBRID VEHICLE CONTROL ECU)**

Pre-procedure1

(a) Disconnect the C57 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

(b) Disconnect the A57 hybrid vehicle control ECU connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(C57,A57)
Click Connector(C57)
Click Connector(A57)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C57-3 (DOUT) - A57-16 (LIN3)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ▼

4.	INSPECT HV AIR CONDITIONING WIRE

CAUTION:
Be sure to wear insulated gloves.

Pre-procedure1

(a) Disconnect the f1 compressor with motor assembly connector.

NOTICE:
Do not allow any foreign matter or water to enter the compressor with motor assembly.

(b) Remove the HV air conditioning wire from the inverter with converter assembly.

NOTICE:
Make sure that no foreign matter, water, etc., enters the inverter with converter assembly.

HINT:
Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(f1,f3)
Click Connector(f1)
Click Connector(f3)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
f1-2 (PB) - f3-1 (ACPB)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

NG ▶ GO TO STEP 6

OK ▼

5.	INSPECT HV AIR CONDITIONING WIRE

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

(a) Disconnect the f1 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

(b) Remove the HV air conditioning wire from the inverter with converter assembly.

NOTICE:

Make sure that no foreign matter, water, etc., enters the inverter with converter assembly.

HINT:

Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(f1,f3)
Click Connector(f1)
Click Connector(f3)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
f1-1 (PE) - f3-2 (ACPE)	Always	Below 1 Ω	Ω

Post-procedure1

(d) None

OK ▶ REPLACE COMPRESSOR WITH MOTOR ASSEMBLY

NG ▶ REPLACE HV AIR CONDITIONING WIRE

6.	INSPECT HV AIR CONDITIONING WIRE

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

(a) Disconnect the f1 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

(b) Remove the HV air conditioning wire from the inverter with converter assembly.

NOTICE:

Make sure that no foreign matter, water, etc., enters the inverter with converter assembly.

HINT:

Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(f1)
Click Connector(f1)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
f1-2 (PB) - Other terminals and body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None

OK ▶ **REPLACE COMPRESSOR WITH MOTOR ASSEMBLY AND HV AIR CONDITIONING WIRE**

Compressor with motor assembly:

- Click here INFO

HV air conditioning wire:

- Click here INFO

NG ▶ **REPLACE HV AIR CONDITIONING WIRE**

7.	**CHECK FOR DTC**

Pre-procedure1

(a) Disconnect the R29 battery state sensor assembly connector.

Procedure1

(b) Check for DTCs.

Body Electrical > Air Conditioner > Trouble Codes

RESULT	PROCEED TO
B149887 is not output	A

RESULT	PROCEED TO
B149887 is output	B

Post-procedure1

(c) None

A ▶ **REPLACE BATTERY STATE SENSOR ASSEMBLY**

B ▼

8.	**CHECK FOR DTC (HYBRID CONTROL)**

Pre-procedure1

(a) Connect the R29 battery state sensor assembly connector.

(b) Disconnect the C57 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

Procedure1

(c) Check for DTCs.

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
P058A01 and P162B87 are not output	A
P058A01 or P162B87 is output	B

Post-procedure1

(d) None

A ▶ **REPLACE COMPRESSOR WITH MOTOR ASSEMBLY**

B ▼

9.	**CHECK HARNESS AND CONNECTOR (COMPRESSOR WITH MOTOR ASSEMBLY - HYBRID VEHICLE CONTROL ECU)**

Pre-procedure1

(a) Disconnect the R29 battery state sensor assembly connector.

(b) Disconnect the C57 compressor with motor assembly connector.

NOTICE:

Do not allow any foreign matter or water to enter the compressor with motor assembly.

(c) Disconnect the A57 hybrid vehicle control ECU connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(A57,C57,R29)
Click Connector(A57)
Click Connector(C57)
Click Connector(R29)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
A57-16 (LIN3) - C57-3 (DOUT)	Always	Below 1 Ω	Ω
A57-16 (LIN3) - R29-2 (LIN)	Always	Below 1 Ω	Ω
A57-16 (LIN3) - Other terminals and body ground	Always	10 kΩ or higher	kΩ
C57-3 (DOUT) - Other terminals and body ground	Always	10 kΩ or higher	kΩ
R29-2 (LIN) - Other terminals and body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(e) None

OK ▶ **REPLACE HYBRID VEHICLE CONTROL ECU**

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