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Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [03/2023 -]
Title: HYBRID / BATTERY CONTROL: HYBRID CONTROL SYSTEM (for PHEV Model): U117687; Lost Communication with Gear Shift Control Module "A" (Powertrain Bus) Missing Message; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	U117687	Lost Communication with Gear Shift Control Module "A" (Powertrain Bus) Missing Message
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DESCRIPTION

The hybrid vehicle control ECU transmits and receives signals via CAN communication to and from the shift control ECU.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
U117687	Lost Communication with Gear Shift Control Module "A" (Powertrain Bus) Missing Message	A CAN communication error between the hybrid vehicle control ECU and shift control ECU (CAN communication system malfunction) occurs The hybrid vehicle control ECU cannot receive signals from the shift control ECU (1 trip detection logic)	<ul style="list-style-type: none"> Transmission floor shift assembly (shift control ECU) Wire harness or connector 	Comes on	Master Warning: Comes on	Hybrid Control	B	SAE Code: U1176

MONITOR DESCRIPTION

If the hybrid vehicle control ECU detects a problem with CAN communication with the shift control ECU, it will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	U1176: Lost communication with gear shift control module verify communication
Required Sensors/Components (Main)	Main: Shift control ECU Sub: Hybrid vehicle control ECU

Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	1 second
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not stored	TMC's intellectual property
Other conditions belong to TMC's intellectual property	-

TYPICAL MALFUNCTION THRESHOLDS

TMC's intellectual property	-
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COMPONENT OPERATING RANGE

Hybrid vehicle control ECU	DTC U1176 (INF U117687) is not detected
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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

- Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
- Turn the ignition switch off and wait for at least 30 seconds.
- With ignition switch ON and wait for 2 minutes or more [*1].

HINT:

[*1] : Normal judgment procedure.

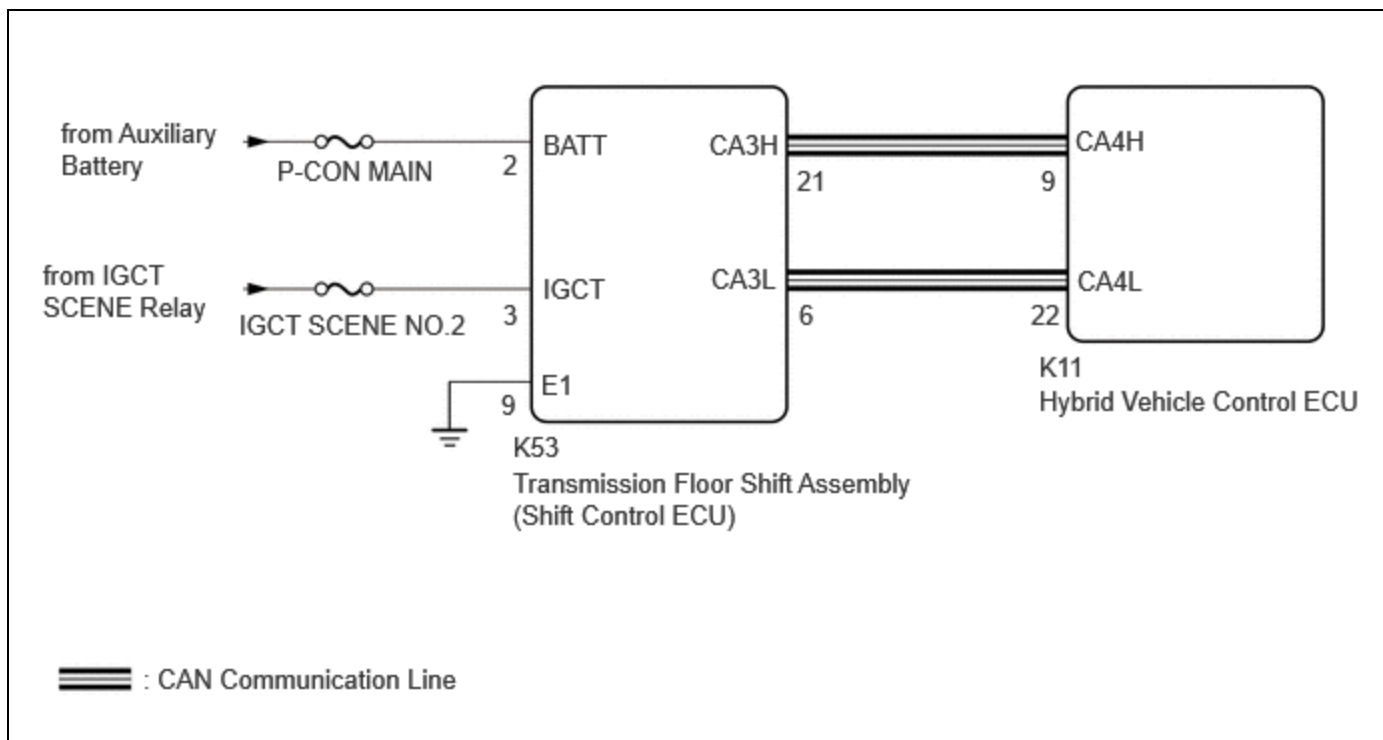
The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.

- Enter the following menus: Powertrain / Hybrid Control / Utility / All Readiness.
- Check the DTC judgment result.

HINT:

- If the judgment result is NORMAL, the system is normal.
- If the judgment result is ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE, perform the normal judgment procedure again.

WIRING DIAGRAM



CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here [INFO](#)

NOTICE:

- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.

Click here [INFO](#)

- When disconnecting and reconnecting the auxiliary battery

HINT:

When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

Click here [INFO](#)

- Ensure there is no power being supplied to the vehicle when disconnecting or reconnecting the connector of the shift control ECU or shift control actuator ECU, and when removing or installing the shift control ECU or shift control actuator ECU.

PROCEDURE

1. CHECK DTC OUTPUT (HEALTH CHECK)

Pre-procedure1

(a) According to the display on the GTS, select "Health Check".

Procedure1

(b) Check for DTCs.

RESULT	PROCEED TO
No DTCs are output.	A
DTCs are output.	B

Post-procedure1

(c) Turn the ignition switch off.

B ► **GO TO DTC CHART**

A



2.	CHECK DTC OUTPUT (HYBRID CONTROL)
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Pre-procedure1

(a) None.

Procedure1

(b) Check for DTCs.

Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
Only U117687 is output	A
U117687 and U029187 are output	B

Post-procedure1

(c) Turn the ignition switch off.

B ► **TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT CONTROL ECU) POWER SOURCE CIRCUIT FAILURE**

A



3.**CHECK TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT CONTROL ECU) (BATT TERMINAL VOLTAGE)**

Pre-procedure1

(a) None.

Procedure1

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

Standard Voltage:


[Click Location & Routing\(K53\)](#)
[Click Connector\(K53\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K53-2 (BATT) - K53-9 (E1)	Ignition switch off	11 to 14 V	V

HINT:

As there might be an intermittent malfunction, inspect the following items even if the measured voltage is as specified.

- Installation condition of fuse(s) (before removing fuse(s)) (BATT circuit)
- Fuse condition (before and after removing fuse(s)) (BATT circuit)
- Connection condition of connectors (BATT circuit)
- Wire harness condition (BATT circuit)
- Wire harness condition (GND circuit)

Post-procedure1

(c) None.

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR (TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT CONTROL ECU) POWER SOURCE CIRCUIT)**

OK**4.****CHECK TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT CONTROL ECU) (IGCT TERMINAL VOLTAGE)**

Pre-procedure1

(a) Turn the ignition switch to ON.

Procedure1

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

Standard Voltage:


[Click Location & Routing\(K53\).](#)
[Click Connector\(K53\).](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K53-3 (IGCT) - K53-9 (E1)	Ignition switch off	11 to 14 V	V

HINT:

As there might be an intermittent malfunction, inspect the following items even if the measured voltage is as specified.

- Installation condition of fuse(s) (before removing fuse(s)) (IGCT circuit)
- Fuse condition (before and after removing fuse(s)) (IGCT circuit)
- Connection condition of connectors (IGCT circuit)
- Wire harness condition (IGCT circuit)
- Wire harness condition (GND circuit)

Post-procedure1

(c) Turn the ignition switch off.

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR
(TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT
CONTROL ECU) POWER SOURCE CIRCUIT)**

OK

5.	CHECK HARNESS AND CONNECTOR (HYBRID VEHICLE CONTROL ECU - TRANSMISSION FLOOR SHIFT ASSEMBLY (SHIFT CONTROL ECU))
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CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

(a) Check that the service plug grip is not installed.

NOTICE:

After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Disconnect the hybrid vehicle control ECU connector.

NOTICE:

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check that each connector between the hybrid vehicle control ECU and transmission floor shift assembly (shift control ECU) is not loose or disconnected.

(c) Disconnect the transmission floor shift assembly (shift control ECU) connector.

NOTICE:

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

(d) Disconnect the shift control actuator assembly (shift control actuator ECU) connector.

NOTICE:

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

(e) Disconnect the inverter with converter assembly connector.

NOTICE:

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

(f) Disconnect the battery ECU assembly connector.

NOTICE:

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

Procedure1

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

Standard Resistance:



[Click Location & Routing\(K11,K53\)](#)

[Click Connector\(K11\)](#)

[Click Connector\(K53\)](#)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
K11-9 (CA4H) - K53-21 (CA3H)	Ignition switch off	Below 1 Ω	Ω
K11-22 (CA4L) - K53-6 (CA3L)	Ignition switch off	Below 1 Ω	Ω
K11-9 (CA4H) or K53-21 (CA3H) - Body ground and other terminals	Ignition switch off	10 k Ω or higher	k Ω
K11-22 (CA4L) or K53-6 (CA3L) - Body ground and other terminals	Ignition switch off	10 k Ω or higher	k Ω

NOTICE:

Make sure that each connector between the hybrid vehicle control ECU and transmission floor shift assembly (shift control ECU) is not loose or disconnected and its terminals are not deformed or corroded.

Post-procedure1

(h) Reconnect the battery ECU assembly connector.

(i) Reconnect the inverter with converter assembly connector.

(j) Reconnect the shift control actuator assembly (shift control actuator ECU) connector.

(k) Reconnect the transmission floor shift assembly (shift control ECU) connector.

(l) Reconnect the hybrid vehicle control ECU connectors.

OK ► **REPLACE TRANSMISSION FLOOR SHIFT ASSEMBLY
(SHIFT CONTROL ECU)**

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

