Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BIYH
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): P1EA917; Solar Charging Control Module Circuit Voltage Above Threshold; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**P1EA917**	**Solar Charging Control Module Circuit Voltage Above Threshold**

DTC SUMMARY

MALFUNCTION DESCRIPTION

When VSOL output is above the specified value for greater than the specified amount of time, overvoltage of the solar charging system is detected, the solar energy control ECU assembly is stopped, and the plugin charge control ECU assembly stores this DTC.

The cause of this malfunction may be one of the following:

Low-voltage circuit (12 V) malfunction

- Solar energy control ECU assembly malfunction (CPU error, VSOL sensor malfunction)
- Battery ECU assembly malfunction (open circuit/temporary interruption)
- Charge relay operation command circuit malfunction (between the battery ECU assembly and No. 1 traction battery device box)

High voltage system malfunction

- Charging circuit malfunction

  - High voltage circuit malfunction in the solar energy control ECU assembly (open circuit/temporary interruption)

  - High voltage circuit between the solar energy control ECU assembly and No. 1 traction battery device box (open circuit/temporary interruption)
- No. 1 traction battery device box malfunction (CHRB, CHRG)

  - No. 1 traction battery device box (CHRB-CHRG) (open circuit/temporary interruption)

  - High voltage circuit between the HV battery and No. 1 traction battery device box (open circuit/temporary interruption)

DESCRIPTION

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P1EA917	Solar Charging Control Module Circuit Voltage Above Threshold	The value of the solar charging voltage (VSOL) signal is above the threshold for a certain amount of time.	• Solar energy control ECU assembly • No. 1 traction	Does not come on	Solar Charging Warning Light: Comes on	Plug-in Control	B	SAE Code: P1EA9

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		(1 trip detection logic)	battery device box • Wire harness or connector					

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

1. Connect the GTS to the DLC3.
2. Turn the ignition switch to ON and turn the GTS on.
3. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
4. Turn the ignition switch off and wait for 2 minutes or more.
5. Confirm to start solar charging and wait for 2 minutes or more.
6. Enter the following menus: Powertrain / Plug-in Control / Utility / All Readiness.
7. Check the DTC judgment result.

HINT:

- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE or N/A, perform driving pattern again.

WIRING DIAGRAM

Refer to the wiring diagram for the P0D0700.

Click here INFO

CAUTION / NOTICE / HINT

CAUTION:

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

NOTICE:

- If the DTCs are cleared or the cable is disconnected from and reconnected to the negative (-) auxiliary battery terminal before performing repairs, connecting the electric vehicle charger cable assembly connector may cause a malfunction. Do not connect the electric vehicle charger cable assembly connector.
- 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

PROCEDURE

1.	**CHECK DTC OUTPUT (PLUG-IN CONTROL, SOLAR CHARGING CONTROL)**

Pre-procedure1

(a) Enter the following menus:

Powertrain > Plug-in Control > Trouble Codes
Powertrain > Solar Charging Control > Trouble Codes

Procedure1

(b) Check for DTCs.

RESULT	PROCEED TO
P1EA917 only is output, or DTCs except the ones in the table below are also output.	A
DTCs of Plug-in Charge Control System in the tables below are output.	B
DTCs of Solar Charging System in the tables below are output.	C

MALFUNCTION CONTENT	SYSTEM	RELEVANT DTC	
Microcomputer malfunction	Plug-in Charge Control System	P06881F	DC Quick Charging Control Module Power Relay Sense Circuit Intermittent
	Solar Charging System	P1EDB49	Solar Charger Control Module A/D Processing Internal Electronic Failure
Communication system malfunction	Plug-in Charge Control System	U113A87	Lost Communication with Solar Charging Control Module Missing Message
	Solar Charging System	U115087	Lost Communication with Hybrid Powertrain Control Module (Hybrid/EV Battery Local Bus) Missing Message
		U115387	Lost Communication with Battery Charger Control Module "A" (ch2) Missing Message
		U117B87	Lost Communication with Battery Energy Control Module "A" (ch2) Missing Message
Sensor and actuator circuit malfunction	Solar Charging System	P1EA412	Solar Charging Voltage Sensor Circuit Short to Auxiliary Battery
		P1EA414	Solar Charging Voltage Sensor Circuit Short to Ground or Open
System malfunction	Plug-in Charge Control System	P1EA41C	Hybrid/EV Control Battery Voltage Sensor / Solar Charging Voltage Sensor Voltage Out of Range

HINT:

- P1EA917 may be output as a result of the malfunction indicated by the DTCs above.
  a. The chart above is listed in inspection order of priority.

b. Check DTCs that are output at the same time by following the listed order. (The main cause of the malfunction can be determined without performing unnecessary inspections.)

Post-procedure1

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART (PLUG-IN CHARGE CONTROL SYSTEM)**

C ▶ **GO TO DTC CHART (SOLAR CHARGING SYSTEM)**

A

2.	**CHECK CONNECTOR CONNECTION CONDITION (SOLAR ENERGY CONTROL ECU ASSEMBLY CONNECTOR)**

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, unless instructed by the repair manual because this may cause a malfunction.

Procedure1

(b) Check the solar energy control ECU assembly connector is connected securely, and there are no contact problems.

(c) Disconnect the solar energy control ECU assembly connector.

NOTICE:

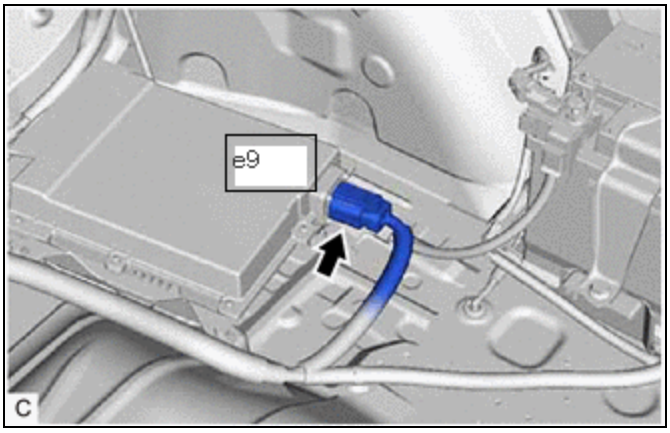
As there is a possibility that high voltage battery charging could be performed by the solar roof, make sure to disconnect all the connectors of the solar energy control ECU assembly.

(d) Check the contact pressure of each terminal of the solar energy control ECU assembly connector and check for foreign matter or arc marks on the terminals.

Click here INFO

Result:

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems.	There is neither foreign matter nor arc marks.	A
The terminals are not connected securely and there is a contact problem.	There is any of foreign matter or arc marks.	B
The terminals are not connected securely and there is a contact problem.	There is neither foreign matter nor arc marks.	C
The terminals are connected securely and there are no contact problems.	There is any of foreign matter or arc marks.	B



Post-procedure1

(e) Reconnect the solar energy control ECU assembly connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A ▼

3.	INSPECT SOLAR ENERGY CONTROL ECU ASSEMBLY (DISCHARGE RESISTANCE)

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

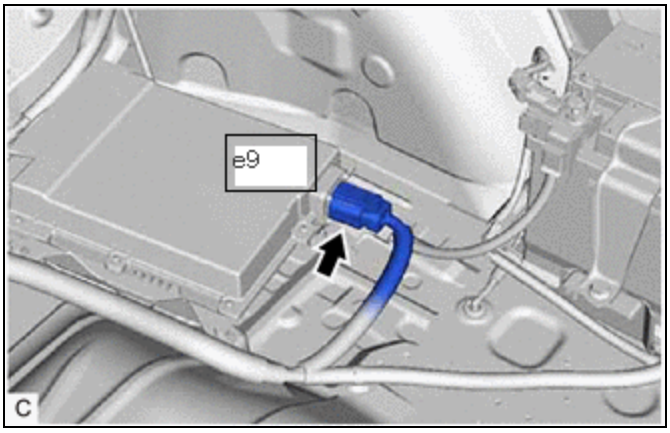
NOTICE:

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

(b) Disconnect the solar energy control ECU assembly connectors.

NOTICE:

As there is a possibility that high voltage battery charging could be performed by the solar roof, make sure to disconnect all the connectors of the solar energy control ECU assembly.



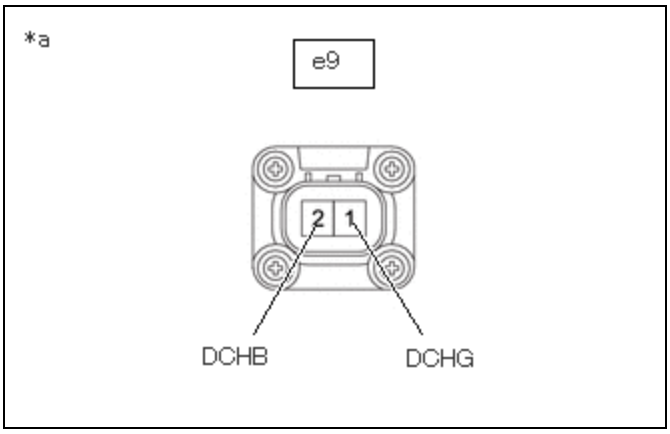
Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(e9)
Click Connector(e9)



TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
e9-2 (DCHB) (positive terminal) - e9-1 (DCHG) (negative terminal)	Ignition switch off	Below 550 kΩ

*a	Component without harness connected (Solar Energy Control ECU Assembly)

Result:

PROCEED TO
OK
NG

Post-procedure1

(d) Connect the solar energy control ECU assembly connectors.

NG ▶ **REPLACE SOLAR ENERGY CONTROL ECU ASSEMBLY**

OK

4.	**CHECK CONNECTOR CONNECTION CONDITION (FLOOR UNDER WIRE CONNECTOR)**

CAUTION:

Be sure to wear insulated gloves

Pre-procedure1

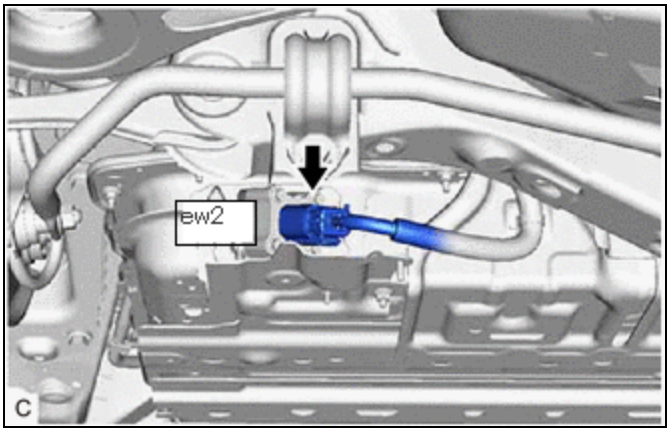
(a) Check that the service plug grip is not installed.

NOTICE:

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

Procedure1

(b) Check the floor under wire connector is connected securely, and there are no contact problems.



(c) Disconnect the floor under wire connector.

(d) Check the contact pressure of each terminal of the floor under wire connector and check for foreign matter or arc marks on the terminals.

Click here INFO

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems.	There is neither foreign matter nor arc marks.	A
The terminals are not connected securely and there is a contact problem.	There is any of foreign matter or arc marks.	B
The terminals are not connected securely and there is a contact problem.	There is neither foreign matter nor arc marks.	C

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems.	There is any of foreign matter or arc marks.	B

Post-procedure1

(e) Reconnect the floor under wire connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A

5.	**CHECK CONNECTOR CONNECTION CONDITION (NO. 1 TRACTION BATTERY DEVICE BOX CONNECTOR)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

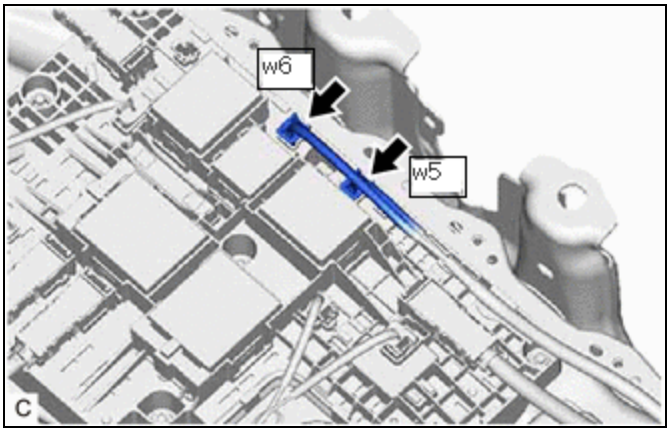
(a) Check that the service plug grip is not installed.

NOTICE:

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

Procedure1

(b) Check the No. 1 traction battery device box connector is connected securely, and there are no contact problems.



(c) Disconnect the No. 1 traction battery device box connector.

(d) Check the contact pressure of each terminal of the No. 1 traction battery device box connector and check for foreign matter or arc marks on the terminals.

Click here INFO

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems.	There is neither foreign matter nor arc marks.	A
The terminals are not connected securely and there is a contact problem.	There is any of foreign matter or arc marks.	B
The terminals are not connected securely and there is a contact problem.	There is neither foreign matter nor arc marks.	C
The terminals are connected securely and there are no contact problems.	There is any of foreign matter or arc marks.	B

Post-procedure1

(e) Reconnect the No. 1 traction battery device box connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A ▼

6.	**CHECK CONNECTOR CONNECTION CONDITION (NO. 1 TRACTION BATTERY DEVICE BOX CONNECTOR)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

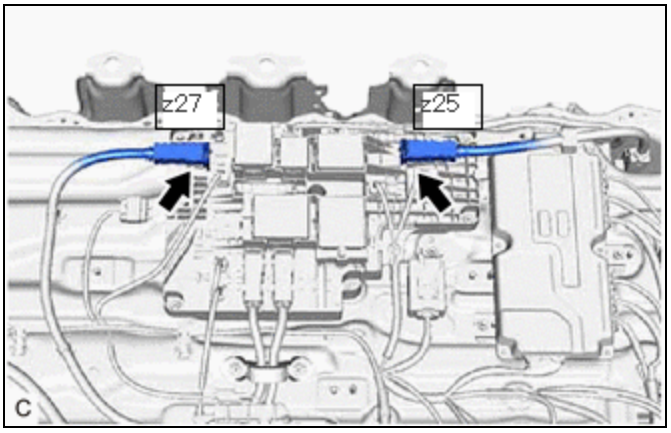
(a) Check that the service plug grip is not installed.

NOTICE:

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

Procedure1

(b) Check the No. 1 traction battery device box connector is connected securely, and there are no contact problems.



(c) Disconnect the No. 1 traction battery device box connector.

(d) Check the contact pressure of each terminal of the No. 1 traction battery device box connector and check for foreign matter or arc marks on the terminals.

Click here INFO

RESULT		PROCEED TO
The terminals are connected securely and there are no contact problems.	There is neither foreign matter nor arc marks.	A
The terminals are not connected securely and there is a contact problem.	There is any of foreign matter or arc marks.	B
The terminals are not connected securely and there is a contact problem.	There is neither foreign matter nor arc marks.	C
The terminals are connected securely and there are no contact problems.	There is any of foreign matter or arc marks.	B

Post-procedure1

(e) Reconnect the No. 1 traction battery device box connector.

B ▶ **REPLACE MALFUNCTIONING PARTS**

C ▶ **CONNECT SECURELY**

A ▼

7.	**CHECK CONNECTOR CONNECTION CONDITION (BATTERY ECU CONNECTOR)**

Click here INFO

NG ▶ **CONNECT SECURELY**

OK ▼

8.	**CHECK CONNECTOR CONNECTION CONDITION (NO. 1 TRACTION BATTERY DEVICE BOX CONNECTOR)**

Click here INFO

NG ▶ **CONNECT SECURELY**

OK ▼

9.	**CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - NO. 1 TRACTION BATTERY DEVICE BOX)**

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 No. 1 traction battery device box connector.

(c) Disconnect the battery ECU assembly connector.

Procedure1

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

Standard Resistance (Check for Open):

EWD INFO

Click Location & Routing(x4,x12,x13)
Click Connector(x4)
Click Connector(x12)
Click Connector(x13)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x4-8 (CHRB) - x12-3 (CHRB)	Ignition switch off	Below 1 Ω

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x4-6 (CHRG) - x13-1 (CHRG)	Ignition switch off	Below 1 Ω

Standard Resistance (Check for Short):

EWD INFO

Click Location & Routing(x4,x12,x13)
Click Connector(x4)
Click Connector(x12)
Click Connector(x13)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x4-8 (CHRB) or x12-3 (CHRB) - Body ground and other terminals	Ignition switch off	10 kΩ or higher
x4-6 (CHRG) or x13-1 (CHRG) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

Post-procedure1

(e) Reconnect the battery ECU assembly connector.

(f) Reconnect the No. 1 traction battery device box connector.

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

OK ▼

10.	**CHECK HARNESS AND CONNECTOR (NO. 1 TRACTION BATTERY DEVICE BOX - BODY GROUND)**

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 No. 1 traction battery device box connector.

(c) Connect the SST.

HINT:

Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(x12,x13)
Click Connector(x12)
Click Connector(x13)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
x12-2 (GND) - Body ground	Ignition switch off	Below 1 Ω
x13-3 (GND8) - Body ground	Ignition switch off	Below 1 Ω

Post-procedure1

(e) Disconnect the SST.

(f) Reconnect the No. 1 traction battery device box connector

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

OK
▼

11.	**CHECK HARNESS AND CONNECTOR (SOLAR ENERGY CONTROL ECU ASSEMBLY - FLOOR UNDER WIRE)**

CAUTION:

Be sure to wear insulated gloves.

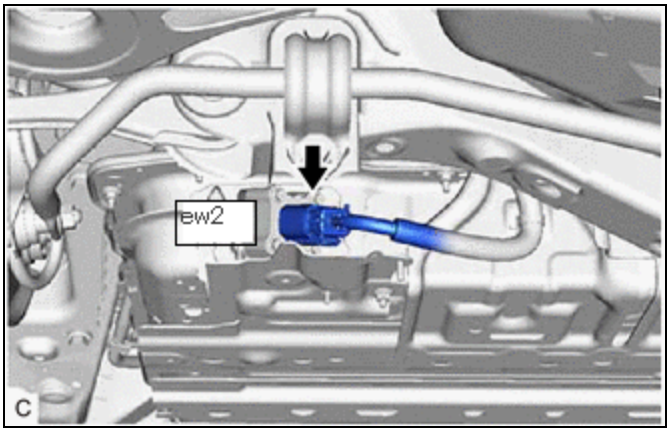
Pre-procedure1

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

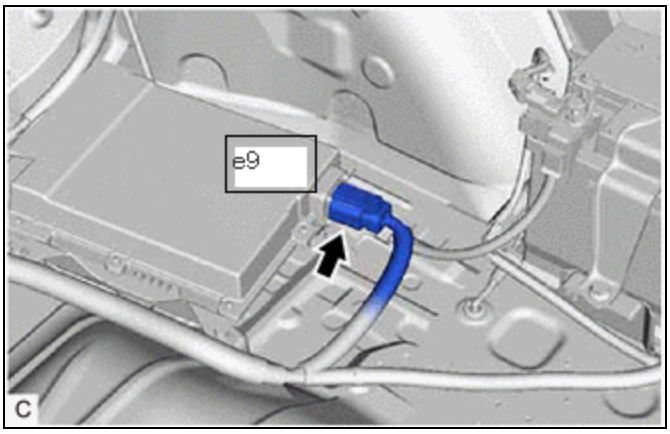
NOTICE:

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 floor under wire connector.



(c) Disconnect the solar energy control ECU assembly connector.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(e9,ew2)
Click Connector(e9)
Click Connector(ew2)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
e9-2 (DCHB) - ew2-1	Ignition switch off	Below 1 Ω
e9-2 (DCHG) - ew2-2	Ignition switch off	Below 1 Ω

Post-procedure1

(e) Reconnect the solar energy control ECU assembly connector.

(f) Reconnect the floor under wire connector.

NG ▶ REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

12.	**CHECK HARNESS AND CONNECTOR (NO. 1 TRACTION BATTERY DEVICE BOX - HIGH VOLTAGE WIRE)**

CAUTION:

Be sure to wear insulated gloves.

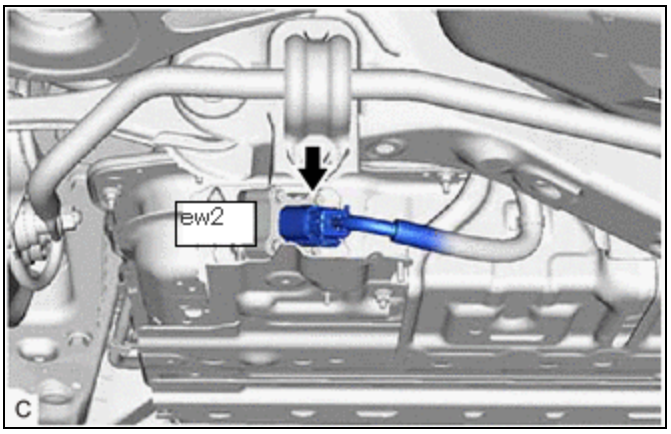
Pre-procedure1

(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.

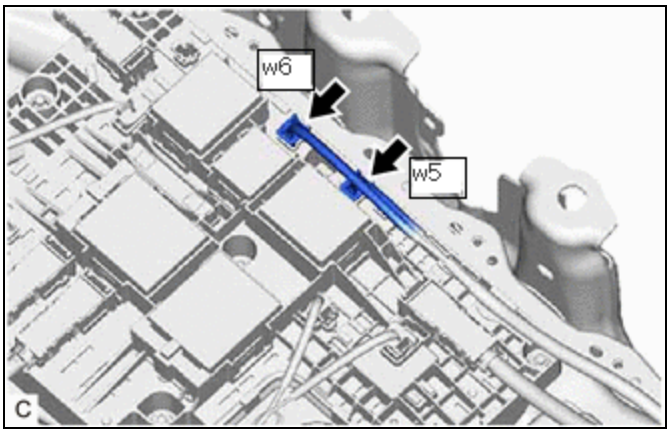
(b) Disconnect the floor under wire connector.



(c) Disconnect the HV battery high voltage connectors from the No. 1 traction battery device box.

NOTICE:

Insulate each disconnected high-voltage connector with insulating tape. Wrap the connector from the wire harness side to the end of the connector.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(w5,ew2,w6)
Click Connector(w5)
Click Connector(ew2)
Click Connector(w6)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
w5-1 (DCB2) - ew2-1	Ignition switch off	Below 1 Ω
w6-1 (DCG2) - ew2-2	Ignition switch off	Below 1 Ω

Post-procedure1

(e) Reconnect the HV battery high voltage connectors.

(f) Reconnect the floor under wire connector.

OK ▶ **REPLACE NO. 1 TRACTION BATTERY DEVICE BOX**

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