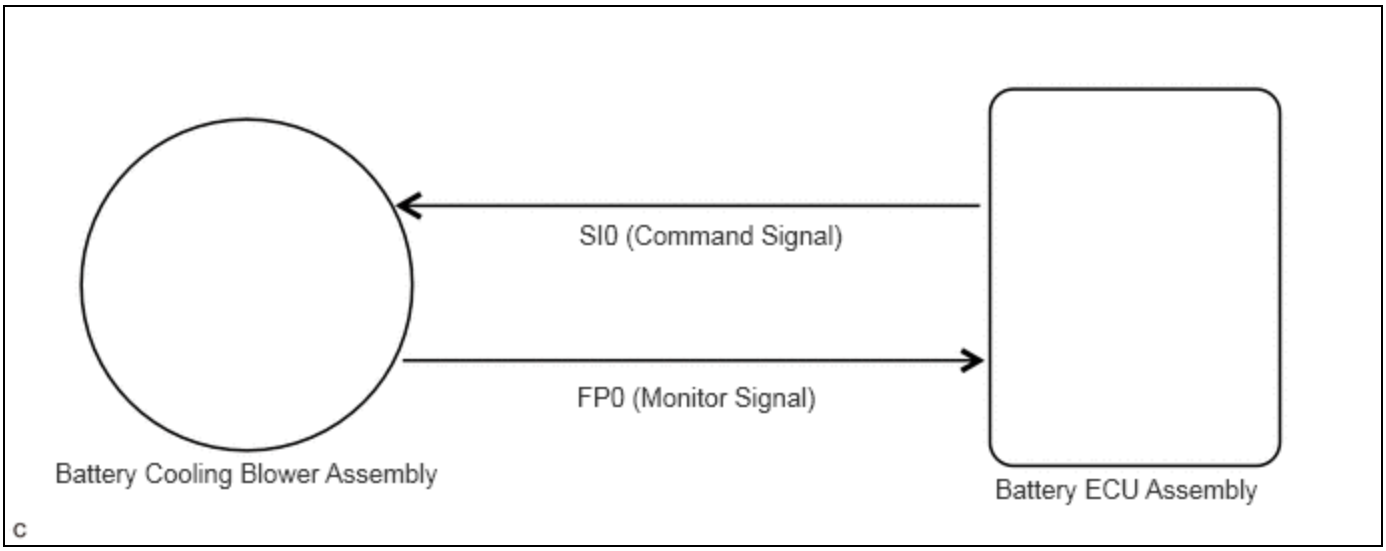
Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM1000000029A59
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: HYBRID / BATTERY CONTROL: HYBRID BATTERY SYSTEM (for M20A-FXS): P0A8111,P0A814B; Hybrid/EV Battery Cooling Fan 1 Circuit Short to Ground; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	**P0A8111**	**Hybrid/EV Battery Cooling Fan 1 Circuit Short to Ground**

DTC	**P0A814B**	**Hybrid/EV Battery Cooling Fan 1 Over Temperature**

DESCRIPTION

The battery cooling blower assembly speed is controlled by the battery ECU assembly. Power is supplied to the battery cooling blower assembly when the MREL terminal of the hybrid vehicle control ECU turns on the IGCT relay. The battery ECU assembly sends command signals (SI0) to the battery cooling blower assembly to adjust the fan speed to an appropriate speed for the HV battery temperature. The frequency (FP0) of the battery cooling blower assembly is sent to the battery ECU assembly as a monitor signal.



DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0A8111	Hybrid/EV Battery Cooling Fan 1 Circuit Short to Ground	Both of the following conditions are met: • The speed calculated based on the battery cooling blower assembly output frequency is	• Battery cooling blower assembly • Battery ECU assembly • BATT FAN fuse • Wire harness	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0A84

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		not within the target control speed range. • The battery cooling blower assembly speed is excessively low when a certain level of speed is requested (possibility of an open or short to ground in connected circuits, or motor locking). (2 trip detection logic)	or connector					
P0A814B	Hybrid/EV Battery Cooling Fan 1 Over Temperature	Both of the following conditions are met: • The HV battery temperature is high and the speed calculated based on the battery cooling blower assembly output frequency is not within the target control speed range. • The HV battery temperature is high and the battery	• Battery cooling blower assembly • Battery ECU assembly • BATT FAN fuse • Wire harness or connector	Comes on	Master Warning: Comes on	HV Battery	A	SAE Code: P0A84

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		cooling blower assembly speed is excessively low when a certain level of speed is requested (possibility of an open or short to ground in connected circuits, or motor locking). (1 trip detection logic)						

HINT:

"Hybrid/EV Battery Cooling Fan 1 Frequency" is detected when the battery cooling blower assembly is operating and its value changes in proportion to the battery cooling blower assembly speed.

MONITOR DESCRIPTION

If the battery ECU assembly detects that the speed of the battery cooling blower assembly is lower than the target speed, it will illuminate the MIL and store a DTC.

MONITOR STRATEGY

Related DTCs	P0A84 (INF P0A8111): Hybrid/EV Battery Cooling Fan 1 Circuit Short to Ground P0A84 (INF P0A814B): Hybrid/EV Battery Cooling Fan 1 Over Temperature
Required sensors/components	Battery cooling blower assembly
Frequency of operation	Continuous
Duration	TMC's intellectual property
MIL operation	1 driving cycle / 2 driving cycles
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	-

COMPONENT OPERATING RANGE

Battery ECU assembly	DTC P0A84 (INF P0A8111) is not detected DTC P0A84 (INF P0A814B) is not detected

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. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for 2 minutes or more.
3. Enter the following menus: Powertrain / HV Battery / Active Test / Control the Hybrid/EV Battery Cooling Fan.[*1]
4. Select fan mode 1 and operate the battery cooling blower assembly and wait for 60 seconds or more.[*2]

   HINT:

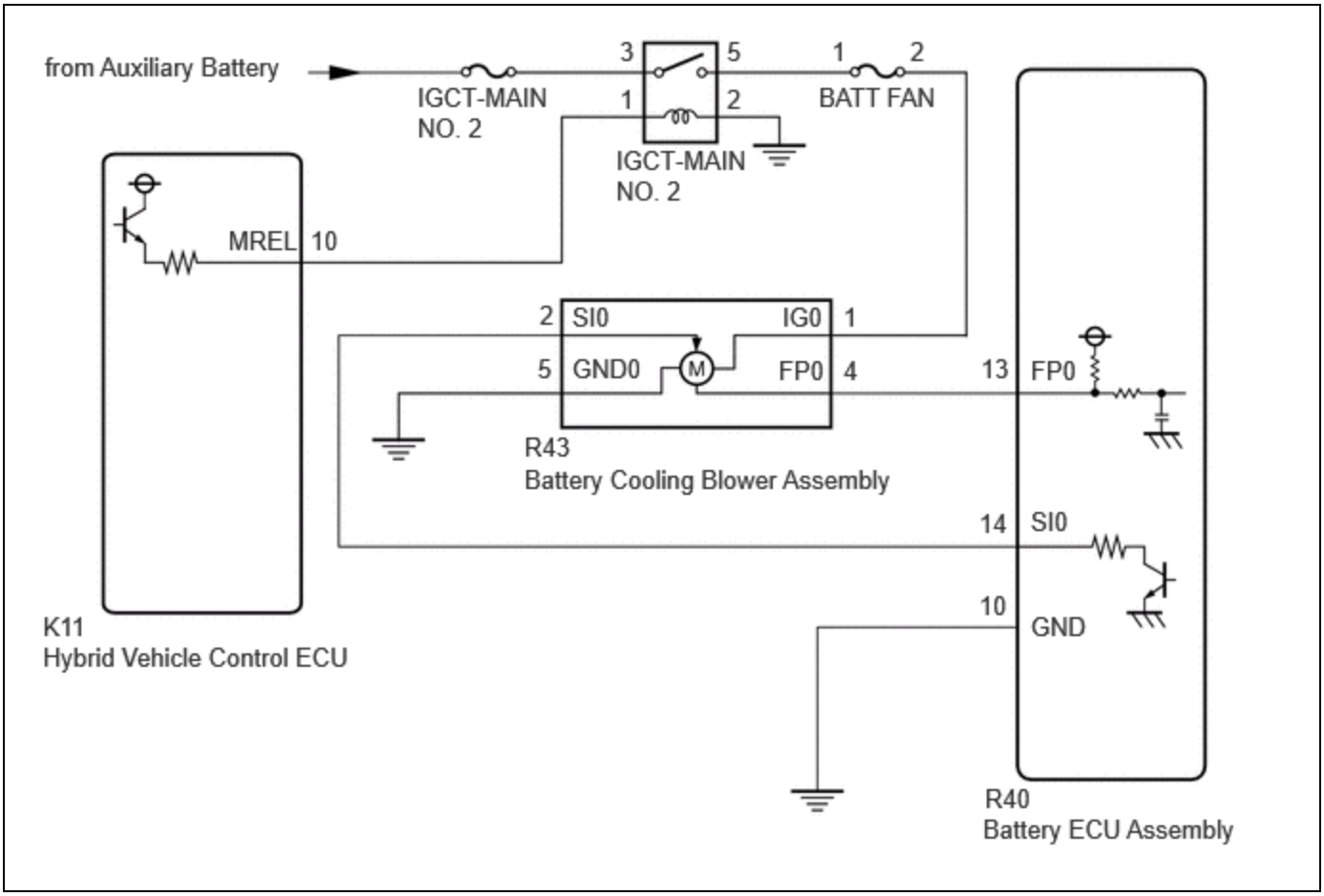
   - Operation of the battery cooling blower assembly can be confirmed by checking if air is sucked into the air intake port of the intake duct.
   - [*1] to [*2]: Normal judgment procedure.

     The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
5. Enter the following menus: Powertrain / HV Battery / Utility / All Readiness.
6. 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, 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

HINT:

As the battery cooling blower assembly speed is excessively low, there is a possibility of an open or short to ground in connected circuits, or motor locking.

PROCEDURE

1.	**CHECK DTC OUTPUT (HV BATTERY, HYBRID CONTROL)**

Pre-procedure1

(a) None

Procedure1

(b) Check for DTCs.

Powertrain > HV Battery > Trouble Codes
Powertrain > Hybrid Control > Trouble Codes

RESULT	PROCEED TO
P0A8111 or P0A814B only is output, or DTCs except the ones in the table below are also output.	A
DTCs of hybrid battery system in the table below are output.	B
DTCs of hybrid control system in the table below are output.	C

SYSTEM	RELEVANT DTC	
Hybrid battery system	P060A47	Hybrid/EV Battery Energy Control Module Monitoring Processor Watchdog / Safety MCU Failure
	P060B49	Hybrid/EV Battery Energy Control Module A/D Processing Internal Electronic Failure
	P060687	Hybrid/EV Battery Energy Control Module Processor to Monitoring Processor Missing Message
Hybrid control system	P0A1F94	Hybrid/EV Battery Energy Control Module Unexpected Operation

Post-procedure1

(c) Turn the ignition switch off.

B ▶ **GO TO DTC CHART (HYBRID BATTERY SYSTEM)**

C ▶ **GO TO DTC CHART (HYBRID CONTROL SYSTEM)**

A ▼

2.	**PERFORM ACTIVE TEST USING GTS (CONTROL THE HYBRID/EV BATTERY COOLING FAN)**

Pre-procedure1

(a) Clear the DTCs and freeze frame data.

Powertrain > HV Battery > Clear DTCs

(b) Select fan mode 6 in the "Control the Hybrid/EV Battery Cooling Fan" Active Test to operate the battery cooling blower assembly.

Powertrain > HV Battery > Active Test

TESTER DISPLAY
Control the Hybrid/EV Battery Cooling Fan

NOTICE:

If the Active Test cannot be performed, skip it and proceed to the next step to check if the fan operates and air is sucked. In accordance with fail-safe system operation, the battery ECU assembly sends a command to operate the battery cooling blower assembly.

Procedure1

(c) Check that the battery cooling blower assembly operates, air is sucked into the inlet duct and the operation sound is normal.

HINT:

The battery cooling blower assembly may not stop even when turning the cooling fan off in the "Control the Hybrid/EV Battery Cooling Fan" Active Test. This is due to HV system control and is not a malfunction.

OK:

The battery cooling blower assembly operates.

Post-procedure1

(d) Turn the ignition switch off.

NG ▶ **GO TO STEP 7**

OK ▼

3.	**CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - BATTERY COOLING BLOWER ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves and protective goggles.

Pre-procedure1

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

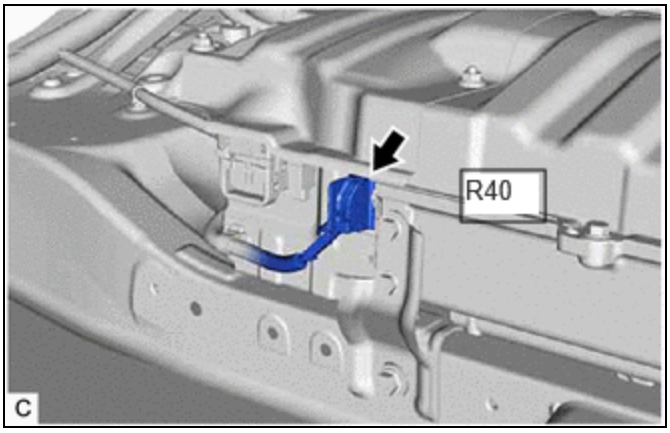
NOTICE:

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 battery ECU assembly connector.

NOTICE:

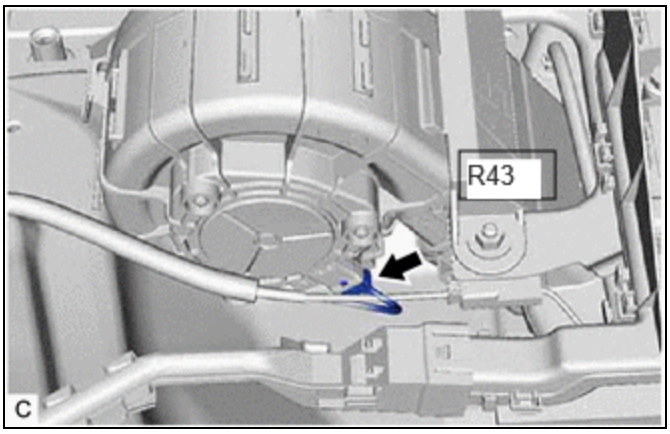
Before disconnecting the connector, check that it is not loose or disconnected.



(c) Disconnect the battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R43,R40)
Click Connector(R43)
Click Connector(R40)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-4 (FP0) - R40-13 (FP0)	Ignition switch off	Below 1 Ω
R43-4 (FP0) or R40-13 (FP0) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

Pre-procedure2

(e) Connect the cable to the negative (-) auxiliary battery terminal.

(f) Turn the ignition switch to ON.

Procedure2

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

Standard Voltage:

EWD INFO

Click Location & Routing(R43,R40)
Click Connector(R43)
Click Connector(R40)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-4 (FP0) or R40-13 (FP0) - Body ground	Ignition switch ON	Below 1 V

NOTICE:

- Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.
- If the ignition switch is turned to ON with the connectors disconnected, other DTCs will be stored. Be sure to clear the DTCs after the inspection.

HINT:

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

Check the condition of each wire harness and each connector between the battery ECU assembly connector and battery cooling blower assembly.

Post-procedure1

(h) Turn the ignition switch off.

(i) Disconnect the cable from the negative (-) auxiliary battery terminal.

(j) Reconnect the battery cooling blower assembly connector.

(k) Reconnect the battery ECU assembly connector.

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

OK ▼

4.	**READ VALUE USING GTS (HYBRID/EV BATTERY COOLING FAN 1 FREQUENCY)**

CAUTION:

Be sure to wear insulated gloves and protective goggles.

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) Connect the cable to the negative (-) auxiliary battery terminal.

(c) Clear the DTCs and freeze frame data.

Powertrain > HV Battery > Clear DTCs

(d) Select each fan mode 1 to 6 in the "Control the Hybrid/EV Battery Cooling Fan" Active Test to operate the battery cooling blower assembly.

Powertrain > HV Battery > Active Test

ACTIVE TEST DISPLAY
Control the Hybrid/EV Battery Cooling Fan

DATA LIST DISPLAY
Hybrid/EV Battery Cooling Fan 1 Frequency

NOTICE:

If the Active Test cannot turn off the battery cooling blower assembly, skip it and proceed to the next step to check the frequency value. In accordance with fail-safe system operation, the battery ECU assembly sends a command to operate the battery cooling fan assembly.

Procedure1

(e) While the cooling fan is operating, compare the value in the Data List (Hybrid/EV Battery Cooling Fan 1 Frequency) with the frequency value that was actually measured at the battery ECU assembly connector.

Specified Condition:

EWD INFO

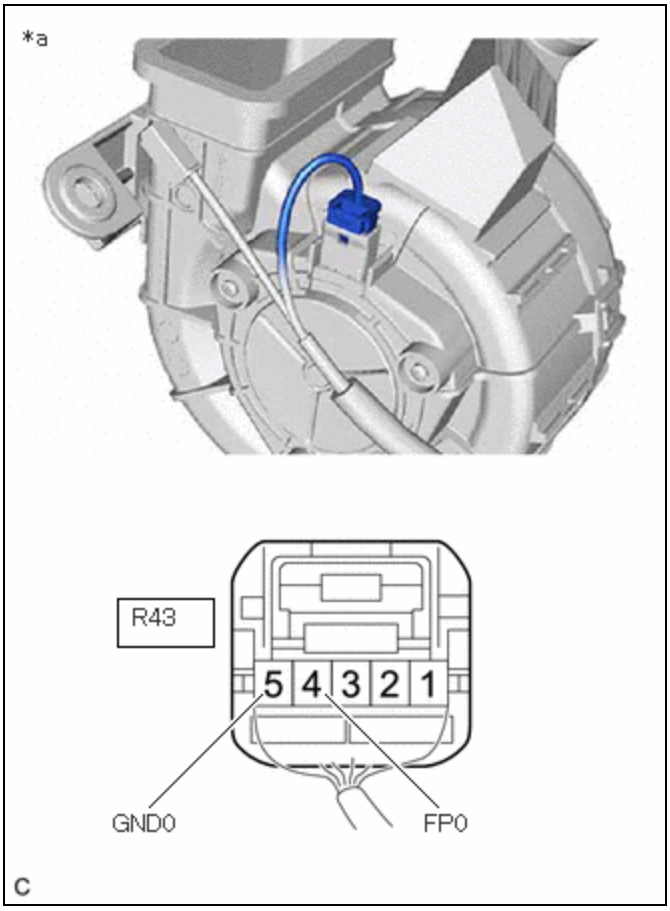
Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION
R43-4 (FP0) - R43-5 (GND0)	Battery cooling blower assembly operating (Active Test of cooling fan being performed)

NOTICE:

Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.

Result:



*a	Component with harness connected

RESULT	PROCEED TO
Both of the value in the Data List (Hybrid/EV Battery Cooling Fan 1 Frequency) and the actual measured value at the battery ECU assembly connector are 0 Hz.	A
Other than above	B

	(Battery Cooling Blower Assembly)

Post-procedure1

(f) Turn the ignition switch off.

(g) Disconnect the cable from the negative (-) auxiliary battery terminal.

B ▶ **GO TO STEP 6**

A ▼

5.	CHECK BATTERY ECU ASSEMBLY

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

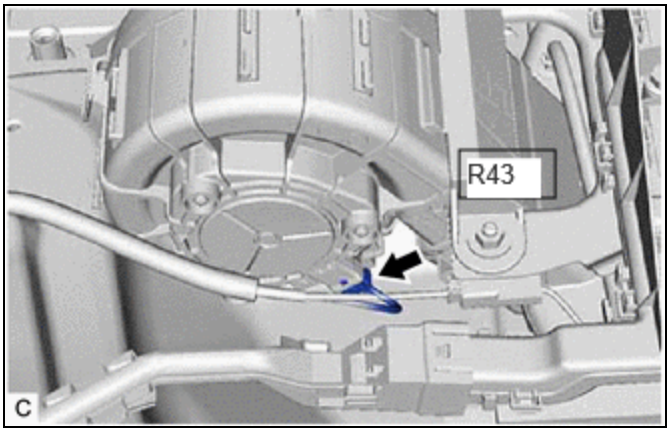
NOTICE:

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 battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



(c) Connect the cable to the negative (-) auxiliary battery terminal.

(d) Turn the ignition switch to ON.

Procedure1

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

Standard Voltage:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-4 (FP0) - R43-5 (GND0)	Ignition switch ON	4.5 to 5.5 V

NOTICE:

- Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.
- If the ignition switch is turned to ON with the connectors disconnected, other DTCs will be stored. Be sure to clear the DTCs after the inspection.

Post-procedure1

(f) Turn the ignition switch off.

(g) Disconnect the cable from the negative (-) auxiliary battery terminal.

(h) Reconnect the battery cooling blower assembly connector.

OK ▶ **REPLACE BATTERY COOLING BLOWER ASSEMBLY**

NG ▶ **REPLACE BATTERY ECU ASSEMBLY**

6.	**CHECK BATTERY ECU ASSEMBLY (FREQUENCY)**

CAUTION:

Be sure to wear insulated gloves and protective goggles.

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) Connect the cable to the negative (-) auxiliary battery terminal.

(c) Clear the DTCs and freeze frame data.

Powertrain > HV Battery > Clear DTCs

(d) Select each fan mode 1 to 6 in the "Control the Hybrid/EV Battery Cooling Fan" Active Test to operate the battery cooling blower assembly.

Powertrain > HV Battery > Active Test

ACTIVE TEST DISPLAY
Control the Hybrid/EV Battery Cooling Fan

DATA LIST DISPLAY
Hybrid/EV Battery Cooling Fan 1 Frequency

NOTICE:

If the Active Test cannot turn off the battery cooling blower assembly, skip it and proceed to the next step to check the frequency value. In accordance with fail-safe system operation, the battery ECU assembly sends a command to operate the battery cooling blower assembly.

Procedure1

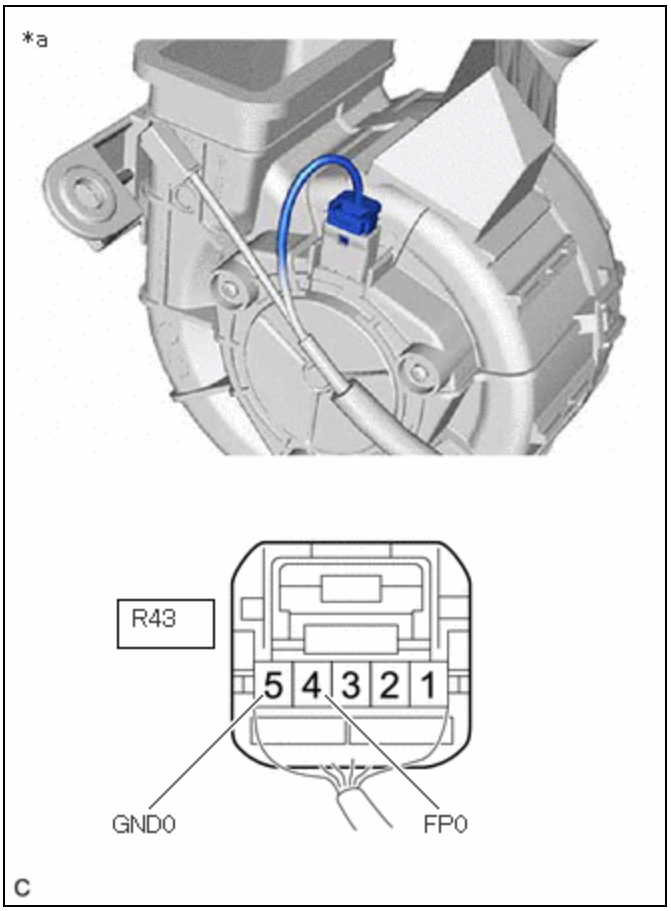
(e) While the cooling fan is operating, compare the value in the Data List (Hybrid/EV Battery Cooling Fan 1 Frequency) with the frequency value that was actually measured at the battery ECU assembly connector.

Specified Condition:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-4 (FP0) - R43-5 (GND0)	Battery cooling blower assembly operating (Active Test of cooling fan being performed)	Difference between the value in the Data List (Hybrid/EV Battery Cooling Fan 1 Frequency) and the actual measured value at the battery ECU assembly connector is 10% or less.



*a	Component with harness connected (Battery Cooling Blower Assembly)

NOTICE:

Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.

HINT:

Compare the values in each fan mode 1 to 6. If the Active Test cannot be performed, compare the values only in the current fan mode.

Result:

PROCEED TO
OK
NG

Post-procedure1

(f) Turn the ignition switch off.

(g) Disconnect the cable from the negative (-) auxiliary battery terminal.

OK ▶ **REPLACE BATTERY COOLING BLOWER ASSEMBLY**

NG ▶ **REPLACE BATTERY ECU ASSEMBLY**

7.	**CHECK FUSE (BATT FAN)**

Pre-procedure1

(a) Remove the BATT FAN fuse from the No. 1 engine room relay block and No. 1 junction block assembly.

Procedure1

(b) Measure the resistance of the BATT FAN fuse.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
BATT FAN fuse	Ignition switch off	Below 1 Ω

Post-procedure1

(c) Install the BATT FAN fuse.

NG ▶ **GO TO STEP 16**

OK ▼

8.	**CHECK HARNESS AND CONNECTOR (IGCT-MAIN NO. 2 RELAY - BATTERY COOLING BLOWER ASSEMBLY) (VOLTAGE)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

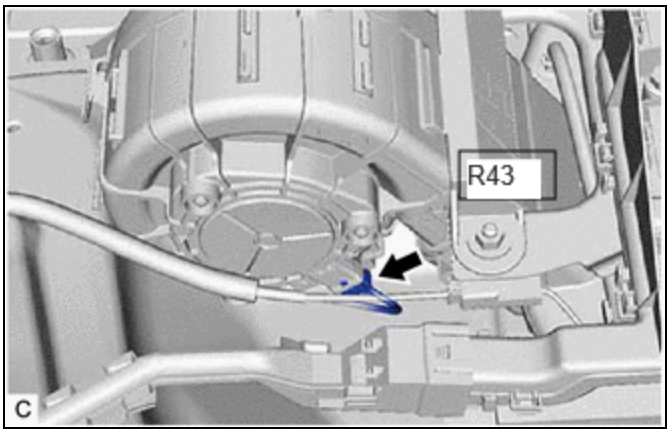
NOTICE:

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 battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



(c) Connect the cable to the negative (-) auxiliary battery terminal.

(d) Clear the DTCs and freeze frame data.

Powertrain > Hybrid Control > Clear DTCs

Procedure1

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

Standard Voltage:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-1 (IG0) - R43-5 (GND0)	Ignition switch ON	11 to 14 V

NOTICE:

- Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.
- If the ignition switch is turned to ON with the connectors disconnected, other DTCs will be stored. Be sure to clear the DTCs after the inspection.

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

Post-procedure1

(f) Turn the ignition switch off.

(g) Disconnect the cable from the negative (-) auxiliary battery terminal.

(h) Reconnect the battery cooling blower assembly connector.

NG ▶ **GO TO STEP 13**

OK ▼

9.	**CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - BATTERY COOLING BLOWER ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

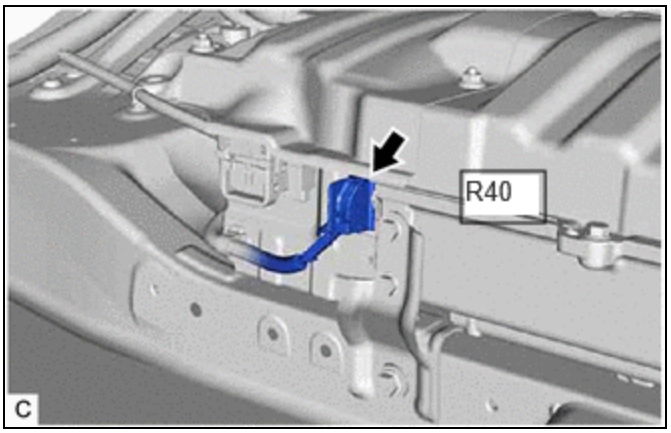
NOTICE:

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 battery ECU assembly connector.

NOTICE:

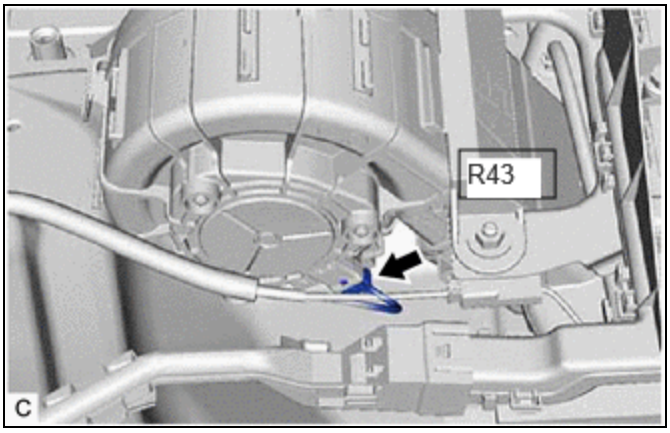
- Before disconnecting the connector, check that it is not loose or disconnected.
- Check that each connector between the battery ECU assembly and battery cooling blower assembly is not loose or disconnected.



(c) Disconnect the battery cooling blower 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

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

Standard Resistance:

EWD INFO

Click Location & Routing(R40,R43)
Click Connector(R40)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R40-14 (SI0) - R43-2 (SI0)	Ignition switch off	Below 1 Ω
R40-14 (SI0) or R43-2 (SI0) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

NOTICE:

Make sure that each connector between the battery ECU assembly and battery cooling blower assembly is not loose or disconnected and its terminals are not deformed or corroded.

Pre-procedure2

(e) Connect the cable to the negative (-) auxiliary battery terminal.

(f) Turn the ignition switch to ON.

Procedure2

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

Standard Voltage:

EWD INFO

Click Location & Routing(R40,R43)
Click Connector(R40)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R40-14 (SI0) or R43-2 (SI0) - Body ground	Ignition switch ON	Below 1 V

NOTICE:

- Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.
- If the ignition switch is turned to ON with the connectors disconnected, other DTCs will be stored. Be sure to clear the DTCs after the inspection.

HINT:

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

Check the condition of each wire harness and each connector between the battery ECU assembly connector and battery cooling blower assembly.

Post-procedure1

(h) Turn the ignition switch off.

(i) Disconnect the cable from the negative (-) auxiliary battery terminal.

(j) Reconnect the battery cooling blower assembly connector.

(k) Reconnect the battery ECU assembly connector.

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

OK ▼

10.	**CHECK BATTERY ECU ASSEMBLY**

Pre-procedure1

(a) Remove the battery ECU assembly.

HINT:

Click here INFO

Procedure1

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

Standard Resistance:

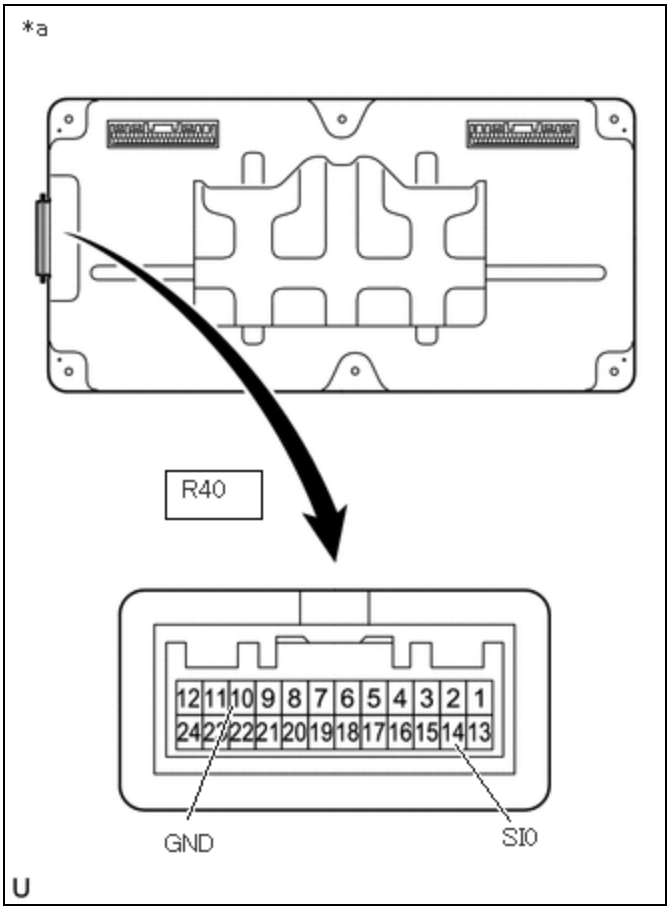
EWD INFO

Click Location & Routing(R40)
Click Connector(R40)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R40-14 (SI0) - R40-10 (GND)	Ignition switch off	10 kΩ or higher

Result:

PROCEED TO
OK
NG



*a	Component without harness connected (Battery ECU Assembly)

Post-procedure1

(c) Install the battery ECU assembly.

NG ▶ **REPLACE BATTERY ECU ASSEMBLY**

OK ▼

11.	CHECK BATTERY ECU ASSEMBLY (SI0 VOLTAGE)

CAUTION:

Be sure to wear insulated gloves and protective goggles.

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) Connect the cable to the negative (-) auxiliary battery terminal.

(c) Turn the ignition switch to ON.

Procedure1

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

Standard Voltage:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

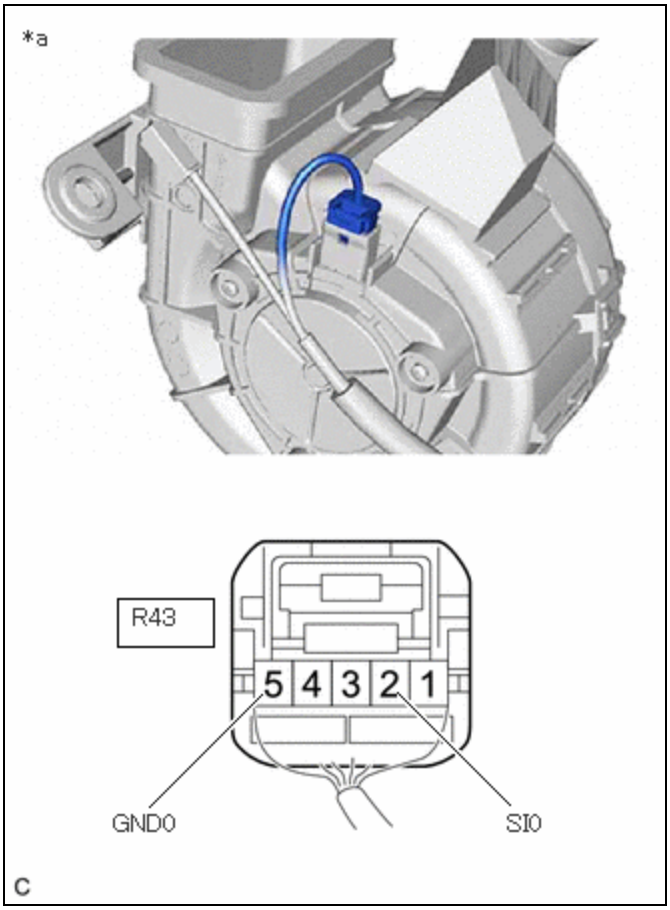
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-2 (SI0) - R43-5 (GND0)	Ignition switch ON	4.5 to 5.5 V

NOTICE:

Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.

Result:

PROCEED TO
OK
NG



*a	Component with harness connected (Battery Cooling Blower Assembly)

Post-procedure1

(e) Turn the ignition switch off.

(f) Disconnect the cable from the negative (-) auxiliary battery terminal.

NG ▶ **REPLACE BATTERY COOLING BLOWER ASSEMBLY**

OK ▼

12.	CHECK BATTERY COOLING BLOWER ASSEMBLY

CAUTION:

Be sure to wear insulated gloves and protective goggles.

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) Connect the cable to the negative (-) auxiliary battery terminal.

(c) Clear the DTCs and freeze frame data.

Powertrain > HV Battery > Clear DTCs

(d) Select each fan mode (1 to 6) in the "Control the Hybrid/EV Battery Cooling Fan" Active Test to operate the battery cooling blower assembly.

Powertrain > HV Battery > Active Test

TESTER DISPLAY
Control the Hybrid/EV Battery Cooling Fan

NOTICE:

If the Active Test cannot turn off the battery cooling blower assembly, skip it and proceed to the next step to check the waveform. In accordance with fail-safe system operation, the battery ECU assembly sends a command to operate the battery cooling blower assembly.

Procedure1

(e) Connect an oscilloscope to the battery ECU assembly connector and check the waveform.

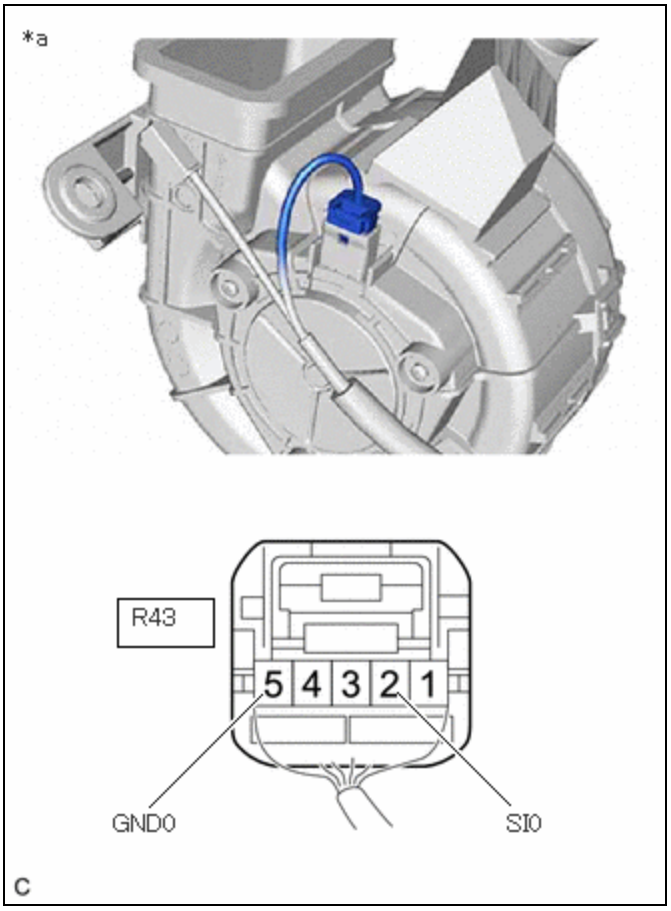
ITEM	CONTENT
Tester Connection	R43-2 (SI0) - R43-5 (GND0)
Equipment Setting	10 V/DIV., 1 ms./DIV.
Condition	Battery cooling blower assembly operating (Active Test of cooling fan being performed)

NOTICE:

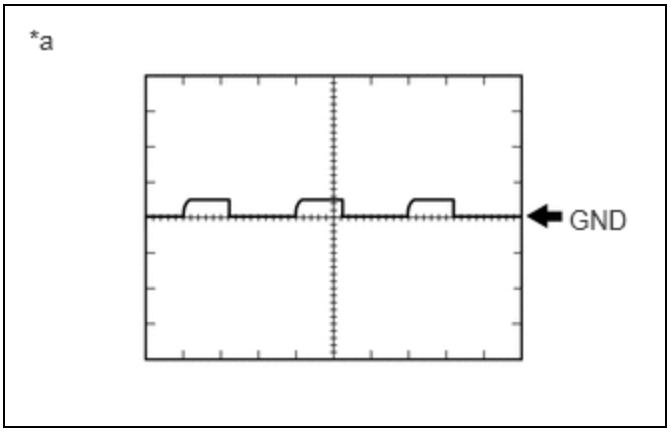
Turning the ignition switch to ON with the service plug grip removed causes other DTCs to be stored. Clear the DTCs after performing this inspection.

HINT:

- Perform this inspection with the battery ECU assembly connector connected.
- The wave length will vary with the operating speed of the battery cooling blower assembly.



*a	Component with harness connected (Battery Cooling Blower Assembly)



*a	Waveform 1

RESULT	PROCEED TO
Normal (The pulse output of waveform 1)	A
No pulse generation	B

Post-procedure1

(f) Turn the ignition switch off.

(g) Disconnect the cable from the negative (-) auxiliary battery terminal.

A ▶ **REPLACE BATTERY COOLING BLOWER ASSEMBLY**

B ▶ **REPLACE BATTERY ECU ASSEMBLY**

13.	**CHECK HARNESS AND CONNECTOR (BATTERY COOLING BLOWER ASSEMBLY - BODY GROUND)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

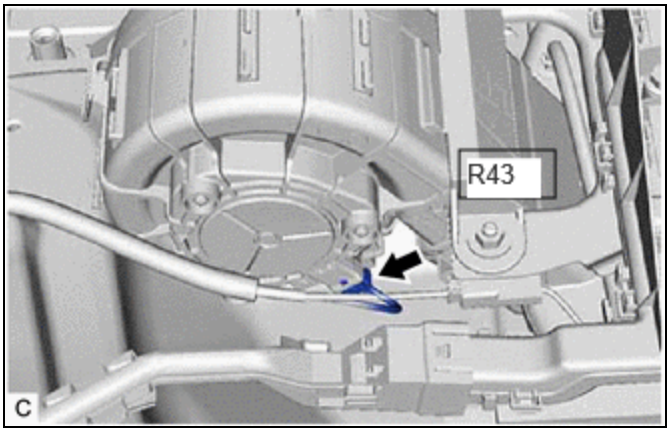
NOTICE:

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 battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-5 (GND0) - Body ground	Ignition switch off	Below 1 Ω

Post-procedure1

(d) Connect the battery cooling blower assembly connector.

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

OK ▼

14.	**CHECK HARNESS AND CONNECTOR (BATTERY ECU ASSEMBLY - BODY GROUND)**

CAUTION:

Be sure to wear insulated gloves and protective goggles.

Pre-procedure1

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

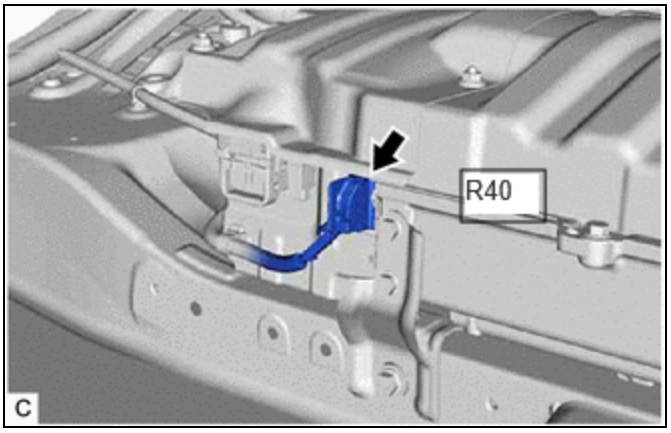
NOTICE:

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 battery ECU assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R40)
Click Connector(R40)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R40-10 (GND) - Body ground	Ignition switch off	Below 1 Ω

Post-procedure1

(d) Reconnect the battery ECU assembly connector.

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

OK ▼

15.	**CHECK HARNESS AND CONNECTOR (IGCT-MAIN NO. 2 RELAY - BATTERY COOLING BLOWER ASSEMBLY)**

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) Remove the IGCT-MAIN NO. 2 relay from the No. 1 engine room relay block and No. 1 junction block assembly.

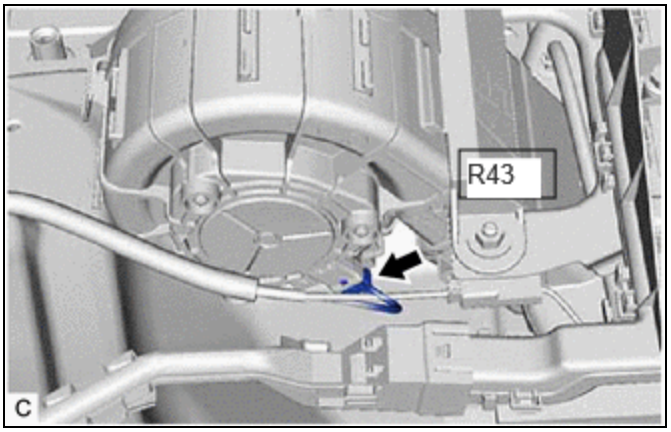
NOTICE:

Check the terminals of the relay for deformation and corrosion.

(c) Disconnect the battery cooling blower assembly connector.

NOTICE:

- Check that each connector between the IGCT-MAIN NO. 2 relay and battery cooling blower assembly is not loose or disconnected.
- Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
5 (IGCT-MAIN NO. 2 relay holder) - R43-1 (IG0)	Ignition switch off	Below 1 Ω

NOTICE:

- When taking a measurement with a tester, do not apply excessive force to the tester probe to avoid damaging the holder.
- Check that each connector between the IGCT-MAIN NO. 2 relay and battery cooling blower assembly is not loose or disconnected.

Post-procedure1

(e) Reconnect the battery cooling blower assembly connector.

(f) Install the IGCT-MAIN NO. 2 relay.

OK ▶ **REPLACE BATTERY ECU ASSEMBLY**

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

16.	**CHECK HARNESS AND CONNECTOR (BATT FAN FUSE - BATTERY COOLING BLOWER ASSEMBLY)**

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

NOTICE:

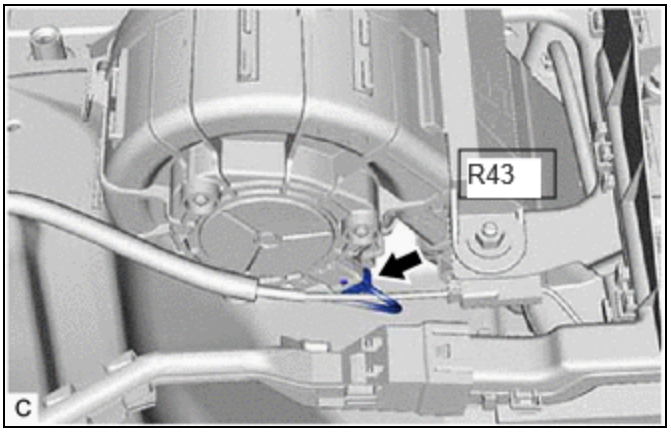
After removing the service plug grip, do not turn the ignition switch to ON (READY), unless instructed by the repair manual because this may cause a malfunction.

(b) Remove the BATT FAN fuse from the No. 1 engine room relay block and No. 1 junction block assembly.

(c) Disconnect the battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-1 (IG0) or 2 (BATT FAN fuse holder) - Body ground and other terminals	Ignition switch off	10 kΩ or higher

NOTICE:

When taking a measurement with a tester, do not apply excessive force to the tester probe to avoid damaging the holder.

Post-procedure1

(e) Reconnect the battery cooling blower assembly connector.

(f) Install the BATT FAN fuse.

NG ▶ **GO TO STEP 19**

OK ▼

17.	CHECK BATTERY COOLING BLOWER ASSEMBLY

CAUTION:

Be sure to wear insulated gloves.

Pre-procedure1

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

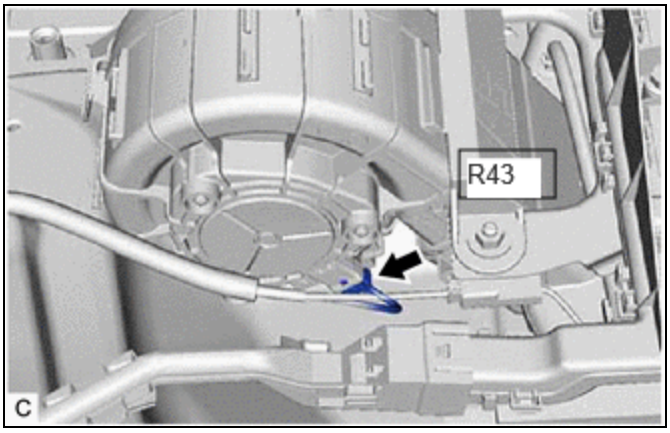
NOTICE:

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 battery cooling blower assembly connector.

NOTICE:

Before disconnecting the connector, check that it is not loose or disconnected.



Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R43)
Click Connector(R43)

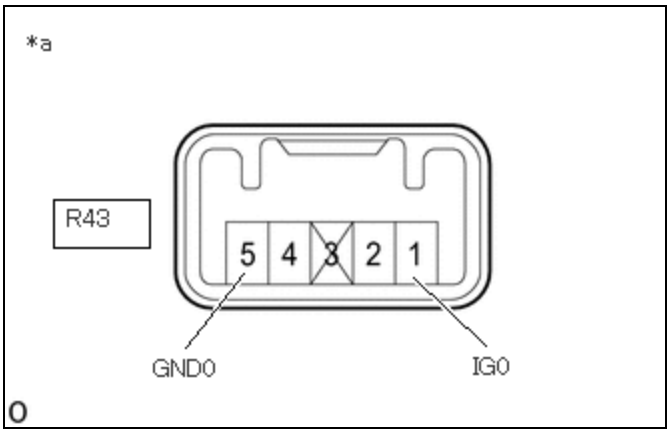
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
R43-1 (IG0) - R43-5 (GND0) and Body ground	Ignition switch off	10 kΩ or higher

NOTICE:

When taking a measurement with a tester, do not apply excessive force to the tester probe to avoid damaging the holder.

Result:

PROCEED TO
OK
NG



*a	Component without harness connected (Battery Cooling Blower Assembly)

Post-procedure1

(d) Reconnect the battery cooling blower assembly connector.

OK ▶ REPLACE FUSE (BATT FAN)

NG

18.	**REPLACE BATTERY COOLING BLOWER ASSEMBLY**

HINT:

Click here INFO

NEXT **REPLACE FUSE (BATT FAN)**

19.	**REPAIR OR REPLACE HARNESS OR CONNECTOR**

NEXT **REPLACE FUSE (BATT FAN)**