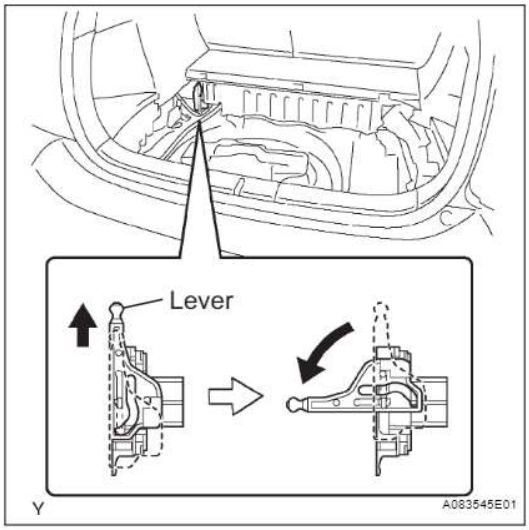


HYBRID BATTERY SYSTEM

PRECAUTION

1. PRECAUTIONS FOR INSPECTING HYBRID BATTERY SYSTEM

(a) Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip (see page IN-5). After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, do not turn the power switch ON (READY) unless instructed by the repair manual.

(b) After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.
HINT:
At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

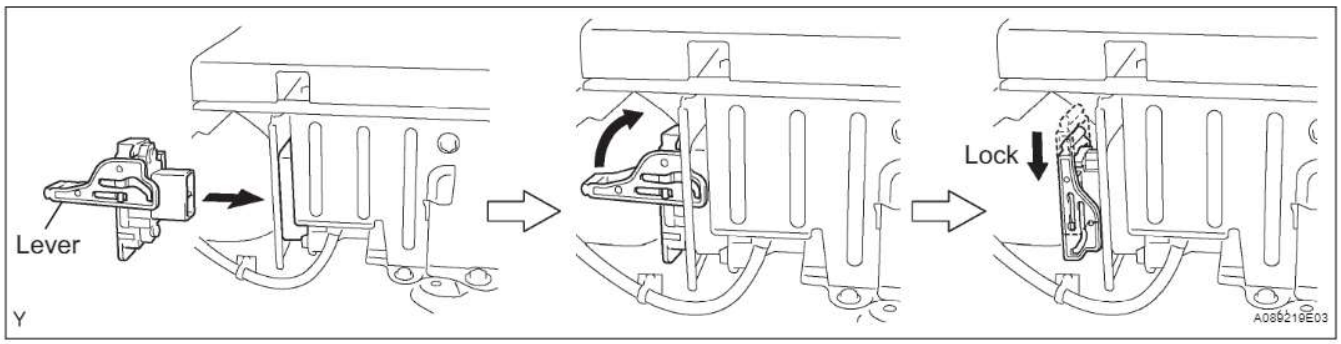
(c) Since liquid leakage may occur, wear protective goggles when checking inside the HV battery.

(d) Wear insulated gloves, turn the power switch OFF, and disconnect the negative terminal of the auxiliary battery before touching any of the orange-colored wires of the high-voltage system.

(e) Turn the power switch OFF before performing a resistance check.

(f) Turn the power switch OFF before disconnecting or reconnecting any connector.

(g) To install the service plug grip, the lever must be flipped and locked downward. Once it is locked in place, it turns the interlock switch ON. Make sure to lock it securely because if you leave it unlocked, the system will output a DTC related to the interlock switch system.



2. NOTICE FOR INITIALIZATION

When disconnecting the cable from the negative (-) battery terminal, initialize the following system after the cable is reconnected.

System Name	See Page
Power Window Control System	IN-32

3. NOTICE FOR HYBRID SYSTEM ACTIVATION

- When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first attempt. If so, press the power switch again.
- With the power switch's power mode changed to ON (IG), disconnect the battery. If the key is not in the key slot during reconnection, DTC B2799 may be output.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:
*: Use the intelligent tester.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS

NEXT

3	CONNECT INTELLIGENT TESTER TO DLC3*

HINT:
If the display indicates a communication fault in the tester, inspect the DLC3.

NEXT

4	CHECK AND RECORD DTC AND FREEZE FRAME DATA*

(a) Refer to the the DTC CHECK / CLEAR (see page HB-17).
HINT:
If a DTC related to the CAN communication system malfunction is output, first troubleshoot and repair the CAN communication system (see page CA-6).

NEXT

5	CLEAR DTC*

(a) Refer to the the DTC CHECK / CLEAR (see page HB-17).

NEXT

6	PROBLEM SYMPTOM CONFIRMATION

(a) When a malfunction does not occur, go to A.
(b) When a malfunction occurs, go to B.

B	Go to step 8

A

7	SYMPTOM SIMULATION

NEXT

8	CHECK DTC*

(a) Refer to the the DTC CHECK / CLEAR (see page HB-17).

NEXT

9	DTC CHART

(a) Refer to the the DIAGNOSTIC TROUBLE CODE CHART (see page HB-23).

NEXT

10	CIRCUIT INSPECTION

NEXT

11	IDENTIFICATION OF PROBLEM

NEXT

HB

12	ADJUSTMENT AND/OR REPAIR

NEXT

13	CONFIRMATION TEST

NEXT

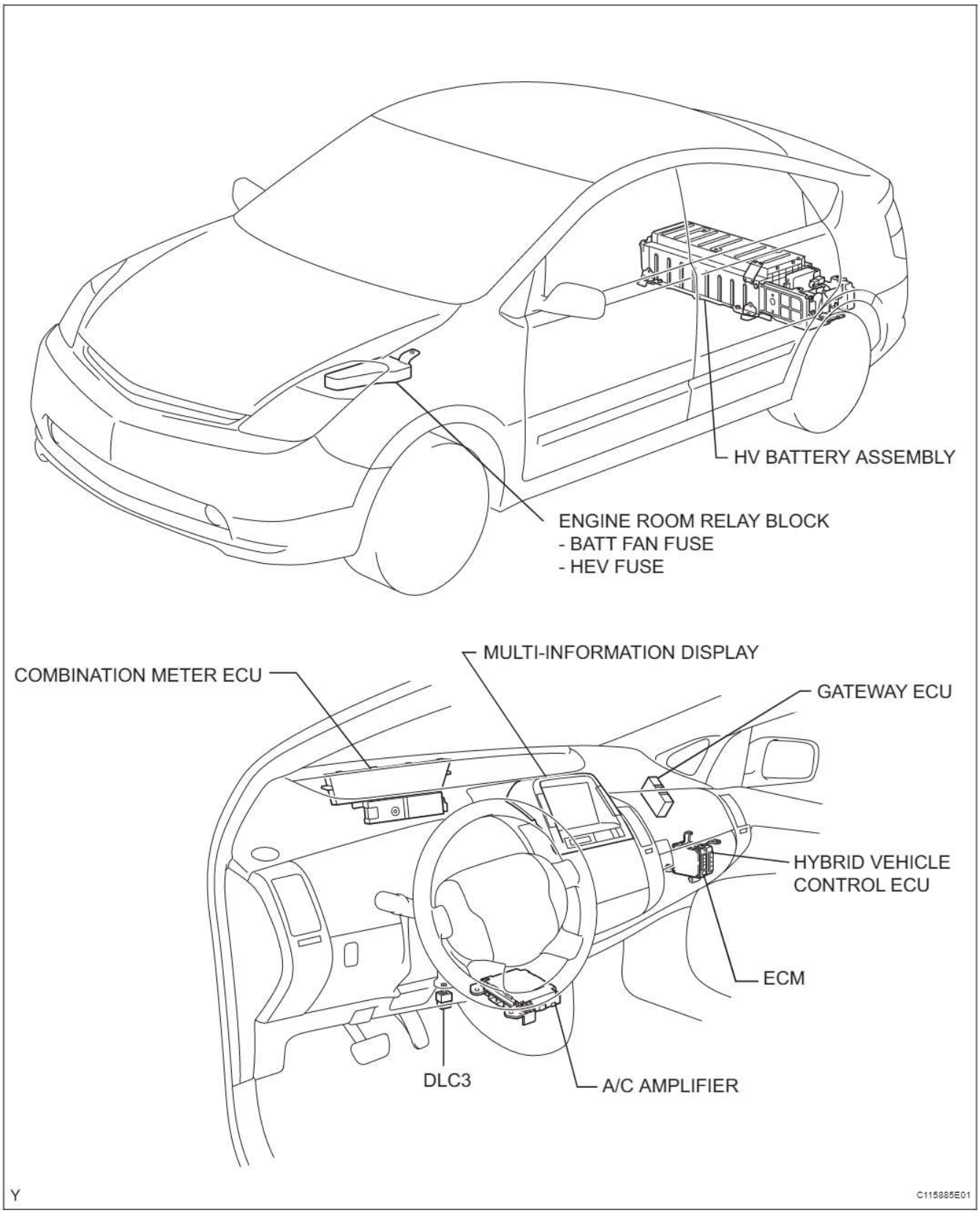
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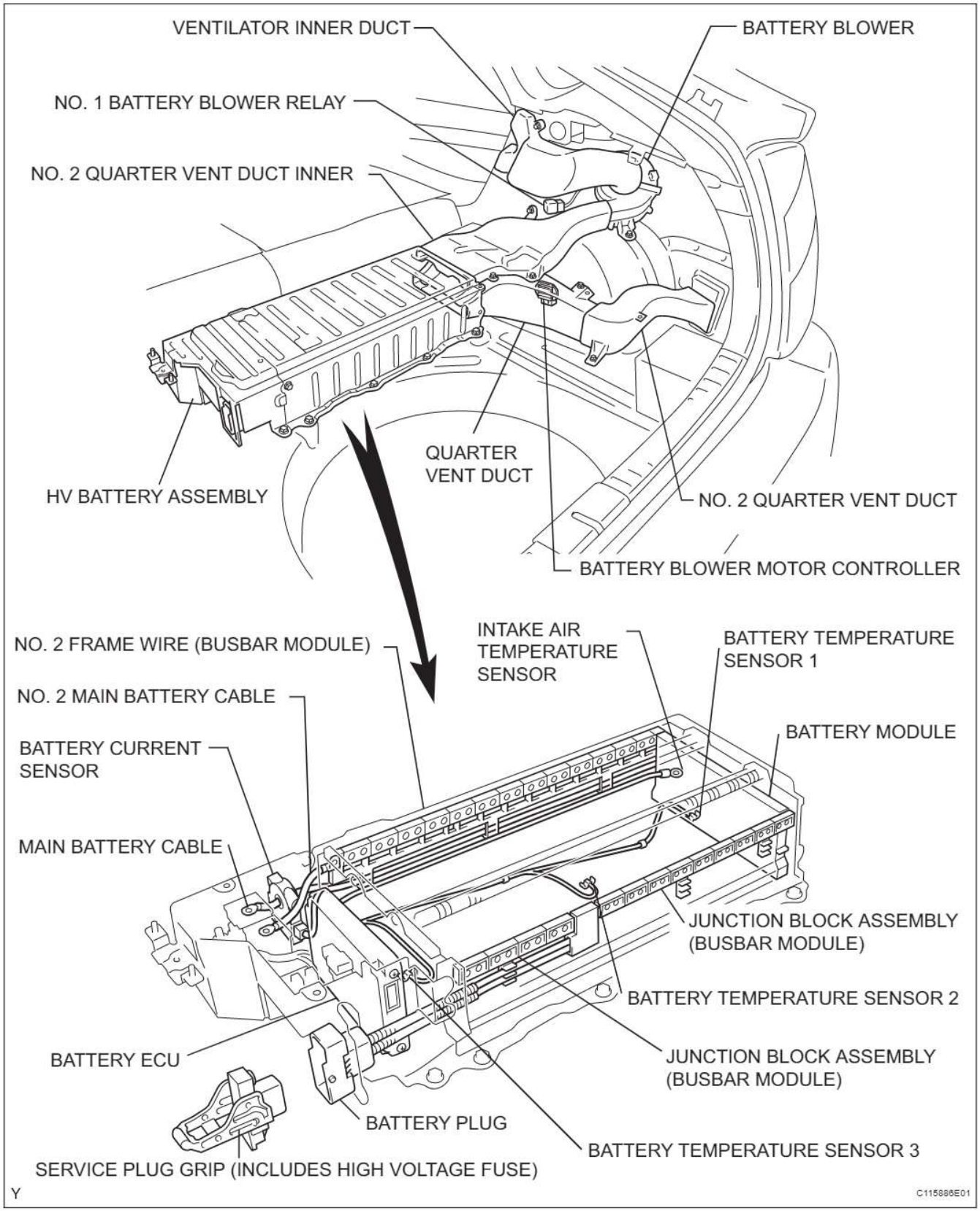
DEFINITION OF TERMS

1. DEFINITION OF TERMS

Term	Definition
Duration	The minimum time that the battery ECU must sense a continuous deviation in the monitored value(s) before setting a DTC. This timing begins after the "typical enabling conditions" are met
Frequency of operation	The number of times that the battery ECU checks for malfunction per driving cycle "Once per driving cycle" means that the battery ECU detects malfunction only one time during a single driving cycle "Continuous" means that the battery ECU detects malfunction every time when enabling condition is met
MIL operation	MIL illumination timing after a defect is detected "Immediate" means that the battery ECU illuminates the MIL the instant the battery ECU determines that there is malfunction "2 driving cycles" means that the battery ECU illuminates the MIL if the same malfunction is detected again in the 2nd driving cycle
Monitor description	Description of what the battery ECU monitors and how it detects malfunction (monitoring purpose and its details)
Related DTCs	A group of DTCs that is classified by a system and a troubleshooting procedure
Required sensor/components	The sensors and components that are used by the battery ECU to detect malfunction
Sequence of operation	The priority order that is applied to monitoring, if multiple sensors and components are used to detect the malfunction While another sensor is being monitored, the next sensor or component will not be monitored until the previous monitoring has concluded
Typical enabling condition	Preconditions that allow the battery ECU to detect malfunction With all preconditions satisfied, the battery ECU sets the DTC when the monitored value(s) exceeds the malfunction threshold(s)
Typical malfunction thresholds	Beyond this value, the battery ECU will conclude that there is malfunction and set a DTC

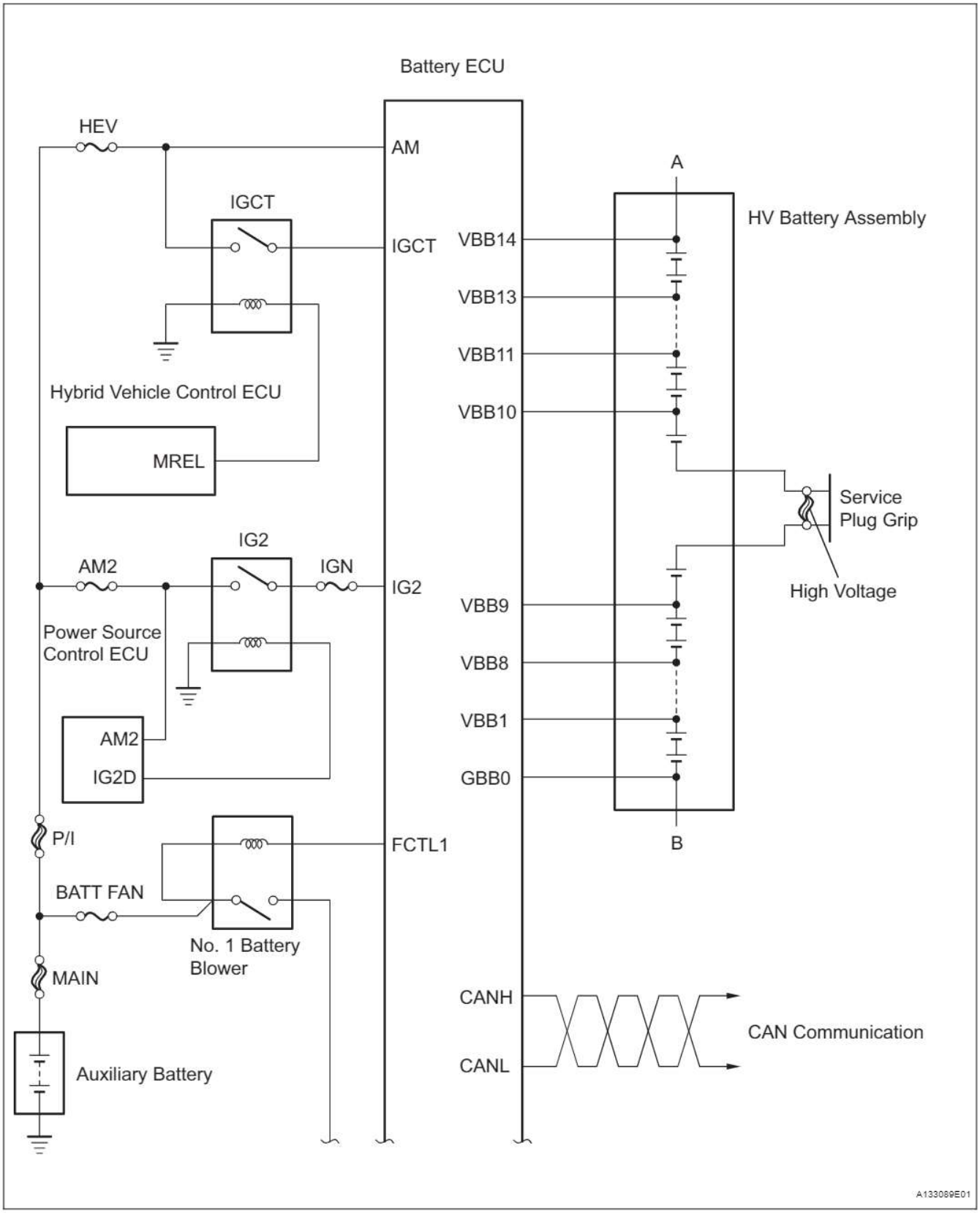
PARTS LOCATION

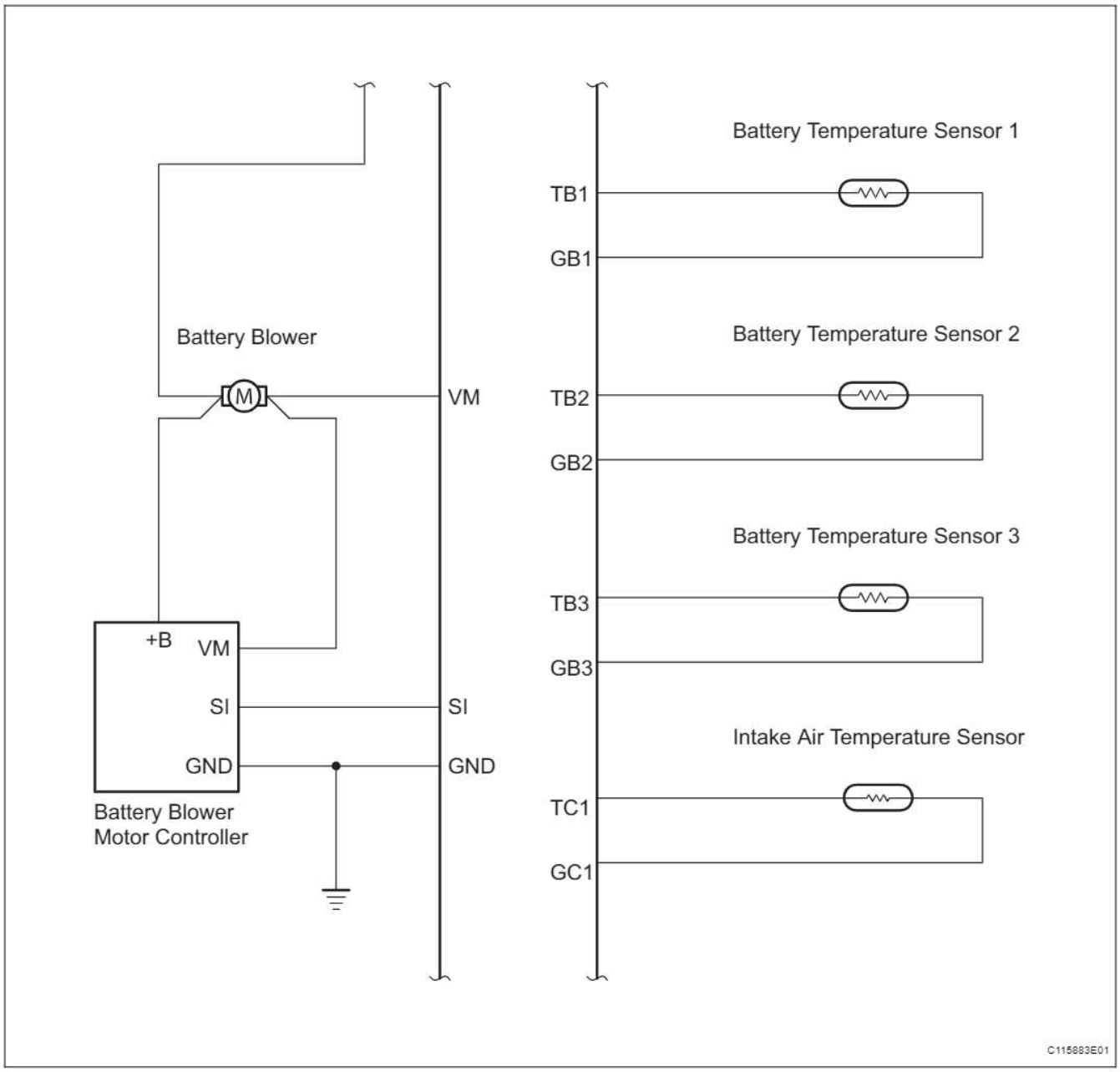



VENTILATOR INNER DUCT
BATTERY BLOWER
NO. 1 BATTERY BLOWER RELAY
NO. 2 QUARTER VENT DUCT INNER
QUARTER VENT DUCT
HV BATTERY ASSEMBLY
NO. 2 QUARTER VENT DUCT
BATTERY BLOWER MOTOR CONTROLLER
NO. 2 FRAME WIRE (BUSBAR MODULE)
INTAKE AIR TEMPERATURE SENSOR
BATTERY TEMPERATURE SENSOR 1
NO. 2 MAIN BATTERY CABLE
BATTERY MODULE
BATTERY CURRENT SENSOR
MAIN BATTERY CABLE
JUNCTION BLOCK ASSEMBLY (BUSBAR MODULE)
BATTERY TEMPERATURE SENSOR 2
BATTERY ECU
JUNCTION BLOCK ASSEMBLY (BUSBAR MODULE)
BATTERY PLUG
BATTERY TEMPERATURE SENSOR 3
SERVICE PLUG GRIP (INCLUDES HIGH VOLTAGE FUSE)
Y
C115886E01

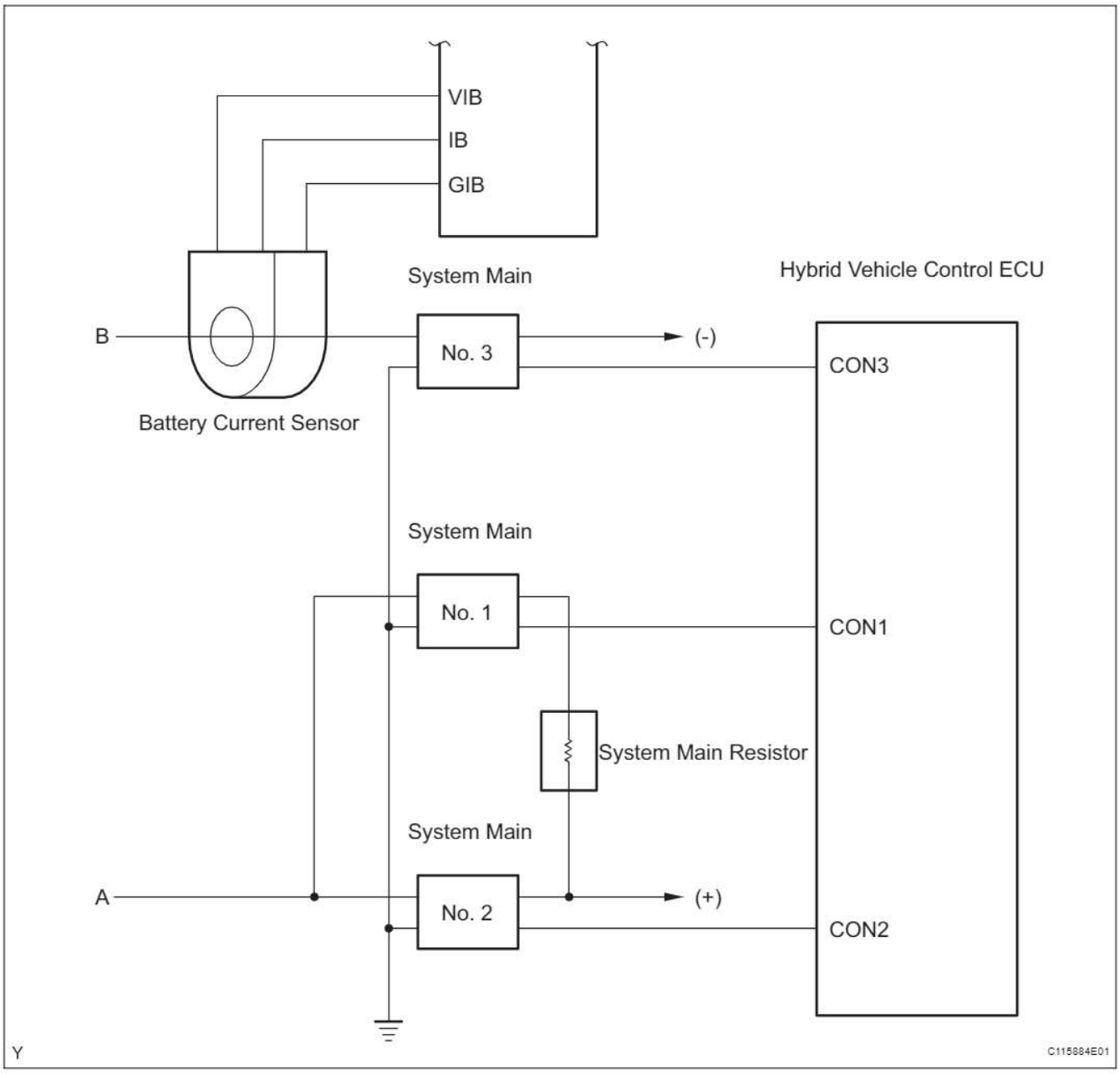
HB

SYSTEM DIAGRAM

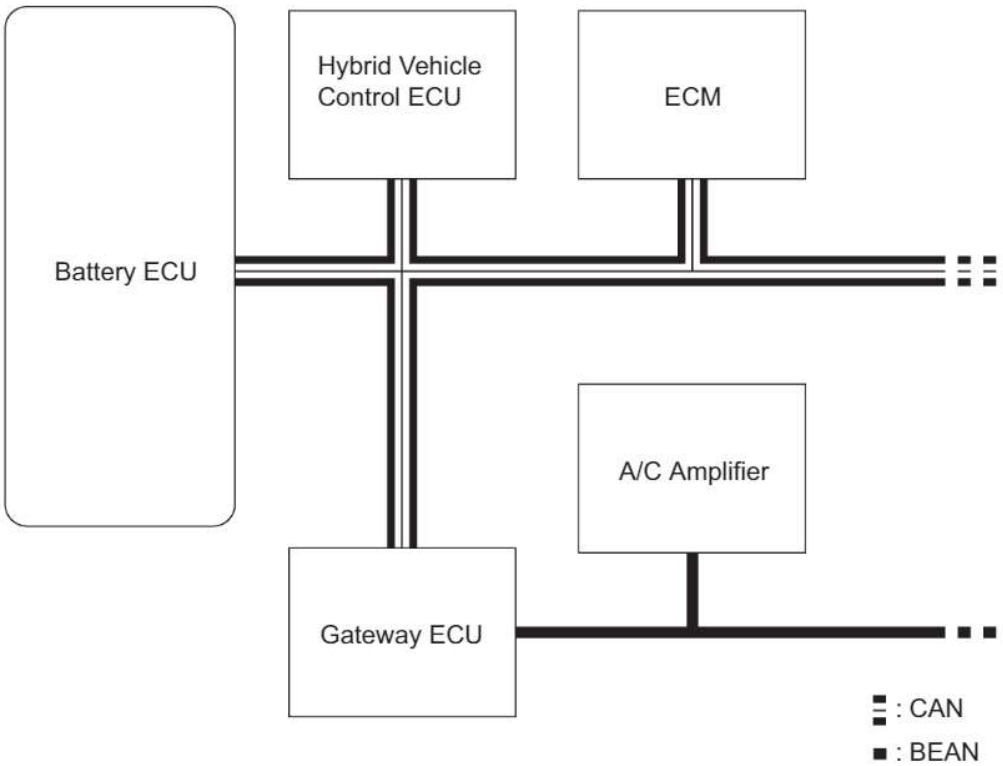



Battery Temperature Sensor 1
TB1
GB1
Battery Blower
Battery Temperature Sensor 2
M
VM
TB2
GB2
Battery Temperature Sensor 3
TB3
GB3
+B
VM
SI
SI
GND
GND
Intake Air Temperature Sensor
TC1
GC1
Battery Blower
Motor Controller
C115883E01

HB


VIB
IB
GIB
System Main
Hybrid Vehicle Control ECU
B
No. 3
(-)
CON3
Battery Current Sensor
System Main
No. 1
CON1
System Main Resistor
System Main
A
No. 2
(+)
CON2
Y
C115884E01

Communication System Diagram



HB

SYSTEM DESCRIPTION

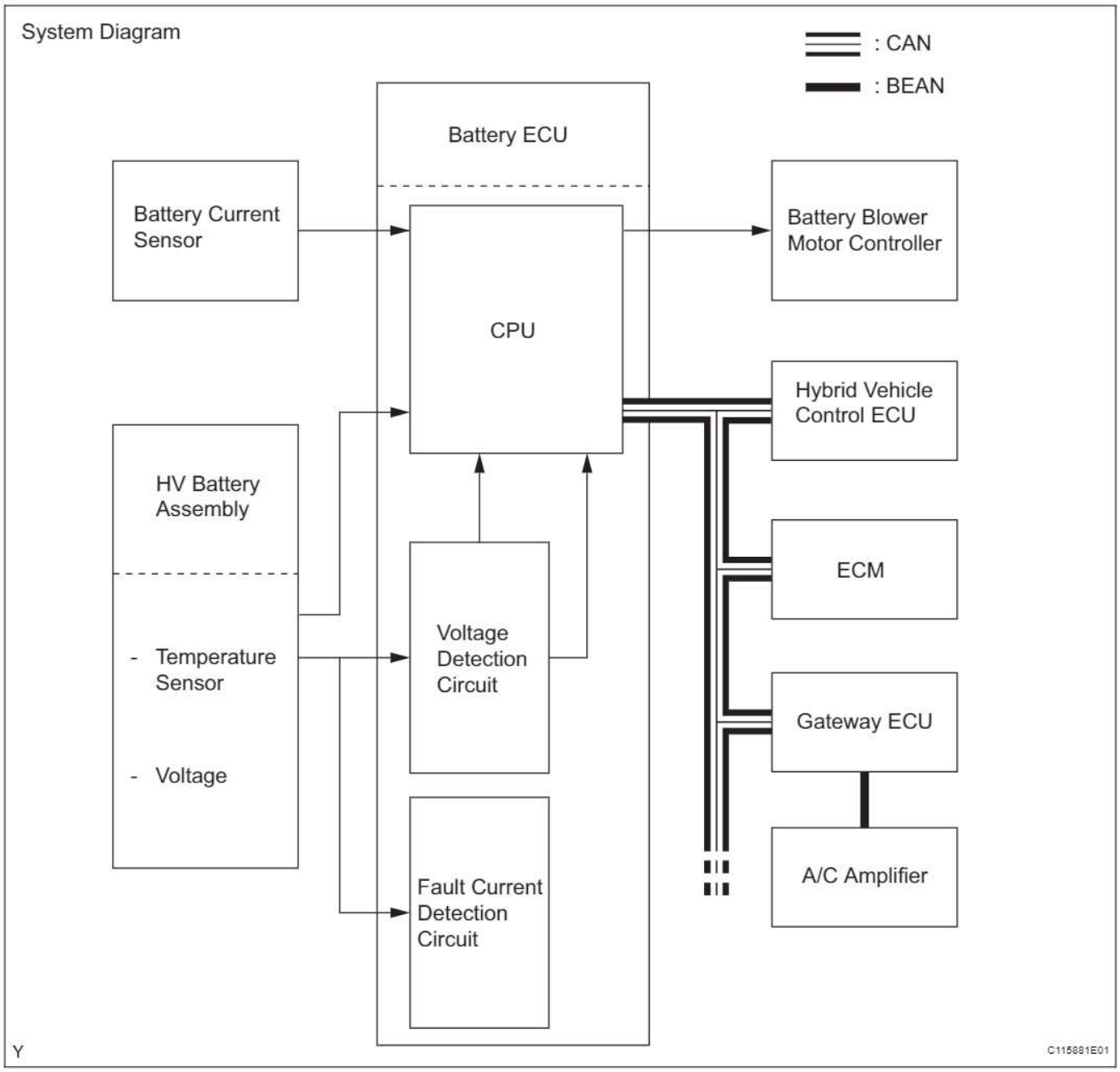
1. OUTLINE

The principal role of the hybrid battery system is to monitor the condition of the HV battery assembly through the use of the battery ECU and transmit this information to the hybrid vehicle control ECU. Furthermore, this system controls the battery blower motor controller in order to maintain a proper temperature in the HV battery assembly.

The battery ECU uses the CAN (Controller Area Network) to maintain communication with the following devices: the hybrid vehicle control ECU, ECM, and A/C amplifier.*

HINT:

*: Because it the battery ECU connected to the BEAN (Body Electronics Area Network), data is transmitted via the gateway ECU.



2. CONTROL DESCRIPTION

(a) HV battery assembly management and fail-safe function.

(1) When the vehicle is accelerated, the battery assembly is discharged. When the vehicle is decelerated, the battery assembly is charged by converting brake energy. The battery ECU calculates SOC (state of charge) of the HV battery based on voltage, current, and temperature, and then sends the results to the hybrid vehicle control ECU. As a result, charge and discharge control is performed in the hybrid vehicle control ECU depending on the SOC.

HB

(2) If a malfunction occurs, the battery ECU performs a fail-safe function and protects the HV battery assembly in accordance with the extent of the malfunction.

(b) Battery blower motor control.

(1) To control an increase in the temperature of the HV battery assembly while the vehicle is being driven, the battery ECU determines and controls the operating mode of the battery blower in accordance with the temperature of the HV battery assembly.

(c) MIL illumination control.

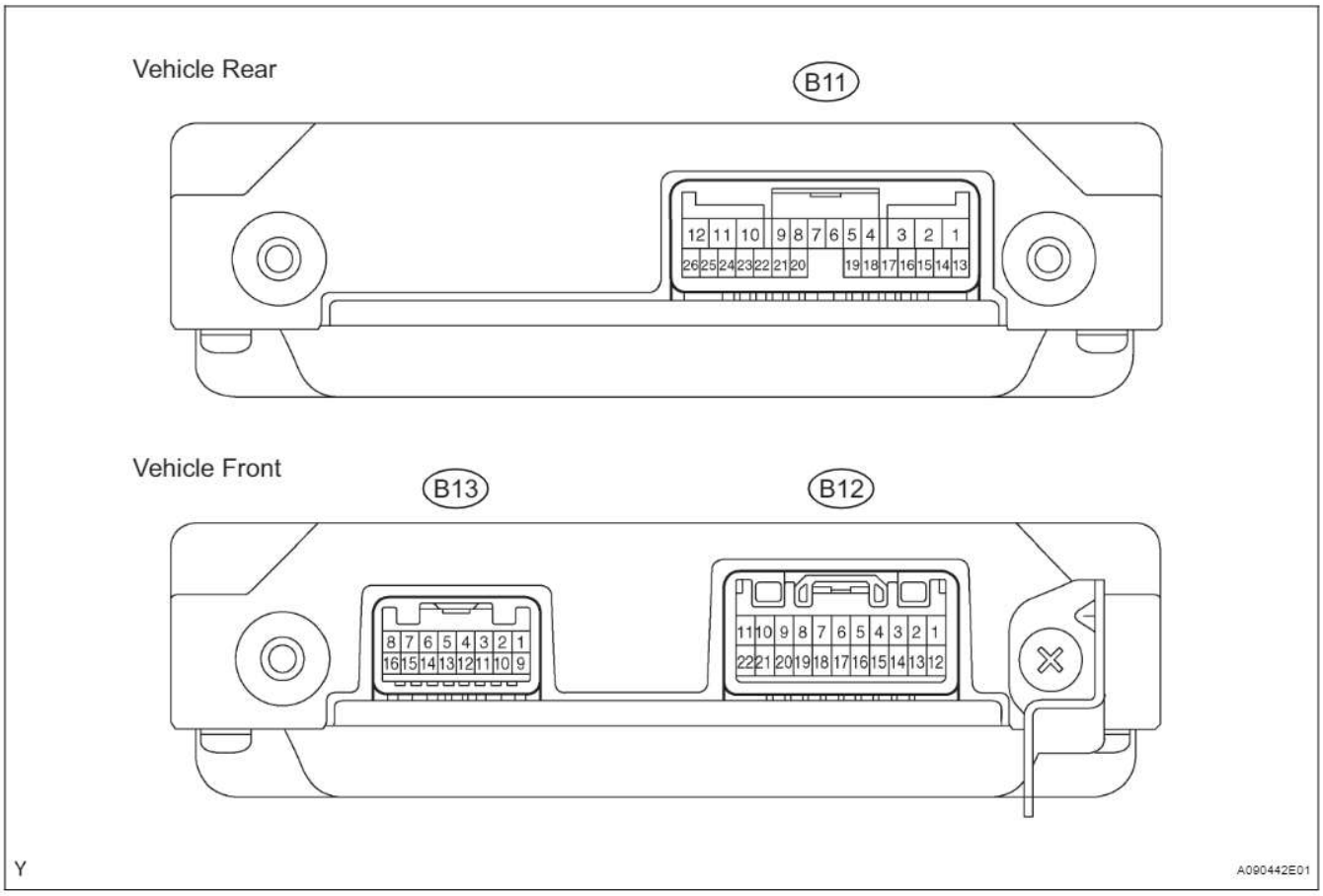
(1) If the battery ECU detects a malfunction that affects the exhaust gas emissions, it will transmit an MIL illumination request to the hybrid vehicle control ECU. (The battery ECU does not directly illuminate the MIL.)

CHECK FOR INTERMITTENT PROBLEMS

1. **CHECK FOR INTERMITTENT PROBLEMS**
   (a) Perform a simulation test (see page IN-36).
      (1) In the simulation test, reproduce the driving condition when the trouble occurred according to the customer's comments and freeze frame data recorded with DTCs.
   (b) Check the connector(s) and terminal(s) (see page IN-45).
   (c) Wiggle the harness and connector(s) (see page IN-45).

TERMINALS OF ECU

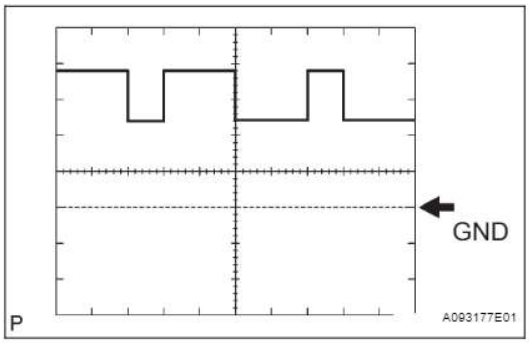
1. CHECK BATTERY ECU



(a) Measure the voltage of the battery ECU connector.
HINT:
Each ECU terminal's standard voltage is shown in the table below.
In the table, first follow the information under "Condition". Look under "Symbols (Terminal No.)" for the terminals to be inspected. The standard voltage between the terminals is shown under "Specified Condition".
Use the illustration above as a reference for the ECU terminals.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
AM (B11-1) - GND (B11-12)	G - W-B	Auxiliary battery (for measuring battery voltage and for battery ECU memory)	Always	9 to 14 V
IGCT (B11-2) - GND (B11-12)	L - W-B	Control signal	Power switch ON (READY)	9 to 14 V
VM (B11-9) - GND (B11-12)	V - W-B	Battery blower motor monitoring signal	Battery blower motor mode 1 actuation (at low speed)	10 to 14 V
VM (B11-9) - GND (B11-12)	V - W-B	Battery blower motor monitoring signal	Battery blower motor mode 6 actuation (at high speed)	2 to 6 V

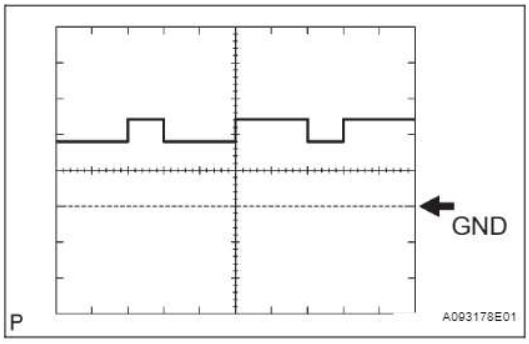
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
FCTL1 (B11-10) - GND (B11-12)	BR - W-B	No. 1 battery blower relay	Battery blower motor actuation	Below 1 V
IG2 (B11-13) - GND (B11-12)	O - W-B	IG signal	Power switch ON (IG)	9 to 14 V
CANH (B11-18) - GND (B11-12)	B - W-B	HIGH-level CAN bus line	Power switch ON (IG)	Pulse generation (See waveform 1)
CANL (B11-19) - GND (B11-12)	W - W-B	LOW-level CAN bus line	Power switch ON (IG)	Pulse generation (See waveform 2)
SI (B11-24) - GND (B11-12)	Y - W-B	Battery blower motor actuation signal	Battery blower motor modes 1 to 6 actuation	Pulse generation (See waveform 3)
TB1 (B13-1) - GB1 (B13-2)	W - W	HV battery temperature sensor 1	HV battery temperature: -40 to 90°C (-40 to 194°F)	4.8 to 1.0 V
TB2 (B13-3) - GB2 (B13-4)	B - B	HV battery temperature sensor 2	HV battery temperature: -40 to 90°C (-40 to 194°F)	4.8 to 1.0 V
TB3 (B13-5) - GB3 (B13-6)	L - L	HV battery temperature sensor 3	HV battery temperature: -40 to 90°C (-40 to 194°F)	4.8 to 1.0 V
TC1 (B13-9) - GC1 (B13-10)	G - G	Intake air temperature sensor	Intake air temperature: -40 to 90°C (-40 to 194°F)	4.8 to 1.0 V
VIB (B13-15) - GIB (B13-14)	-	Power source of battery current sensor (a specific voltage)	Power switch ON (IG)	4.5 to 5.5 V
IB (B13-16) - GIB (B13-14)	-	Battery current sensor	Power switch ON (READY)	0.5 to 4.5 V
GND (B11-12) - Body ground	W-B - Body ground	Ground	Always (resistance check)	Below 6 Ω



(b) Using an oscilloscope, check the waveform 1.
Waveform 1 (HIGH-level CAN bus line)

Item	Content
Symbols (Terminal No.)	CANH (B11-18) - GND (B11-12)
Tool Setting	1 V/Div., 2 μsec./Div.
Condition	Power switch ON (IG)

HINT:
The waveform varies depending on the contents of the communication.

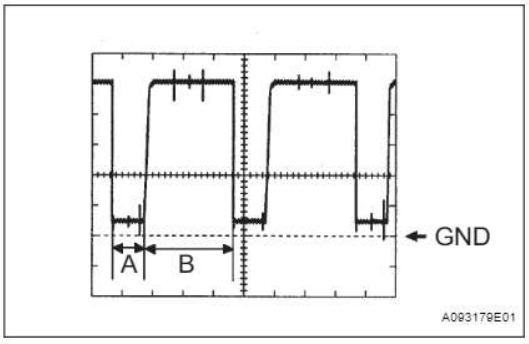


(c) Using an oscilloscope, check the waveform 2.
Waveform 2 (LOW-level CAN bus line)

Item	Content
Symbols (Terminal No.)	CANL (B11-19) - GND (B11-12)
Tool Setting	1 V/Div., 2 μsec./Div.
Condition	Power switch ON (IG)

HINT:
The waveform varies depending on the contents of the communication.

HB

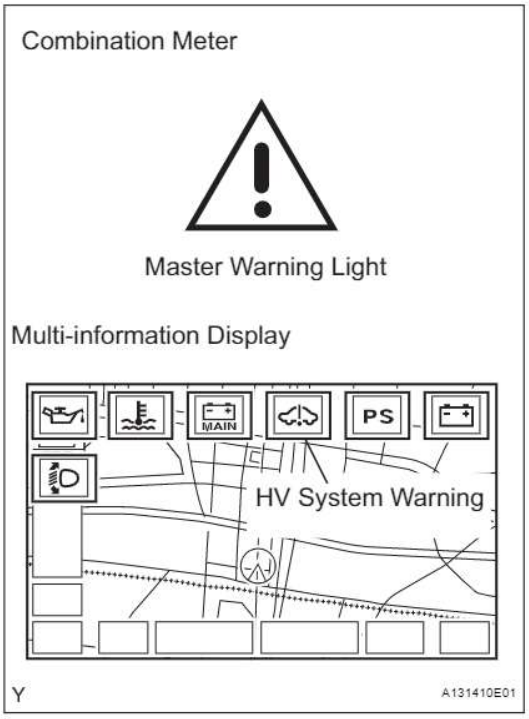


(d) Using an oscilloscope, check the waveform 3.
Waveform 3 (Battery blower motor actuation signal)

Item	Content
Symbols (Terminal No.)	SI (B11-24) - GND (B11-12)
Tool Setting	1 V/Div., 50 μsec./Div.
Condition	During vehicle stop

HINT:
Amplitude A and B in the diagram vary by mode.

Mode	A	B
1	44.4 μsec.	155.6 μsec.
2	44.4 μsec.	155.6 μsec.
3	51.6 μsec.	148.4 μsec.
4	59.0 μsec.	141.0 μsec.
5	59.0 μsec.	141.0 μsec.
6	146.4 μsec.	53.6 μsec.



DIAGNOSIS SYSTEM

1. DESCRIPTION

- The battery ECU has a self-diagnosis system. If the computer, HV battery system or the components are not working properly, the ECU carries out a diagnosis to detect the malfunction, and illuminates the master warning light in the combination meter together with the HV system warning indicator on the multi-information display.
  HINT:
  The master warning light illuminates when the HV battery system fails and it blinks when in inspection mode.

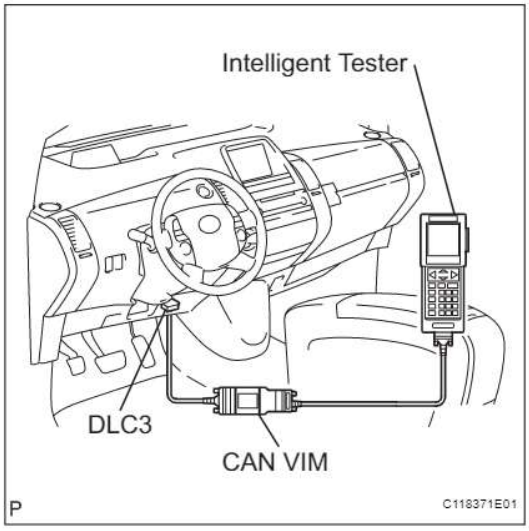


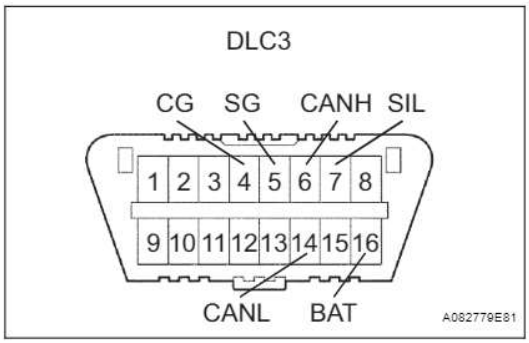
- When troubleshooting OBD II vehicles, the only difference from the usual troubleshooting procedure is that you need to connect the OBD II scan tool (complying with ISO 15031-4) or the intelligent tester to the vehicle, and read various data output from the vehicle's ECUs.

- OBD II regulations require that the vehicle's on-board computer illuminate the MIL in the instrument panel when the computer detects a malfunction in: 1) the emission control systems/components, or 2) the powertrain control components (which affect vehicle emissions), or 3) the computers. In addition, the applicable Diagnostic Trouble Codes (DTCs) prescribed by SAE J2012 are recorded in the battery ECU memory (see page HB-23).

If the malfunction does not recur in 3 consecutive trips, the MIL will turn off automatically. However the DTCs remain recorded in the battery ECU memory.

- To check the DTCs, connect the intelligent tester to the Data Link Connector 3 (DLC3) with the CAN vehicle interface module (CAN VIM). Or, connect the OBD II scan tool to the DLC3. The intelligent tester or OBD II scan tool also enables you to erase DTCs and check the freeze frame data and various forms of the HV battery system data (for operating instructions, refer to their respective instruction manuals). The DTCs include SAE controlled codes and manufacturer controlled codes. SAE controlled codes must be set as prescribed by the SAE, while manufacturer controlled codes can be set by a manufacturer within the prescribed limits (see page HB-23).
- Freeze frame data:
  The freeze frame data records the driving condition when a malfunction is detected. When troubleshooting, it can help determine if the vehicle was moving forward, braking, stationary, or moving in reverse.





2. CHECK DLC3

The battery ECU uses the ISO 15765-4. The terminal arrangement of the DLC3 complies with ISO 15031-3 and matches the ISO 15765-4 format.

HB

Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	9 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Ignition switch OFF	54 to 69 Ω
CANH (6) - Battery positive	HIGH-level CAN bus line	Ignition switch OFF	1 MΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Ignition switch OFF	200 Ω or higher
CANL (14) - Battery positive	LOW-level CAN bus line	Ignition switch OFF	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Ignition switch OFF	200 Ω or higher

HINT:
*: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the ignition switch, other switches or doors.
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.
HINT:
Connect the cable of the intelligent tester or the OBD II scan tool to the DLC3, turn the power switch ON (IG) and attempt to use the tester. If the display indicates UNABLE TO CONNECT TO VEHICLE has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester or scan tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tester or scan tool is connected to another vehicle, the problem is probably in the tester or scan tool itself, so consult the Service Department listed in its instruction manual.

3. INSPECT AUXILIARY BATTERY

(a) Measure the voltage of the auxiliary battery.
Standard voltage:
11 to 14 V

(b) Inspect the auxiliary battery, fuses, fusible links, wiring harness, connectors and ground.

4. CHECK MIL

(a) The MIL illuminates when the power switch is turned ON (IG) and the "READY" light is OFF.
If the MIL is not illuminated, troubleshoot the MIL circuit (see page ES-428).



(b) When the "READY" light turns illuminated, the MIL should turn off.
If the MIL remains on, the diagnosis system has detected a malfunction or abnormality in the system.



DTC CHECK / CLEAR

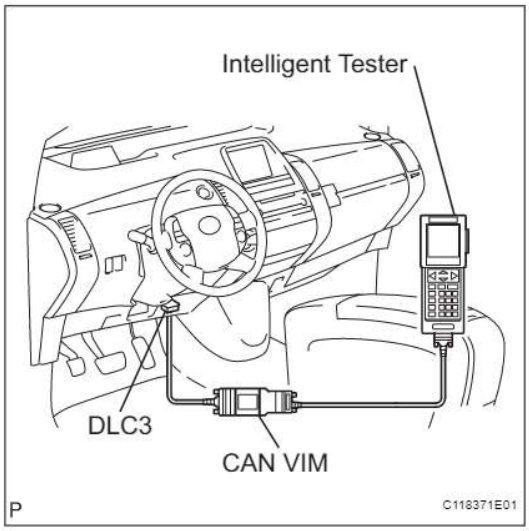
1. CHECK DTC (HV BATTERY)

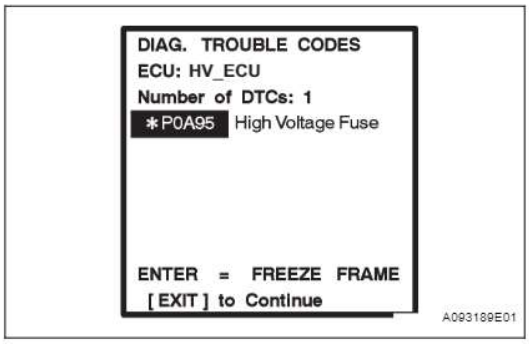
(a) Connect the intelligent tester to the DLC3.

(b) Turn the power switch ON (IG) and the tester ON.

(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.

(d) Confirm the details of the DTCs (see page HB-23).





2. CHECK FREEZE FRAME DATA

(a) If a DTC is present, select that DTC in order to display its freeze frame data.

(b) Read freeze frame data recorded when the DTC was set.

3. CHECK DTC (SYSTEMS OTHER THAN HV BATTERY)

HINT:

The battery ECU maintains mutual communication with the computers, including the ECM, hybrid vehicle control ECU and others. Therefore, if the battery ECU outputs a warning, it is necessary to check and record the DTCs of all the systems.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the power switch ON (IG) and the tester ON.

(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / CODES (All).

(d) If DTCs output, check the relevant system.

HINT:

If DTCs for the CAN communication system are present in addition to other DTCs, first troubleshoot and repair any malfunctions in the CAN communication (see page CA-6).

4. CLEAR DTC

(a) Connect the intelligent tester to the DLC3.

(b) Turn the power switch ON (IG) and the tester ON.

(c) Check that the shift position is in the P position.

(d) Clear DTCs and freeze frame data.

(1) Enter the following menus: DIAGNOSIS / OBD/ MOBD / HV BATTERY / DTC INFO / CLEAR CODES.

(2) Press YES.

HB

FREEZE FRAME DATA

1. FREEZE FRAME DATA

HINT:

The freeze frame data records the operating conditions of the HV battery system and components when the DTC was set. It is used for estimating or simulating the condition of the vehicle when a malfunction occurred.

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Select a DTC in order to display its freeze frame data.
(e) Check the freeze frame data of the DTC that has been detected.

Freeze frame data

Intelligent Tester Display	Measurement Item/Range	Suspected Vehicle Status When Malfunction Occurs
BATTERY SOC	State of charge (SOC) of HV battery Min.: 0%, Max: 100%	-
DELTA SOC	SOC variance/ Min.: 0%, Max.: 100%	Difference between maximum and minimum values of SOC at every battery block
IB BATTERY	Current value of battery pack/ Min.: -327.68 A, Max.: 327.67 A	Charging/discharging condition of HV battery • Discharging amperage indicated by a positive value • Charging amperage indicated by a negative value
BATT INSIDE AIR	Temperature of intake ambient air to battery pack/ Min.: -327.68°C, Max.: 327.67°C	-
VMF FAN VOLTAGE	Battery blower motor voltage/ Min.: 0 V, Max.: 25.4 V	Actuation condition of battery blower motor
AUX. BATT V	Auxiliary battery voltage/ Min.: 0 V, Max.: 25.4 V	Condition of auxiliary battery
WIN	Charge wattage of HV battery/ Min.: -64 kW, Max.: 0 kW	Charge control wattage which is sent from battery ECU to hybrid vehicle control ECU
WOUT	Discharge wattage of HV battery/ Min.: 0 kW, Max.: 63.5 kW	Discharge control wattage which is sent from battery ECU to hybrid vehicle control ECU
COOLING FAN SPD	Battery blower motor drive mode/ Min.: 0, Max.: 6	Stopped: 0 Low to high speed actuation: 1 to 6
ECU CTRL MODE	ECU control mode/ Min.: 0, Max.: 4	Operating condition of HV battery
SBLW RQST	Battery blower motor stop control request (standby blower)	-
BATT TEMP 1 to 3	Temperature of HV battery/ Min.: -327.68°C, Max.: 327.67°C	-
V1 to V14 BATT BLOCK	Battery block voltage/ Min.: -327.68 V, Max.: 327.67 V	Voltage variance among battery blocks

FAIL-SAFE CHART

1. FAIL-SAFE CHART

DTC No.	Detection Item	Driving Condition
P0560	System Voltage	Turns on READY light and drives normally
P0A1F	Battery Energy Control Module	Turns on READY light and drives in fail-safe mode
P0A7F	Hybrid Battery Pack Deterioration	Turns on READY light and drives normally
P0A80	Replace Hybrid Battery Pack	Turns on READY light and drives normally
P0A81	Hybrid Battery Pack Cooling Fan 1	Turns on READY light and drives normally
P0A82	Hybrid Battery Pack Cooling Fan 1 Performance or Stuck OFF	Turns on READY light and drives normally
P0A84	Hybrid Battery Pack Cooling Fan 1 Control Circuit Low	Turns on READY light and drives normally
P0A85	Hybrid Battery Pack Cooling Fan 1 Control Circuit High	Turns on READY light and drives normally
P0A95	High Voltage Fuse	Turns on READY light and drives in fail-safe mode (while the engine is running) Turns off READY light and stops the HV control system (while the engine stops)
P0A9C	Hybrid Battery Temperature Sensor "A" Range/Performance	Turns on READY light and drives normally
P0A9D	Hybrid Battery Temperature Sensor "A" Circuit Low	Turns on READY light and drives normally
P0A9E	Hybrid Battery Temperature Sensor "A" Circuit High	Turns on READY light and drives normally
P0AAC	Hybrid Battery Pack Air Temperature Sensor "A" Circuit	Turns on READY light and drives normally
P0ABF	Hybrid Battery Pack Current Sensor Circuit	Turns on READY light and drives normally
P0AC0	Hybrid Battery Pack Current Sensor Circuit Range/Performance	Turns on READY light and drives normally
P0AC1	Hybrid Battery Pack Current Sensor Circuit Low	Turns on READY light and drives normally
P0AC2	Hybrid Battery Pack Current Sensor Circuit High	Turns on READY light and drives normally
P0AFA	Hybrid Battery System Voltage	Turns on READY light and drives normally
P3011	Battery Block 1 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3012	Battery Block 2 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3013	Battery Block 3 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3014	Battery Block 4 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3015	Battery Block 5 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3016	Battery Block 6 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3017	Battery Block 7 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3018	Battery Block 8 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3019	Battery Block 9 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3020	Battery Block 10 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3021	Battery Block 11 Becomes Weak	Turns on READY light and drives in fail-safe mode

DTC No.	Detection Item	Driving Condition
P3022	Battery Block 12 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3023	Battery Block 13 Becomes Weak	Turns on READY light and drives in fail-safe mode
P3024	Battery Block 14 Becomes Weak	Turns on READY light and drives in fail-safe mode
U0100	Lost Communication with ECM/PCM "A"	Turns on READY light and drives normally
U0293	Lost Communication with HV ECU	Turns on READY light and drives normally

DATA LIST / ACTIVE TEST

1. **READ DATA LIST**

NOTICE:

- **The DATA LIST values may vary significantly if there are slight differences in measurement, differences in the environment in which the measurements are obtained, or the aging of the vehicle. Thus, definite standards or judgment values are unavailable. There may be a malfunction even if a measured value is within the reference range.**
- **In the event of intricate symptoms, collect sample data from another vehicle of the same model operating under identical conditions, in order to reach an overall judgment by comparing all the items of the DATA LIST.**

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST as the first step of troubleshooting is one method to shorten diagnostic time.

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / HV BATTERY / DATA LIST.
(d) Check the results by referring to the following table.

Intelligent Tester Display	Measurement Item/Range (Display)	Reference Range	Diagnostic Note
MIL status	MIL status/ ON or OFF	MIL ON: ON	Constant ON: Repair in accordance with detected DTCs
DRIVING MILEAGE	Accumulated driving mileage after the malfunction occurrence/ Min.: 0 km, Max.: 65,535 km	-	-
BATTERY SOC	Battery state of charge/ Min.: 0%, Max: 100%	Always: 0 to 100%	-
DELTA SOC	Difference between maximum and minimum values of SOC/ Min.: 0%, Max.: 100%	READY light ON, engine stopped and no electrical load: 0 to 60%	-
IB BATTERY	Current value of battery pack/ Min.: -327.68 A, Max.: 327.67 A	• Soon after a full-load acceleration with the engine stopped: Maximum 140 A (room temperature) • When shifting into N position, 1 second has elapsed after engine started with P position, engine stopped, head light ON, A/C fan high, and READY light ON: Maximum 30 A	-
BATT INSIDE AIR	Temperature of intake ambient air to battery pack/ Min.: -327.68°C, Max.: 327.67°C	Undisturbed for 1 day: Same as ambient air temperature	-
VMF FAN VOLTAGE	Battery blower motor monitoring voltage/ Min.: -25.6 V, Max.: 25.4 V	Fan mode 1 with READY light ON and P position: 9.5 to 11.5 V	-

HB

Intelligent Tester Display	Measurement Item/Range (Display)	Reference Range	Diagnostic Note
AUX. BATT V	Auxiliary battery voltage/ Min.: 0 V, Max.: 25.4 V	Equivalent to auxiliary battery voltage	-
WIN	Charge control wattage which is sent from battery ECU to hybrid vehicle control ECU/ Min.: -64 kW, Max.: 0 kW	-25 kW or more	-
WOUT	Discharge control wattage which is sent from battery ECU to hybrid vehicle control ECU/ Min.: 0 kW, Max.: 63.5 kW	21 kW or less	-
COOLING FAN SPD	Battery blower motor actuation mode/ Min.: 0, Max.: 6	Stopped: 0 Low to high speed actuation: 1 to 6	-
ECU CTRL MODE	ECU control mode/ Min.: 0, Max.: 4	-	-
SBLW RQST	Battery blower motor stop control request (standby blower)	ON/OFF	-
BATT TEMP 1 to 3	Temperature of HV battery/ Min.: -327.68°C, Max.: 327.67°C	Undisturbed for 1 day: Same as ambient air temperature	-
NUM OF BATT	The number of battery blocks/ Min.: 0, Max.: 255	Always: 14	-
BAT BLOCK MIN V	Battery block minimum voltage/ Min.: -327.68 V, Max.: 327.67 V	SOC 50 to 60%: 12 V or more	-
MIN BAT BLOCK #	Battery block number with minimum voltage	One of numbers 0 to 13	-
BAT BLOCK MAX V	Battery block maximum voltage/ Min.: -327.68 V, Max.: 327.67 V	SOC 55 to 60%: 23 V or less	-
MAX BAT BLOCK #	Battery block number with maximum voltage	One of numbers 0 to 13	-
V1 to V14 BATT BLOCK	Battery block voltage/ Min.: -327.68 V, Max.: 327.67 V	SOC 60%: 12 to 20 V	-
1 to 14 INTNL RESIST	Internal resistance of each battery block/ Min.: 0 Ω, Max.: 0.255 Ω	Always: 0.01 to 0.1 Ω	-
REGULATION	Compliance regulation	OBD2 (CARB)	-
#CODES	The number of emission related powertrain DTCs/ Min.: 0, Max.: 127	-	-
DTC	The number of stored DTCs/ Min.: 0, Max.: 255	-	-

HB

2. PERFORM ACTIVE TEST

NOTICE:

Beware that if the connector to the intelligent tester becomes disconnected or a communication error occurs during the ACTIVE TEST, the vehicle could become inoperative (READY light OFF).

HINT:

Performing an ACTIVE TEST using the intelligent tester enables components including the relay, VSV, and actuator, to be operated without removing any parts. Performing an ACTIVE TEST as the first step of troubleshooting is one method to shorten diagnostic time.

It is possible to display items in the DATA LIST during the ACTIVE TEST.

(a) Connect the intelligent tester to the DLC3.

(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/ MOBD / HV BATTERY / ACTIVE TEST.
(d) Perform the ACTIVE TEST according to the display on the tester.

Intelligent Tester Display	Purpose	Test Details	Test Condition
COOLING FAN SPD	To check the operation and the speed of the battery blower motor	Stops the battery blower motor in mode 0 or operates it in modes 1 to 6	Disabled when a DTC is detected

DIAGNOSTIC TROUBLE CODE CHART

HINT:

- *1: "Comes on" means that the MIL is illuminated. "-" means that the MIL is not illuminated.
- *2: "Comes on" means that the master warning light is illuminated.
- *3: Warning shown on the multi-information display.

DTC No.	Detection Item	Trouble Area	MIL	Master Warning Light	Warning	Memory	See page
P0560	System Voltage	- Wire harness or connector - HEV fuse - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-27
P0A1F	Battery Energy Control Module	Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-31
P0A7F	Hybrid Battery Pack Deterioration	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-33
P0A80	Replace Hybrid Battery Pack	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-35
P0A81	Hybrid Battery Pack Cooling Fan 1	- Quarter vent duct (blower motor controller) - Battery ECU	-	Comes on	HV system	DTC Stored	HB-37
P0A82	Hybrid Battery Pack Cooling Fan 1 Performance or Stuck OFF	- Quarter vent duct - No. 2 quarter vent duct - No. 2 quarter vent duct inner - Ventilator inner duct - Battery blower - Battery ECU	-	Comes on	HV system	DTC Stored	HB-39
P0A84	Hybrid Battery Pack Cooling Fan 1 Control Circuit Low	- Wire harness or connector - BATT FAN fuse - No. 1 battery blower relay - Battery blower - Quarter vent duct (blower motor controller) - Battery ECU	-	Comes on	HV system	DTC Stored	HB-41
P0A85	Hybrid Battery Pack Cooling Fan 1 Control Circuit High	- Wire harness or connector - BATT FAN fuse - No. 1 battery blower relay - Battery blower - Quarter vent duct (blower motor controller) - Battery ECU	-	Comes on	HV system	DTC Stored	HB-41

HB

DTC No.	Detection Item	Trouble Area	MIL	Master Warning Light	Warning	Memory	See page
P0A95	High Voltage Fuse	- High voltage fuse - Service plug grip - Battery plug - Battery ECU	-	Comes on	HV system	DTC Stored	HB-52
P0A9C	Hybrid Battery Temperature Sensor "A"	- HV battery assembly (battery temperature sensor) - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-55
P0A9D	Hybrid Battery Temperature Sensor "A" Circuit Low	- HV battery assembly (battery temperature sensor) - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-55
P0A9E	Hybrid Battery Temperature Sensor "A" Circuit High	- HV battery assembly (battery temperature sensor) - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-55
P0AAC	Hybrid Battery Pack Air Temperature Sensor "A" Circuit	- HV battery assembly (intake air temperature sensor) - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-59
P0ABF	Hybrid Battery Pack Current Sensor Circuit	- HV battery assembly (wire harness or connector) - Battery current sensor - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-62
P0AC0	Hybrid Battery Pack Current Sensor Circuit Range/ Performance	- HV battery assembly (wire harness or connector) - Battery current sensor - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-62
P0AC1	Hybrid Battery Pack Current Sensor Circuit Low	- HV battery assembly (wire harness or connector) - Battery current sensor - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-62
P0AC2	Hybrid Battery Pack Current Sensor Circuit High	- HV battery assembly (wire harness or connector) - Battery current sensor - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-62

DTC No.	Detection Item	Trouble Area	MIL	Master Warning Light	Warning	Memory	See page
P0AFA	Hybrid Battery System Voltage Low	- Junction block assembly (busbar module) - No. 2 frame wire (busbar and wire harness) Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-67
P3011	Battery Block 1 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3012	Battery Block 2 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3013	Battery Block 3 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3014	Battery Block 4 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3015	Battery Block 5 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3016	Battery Block 6 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3017	Battery Block 7 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3018	Battery Block 8 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3019	Battery Block 9 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3020	Battery Block 10 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3021	Battery Block 11 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3022	Battery Block 12 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3023	Battery Block 13 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
P3024	Battery Block 14 Becomes Weak	- HV battery assembly - Battery ECU	Comes on	Comes on	HV system	DTC Stored	HB-72
U0100	Lost Communication with ECM/PCM "A"	CAN communication system	Comes on	Comes on	HV system	DTC Stored	HB-75
U0293	Lost Communication with HV ECU	CAN communication system	Comes on	Comes on	HV system	DTC Stored	HB-75

DTC	P0560	System Voltage

DESCRIPTION

Battery power is constantly supplied to the AM terminal of the battery ECU for the purpose of maintaining the DTCs and freeze frame data in memory. This voltage is supplied as a backup even if the power switch is turned OFF.

DTC No.	DTC Detection Condition	Trouble Area
P0560	Open in auxiliary battery power supply system while battery power is supplied to terminal IGCT (1 trip detection logic)	• Wire harness or connector • HEV fuse • Battery ECU

MONITOR DESCRIPTION

If 1 or more seconds have elapsed with a voltage of 1 V or less at the AM terminal at the battery ECU, the battery ECU will determine that malfunction has occurred in the back-up power supply system, illuminate the MIL, and set a DTC.

MONITOR STRATEGY

Related DTCs	P0560: Battery ECU/Range check
Required sensors/components	Main: Back-up power source circuit Sub: Battery ECU
Frequency of operation	Continuous
Duration	1 second
MIL operation	Immediate after next power switch ON (IG)
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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

HB

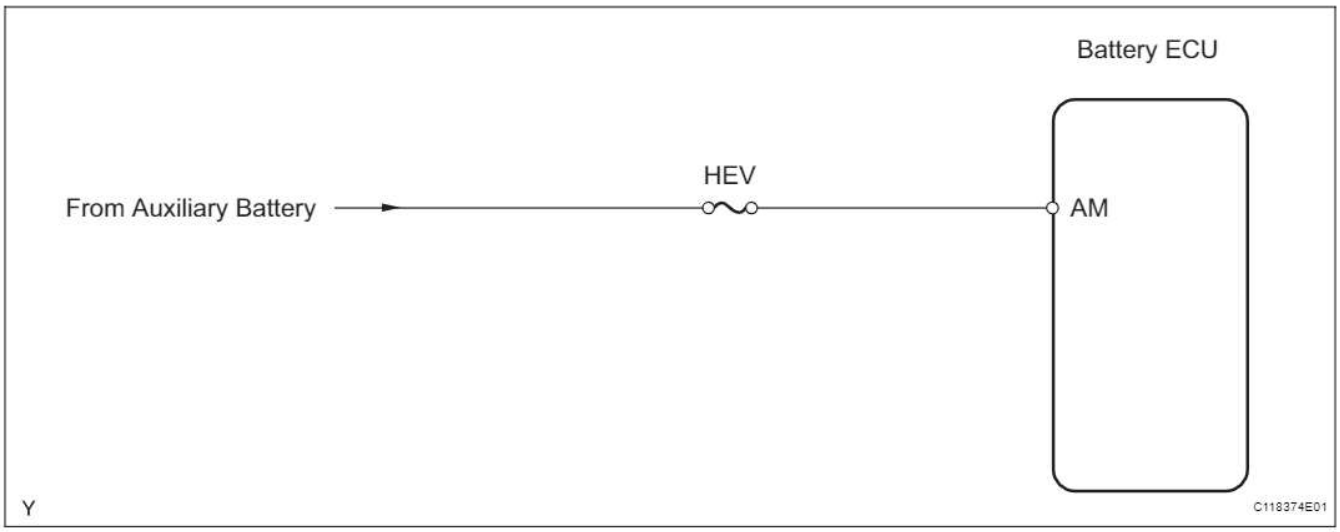
TYPICAL MALFUNCTION THRESHOLDS

Stand-by RAM back-up voltage	1 V or less

COMPONENT OPERATING RANGE

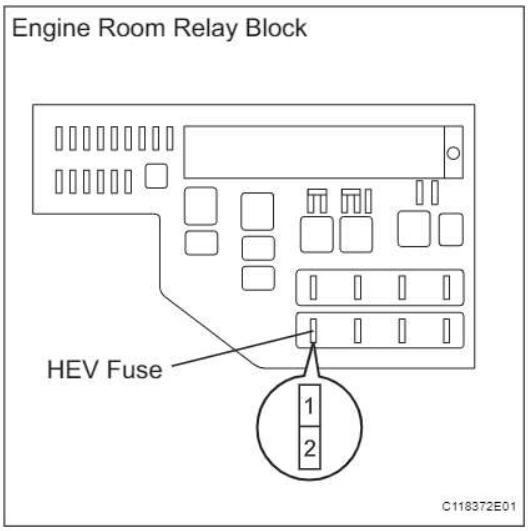
Auxiliary battery voltage	9 to 14 V

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK FUSE (HEV)

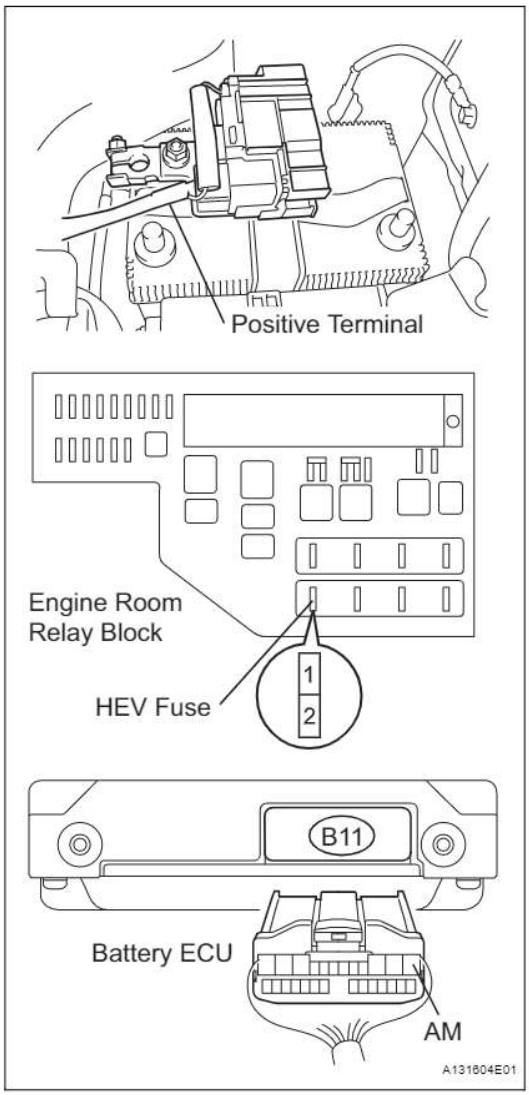


(a) Remove the HEV fuse from the engine room relay block.
(b) Measure the resistance of the HEV fuse.
Standard resistance:
Below 1 Ω
(c) Reinstall the HEV fuse.

NG → **Go to step 3**

OK

2	CHECK WIRE HARNESS (BATTERY ECU - AUXILIARY BATTERY)



(a) Disconnect the negative auxiliary battery terminal.
(b) Disconnect the positive auxiliary battery terminal.
(c) Remove the HEV fuse from the engine room relay block.
(d) Disconnect the B11 battery ECU connector.
(e) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B11-1 (AM) - HEV fuse terminal 2	Below 1 Ω
HEV fuse terminal 1 - Positive auxiliary battery terminal	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.

(f) Reconnect the battery ECU connector.
(g) Reinstall the HEV fuse.
(h) Reconnect the positive auxiliary battery terminal.
(i) Reconnect the negative auxiliary battery terminal.

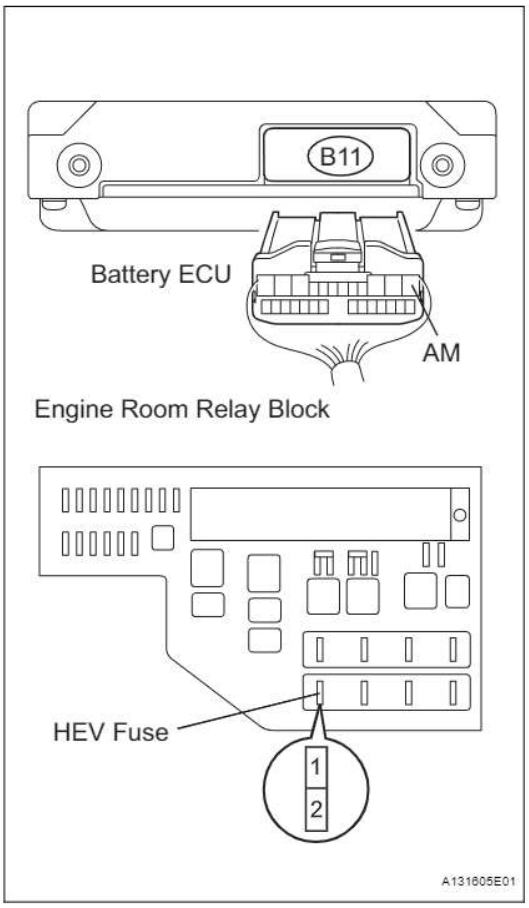
NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

CHECK AND REPAIR CONNECTOR CONNECTION

HB

3	CHECK WIRE HARNESS (BATTERY ECU - HEV FUSE)



(a) Disconnect the B11 battery ECU connector.
(b) Remove the HEV fuse from the engine room relay block.
(c) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
B11-1 (AM) or HEV fuse terminal 2 - Body ground	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.

(d) Reconnect the battery ECU connector.
(e) Reinstall the HEV fuse.

NG → **AFTER REPAIRING OR REPLACING HARNESS AND CONNECTOR, REPLACE FUSE (HEV)**

OK

REPLACE FUSE (HEV)

DTC	P0A1F	Battery Energy Control Module

DESCRIPTION

For the purpose of calculating the SOC (state of charge) of the HV battery and ensuring safety in the event of a malfunction in the HV battery assembly, the battery ECU provides the following control functions:

- SOC calculation
  The battery ECU calculates the SOC by estimating the charging and discharging amperage and monitoring other values.
- Cooling fan control
  The battery ECU controls the battery blower in order to protect the HV battery assembly from heat that is generated during charging and discharging. By maintaining a stable temperature, it promotes the effective operation of the HV battery assembly.
- HV battery assembly malfunction monitoring
  If the battery ECU detects a malfunction, it protects the HV battery assembly by limiting or stopping the charging or discharging of the HV battery in accordance with the temperature or voltage of the HV battery assembly.

DTC No.	DTC Detection Condition	Trouble Area
P0A1F	Battery ECU internal error (1 trip detection logic)	Battery ECU

MONITOR DESCRIPTION

If the battery ECU detects an internal malfunction in the ECU itself, it illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0A1F: Battery ECU/Rationality
Required sensors/components	Battery ECU
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediate or 1 driving cycle or 2 driving cycles
Sequence of operation	None

HB

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Battery ECU	Abnormal

COMPONENT OPERATING RANGE

Battery ECU	DTC P0A1F is not detected

INSPECTION PROCEDURE

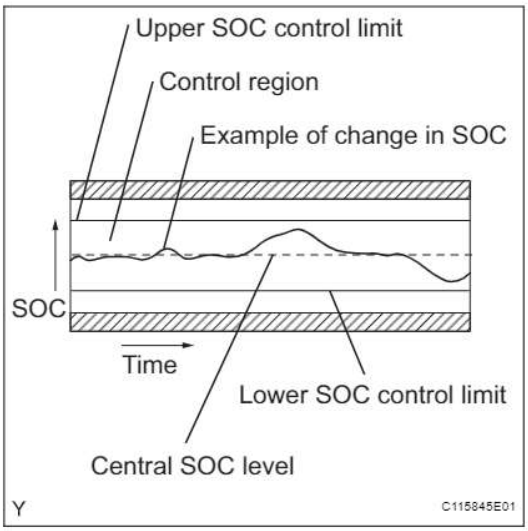
1	REPLACE BATTERY ECU

NEXT

COMPLETED

DTC	P0A7F	Hybrid Battery Pack Deterioration

DESCRIPTION



The battery ECU calculates the SOC (state of charge) of the HV battery by estimating the amperage that flows into the HV battery and monitoring other values.
The battery ECU sends the calculated SOC to the hybrid vehicle control ECU. The hybrid vehicle control ECU charges and discharges the HV battery depending on driving patterns based on the information sent by the battery ECU.

DTC No.	DTC Detection Condition	Trouble Area
P0A7F	When either condition below is met: • Resistance of HV battery assembly is higher than standard (1 trip detection logic) • When the capacity difference between battery modules exceeds the specified value (2 trip detection logic)	• HV battery assembly • Battery ECU

HB

MONITOR DESCRIPTION

The battery ECU calculates the resistance of the HV battery through amperage and voltage, and uses this resistance to determine the extent of deterioration of the HV battery. If the battery ECU detects that the resistance of the HV battery has exceeded the standard, it determines that malfunction has occurred. In addition, the battery ECU monitors the SOC, and if the difference between the maximum and minimum SOC values exceeds the standard, it determines that malfunction has occurred. When either of the malfunction detection conditions is met, the battery ECU illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0A7F: HV battery/Rationality
Required sensors/components	Main: Battery voltage sensor inside battery ECU, battery current sensor Sub: Battery temperature sensor
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediate or 2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Either of the following condition	(1) or (2)
(1) Internal resistance	Exceeds the standard level
(2) The difference between the maximum SOC and the minimum SOC	Exceeds the standard level

COMPONENT OPERATING RANGE

TOYOTA's intellectual property	-

INSPECTION PROCEDURE

1 **READ DTC OUTPUT (DTC P0A1F IS OUTPUT)**

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

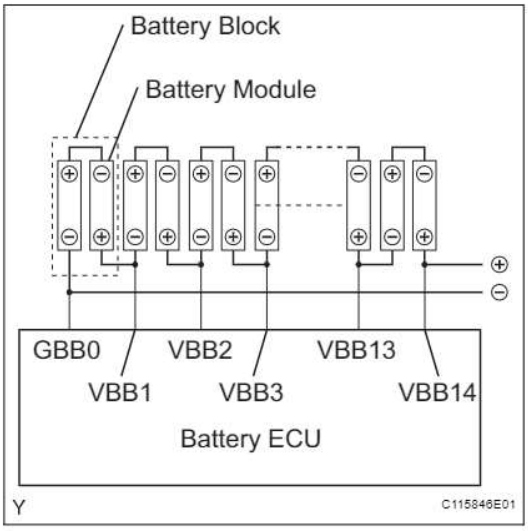
HB

REPLACE HV SUPPLY BATTERY ASSEMBLY

DTC	P0A80	Replace Hybrid Battery Pack

DESCRIPTION

The HV battery assembly consists of nickel hydride batteries. Nickel hydride batteries do not require external charging. The SOC (state of charge) of the HV battery is maintained at a constant voltage level by the hybrid vehicle control ECU while the vehicle is being driven. In the HV battery assembly, 28 modules are connected in series, and each module has six 1.2 V cells that are connected in series. Thus, the HV battery assembly contains a total of 168 cells which produce 201.6 V.
The battery ECU, which monitors two modules as a single battery block, detects the battery block voltage at a total of 14 locations.



DTC No.	DTC Detection Condition	Trouble Area
P0A80	Voltage difference between battery blocks is higher than standard (2 trip detection logic)	• HV battery assembly • Battery ECU

MONITOR DESCRIPTION

The battery ECU, which monitors the voltage of the battery blocks, determines that malfunction has occurred if a voltage difference between the battery blocks exceeds the standard. When the malfunction detection condition is satisfied, the battery ECU illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0A80: HV battery/Rationality
Required sensors/components	Main: Battery voltage sensor inside battery ECU Sub: Battery current sensor, battery temperature sensor
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	2 driving cycles
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Battery voltage difference	Exceeds the standard level

COMPONENT OPERATING RANGE

TOYOTA's intellectual property	-

INSPECTION PROCEDURE

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO → **REPLACE HV SUPPLY BATTERY ASSEMBLY**

HB

DTC	P0A81	Hybrid Battery Pack Cooling Fan 1

DESCRIPTION

Refer to DTC P0A84 (see page HB-41).

DTC No.	DTC Detection Condition	Trouble Area
P0A81	Voltage at motor is out of predetermined range in proportion to target control voltage (1 trip detection logic)	• Quarter vent duct (blower motor controller) • Battery ECU

WIRING DIAGRAM

Refer to DTC P0A84 (see page HB-42).

INSPECTION PROCEDURE

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.

Result

Display (DTC Output)	Proceed to
P0A81	A
P0A81 and P0A1F	B
P0A81 and P0A84	C

B → REPLACE BATTERY ECU

C → GO TO DTC P0A84 CHART

HB

A

2	REPLACE QUARTER VENT DUCT (BATTERY BLOWER MOTOR CONTROLLER)

(a) Replace the quarter vent duct (blower motor controller).
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch ON (IG) and the tester ON.
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / CLEAR CODES.
(e) Perform a simulation test.

NEXT

3	READ DTC OUTPUT (DTC P0A81 IS OUTPUT AGAIN)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.

(d) Read DTCs.
Result:
DTC P0A81 is output again

YES → **REPLACE BATTERY ECU**

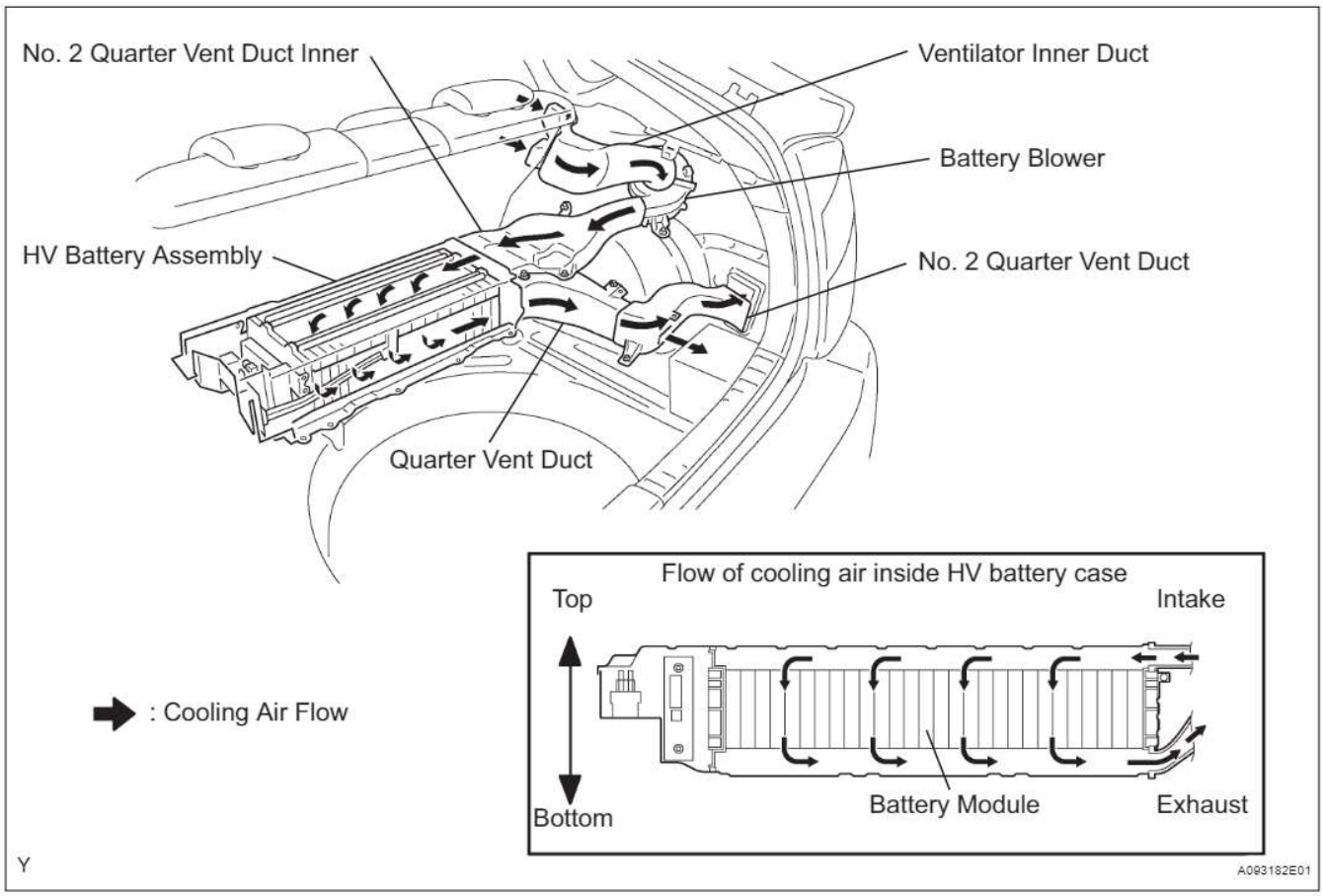
NO

SYSTEM IS OK

DTC	P0A82	Hybrid Battery Pack Cooling Fan 1 Performance or Stuck OFF

DESCRIPTION

The cooling air flows into the inlet on the right of the rear seat and travels through an intake duct to the battery blower on the right surface of the luggage compartment. Furthermore, the cooling air travels through an intake duct (which connects the battery blower to the upper right surface of the HV battery assembly) and flows to the HV battery assembly.
The cooling air flows from the top to the bottom between the HV battery modules. After it has cooled the modules, it is discharged from the bottom right surface of the HV battery assembly.
The exhaust air travels through an exhaust duct on the right surface of the luggage compartment and is discharged into the cabin as well as outside of the vehicle.
The battery ECU uses battery temperature sensors in order to detect the temperature of the HV battery assembly. Based on the results of this detection, the battery ECU controls the battery blower. (Thus, the battery blower starts when the HV battery temperature rises to a predetermined level.)



DTC No.	DTC Detection Condition	Trouble Area
P0A82	Difference between estimated battery temperature based on blower fan cooling performance and actual temperature is excessive (2 trip detection logic)	• Quarter vent duct • No. 2 quarter vent duct • No. 2 quarter vent duct inner • Ventilator inner duct • Battery blower • Battery ECU

INSPECTION PROCEDURE

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

2	CHECK DUCT AND BLOWER

(a) Check the ducts and the blower listed below for disconnection and damage. Also, check that they are not clogged up with foreign substances.
(1) Quarter vent duct
(2) No. 2 quarter vent duct
(3) No. 2 quarter vent duct inner
(4) Ventilator inner duct
(5) Battery blower

NG → **REMOVE FOREIGN SUBSTANCES OR REPLACE AFFECTED PARTS**

OK

HB

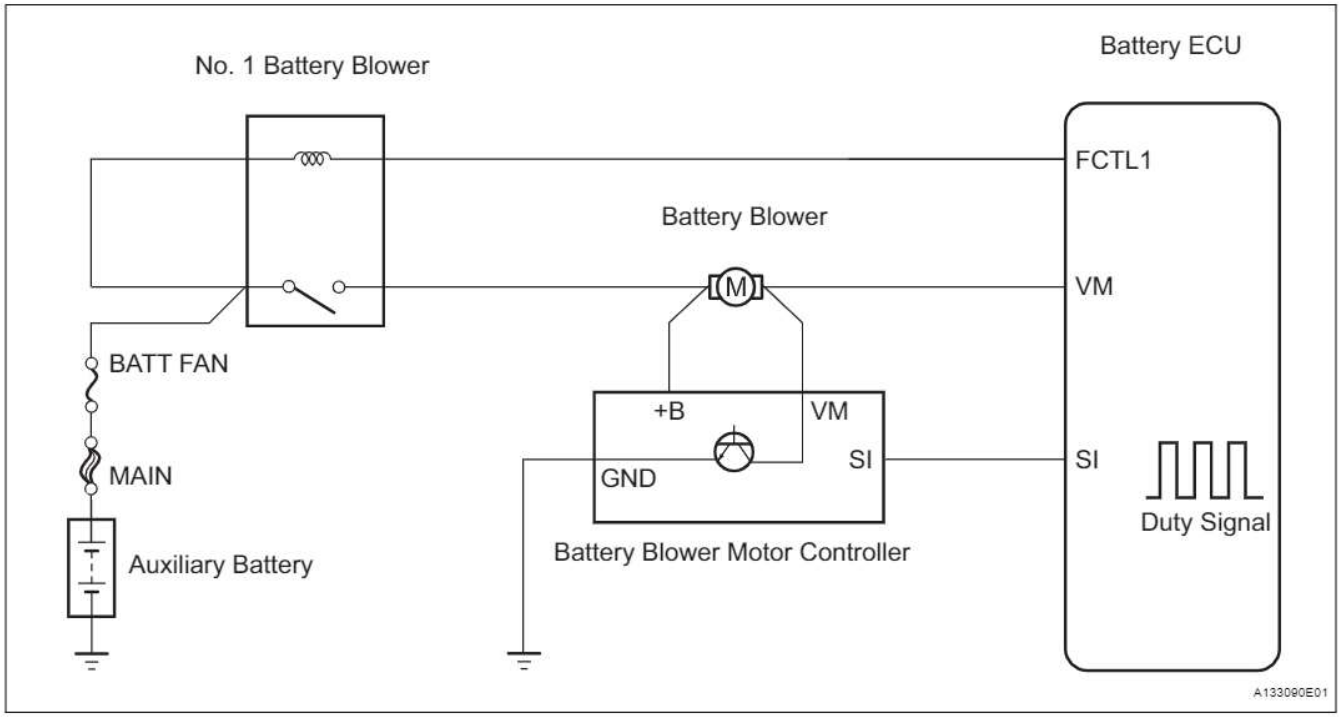
REPLACE BATTERY ECU

DTC	P0A84	Hybrid Battery Pack Cooling Fan 1 Control Circuit Low

DTC	P0A85	Hybrid Battery Pack Cooling Fan 1 Control Circuit High

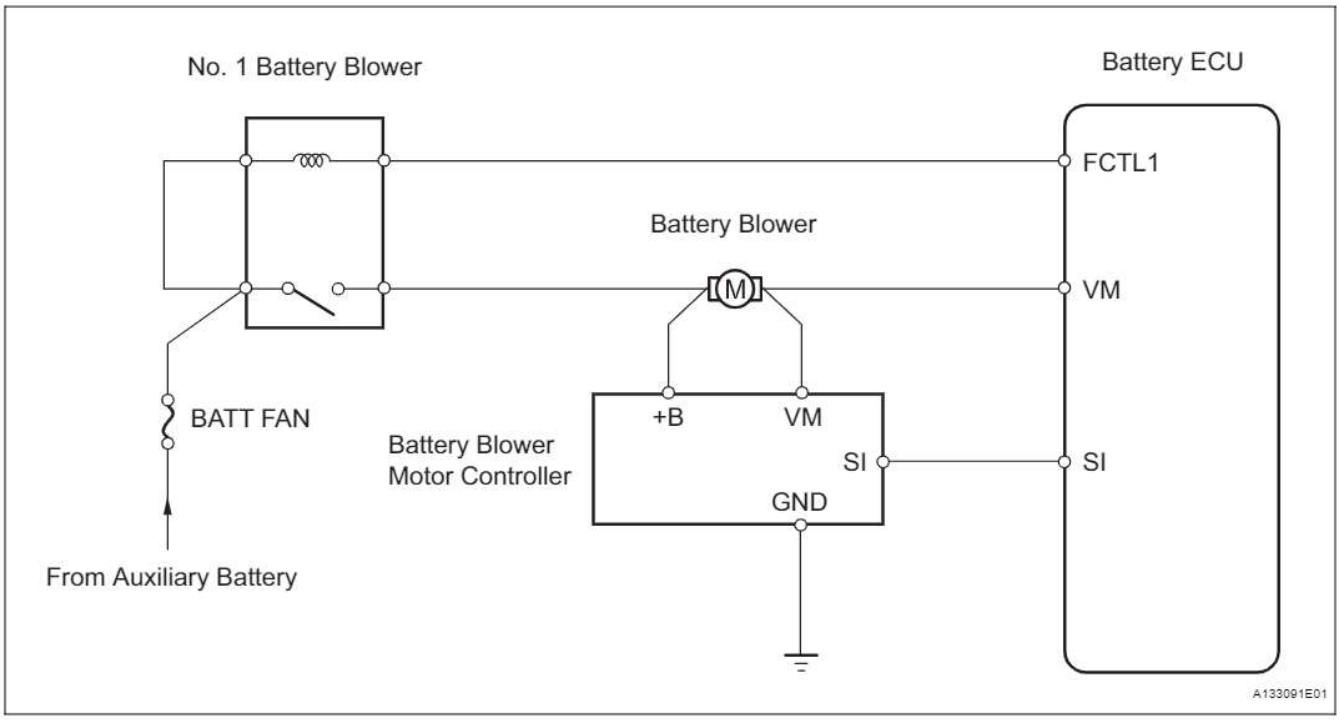
DESCRIPTION

The blower motor controller regulates the voltage of the battery blower. The blower motor controller has fins made of aluminum. The exhaust air from the HV battery assembly that flows through the quarter vent duct cools the blower motor controller, which is installed in the quarter vent duct.
The current flows from the FCTL1 terminal of the battery ECU to the relay coil of the No. 1 battery blower relay and as the contact point of the relay closes, the power is supplied to the battery blower.
When a fan actuation signal is transmitted from the battery ECU, the blower motor controller adjusts voltage (VM) which is applied to the battery blower in order to get the requested fan speed. The adjusted voltage is also transmitted to the VM terminal of the battery ECU in the form of a monitoring signal. The blower motor controller corrects the voltage at the blower motor by monitoring voltage at the +B terminal of the battery blower.



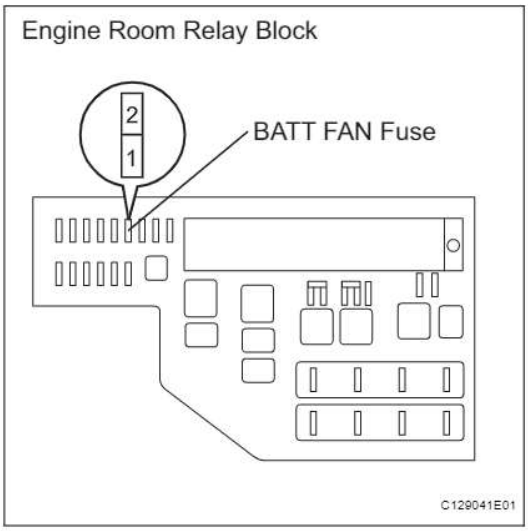
DTC No.	DTC Detection Condition	Trouble Area
P0A84	Battery blower voltage is lower than malfunction threshold at constant vehicle speed	• Wire harness or connector • BATT FAN fuse • No. 1 battery blower relay • Battery blower • Quarter vent duct (battery blower motor controller) • Battery ECU
P0A85	Battery blower voltage is higher than malfunction threshold at constant vehicle speed	• Wire harness or connector • BATT FAN fuse • No. 1 battery blower relay • Battery blower • Quarter vent duct (battery blower motor controller) • Battery ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK FUSE (BATT FAN)

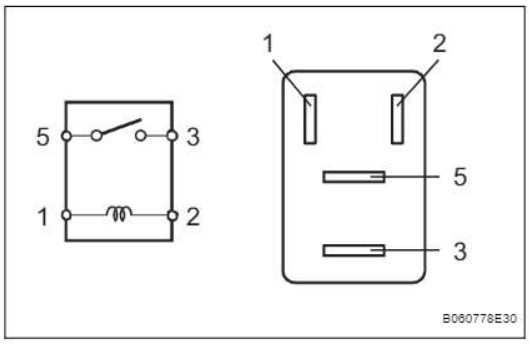


(a) Remove the BATT FAN fuse from the engine room relay block.
(b) Measure the resistance of the BATT FAN fuse.
Standard resistance:
Below 1 Ω
(c) Reinstall the BATT FAN fuse.

NG → **Go to step 14**

OK

2 INSPECT NO. 1 BATTERY BLOWER RELAY



(a) Remove the No. 1 battery blower relay.
(b) Measure the resistance of the terminals of the relay.
Standard resistance

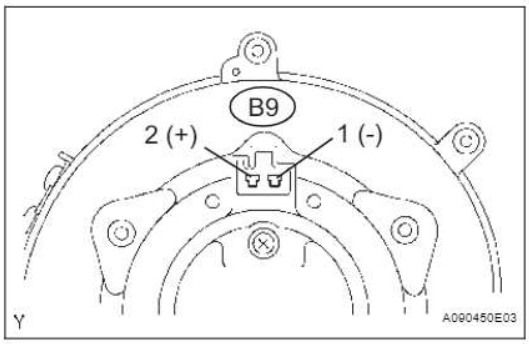
Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (Apply battery voltage to terminals 1 and 2)

(c) Reinstall the No. 1 battery blower relay.

NG → **REPLACE NO. 1 BATTERY BLOWER RELAY**

OK

3 INSPECT BATTERY BLOWER



(a) Disconnect the B9 battery blower connector.
(b) Connect the positive terminal of the battery to terminal 2 of the battery blower connector, and the negative battery terminal to terminal 1 of the connector.
(c) Check that the blower fan rotates when voltage is applied.
OK:
Blower fan rotates

NG → **REPLACE BATTERY BLOWER**

OK

HB

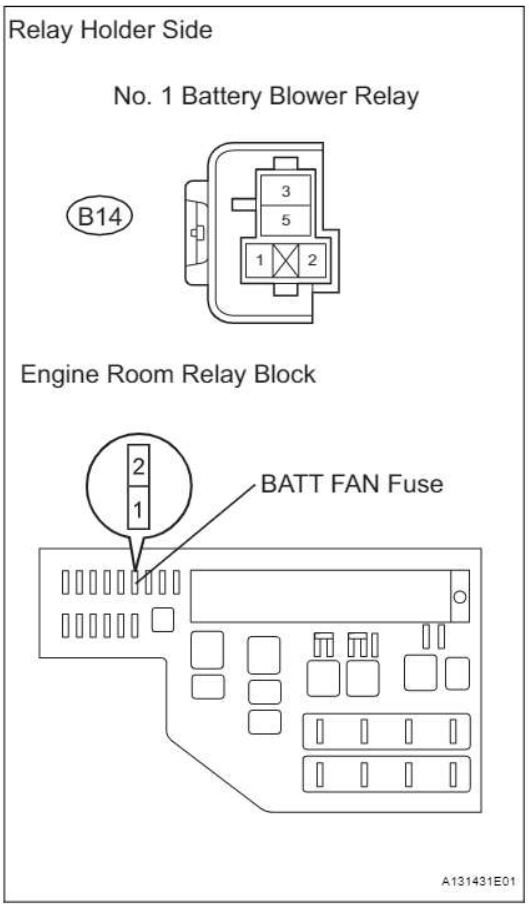
4 CHECK BATTERY BLOWER MOTOR CONTROLLER

(a) Check the battery blower motor controller (see page HB-159).

NG → **REPLACE QUARTER VENT DUCT (BATTERY BLOWER MOTOR CONTROLLER)**

OK

5	CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATT FAN FUSE)



(a) Remove the B14 No. 1 battery blower relay.
(b) Remove the BATT FAN fuse from the engine room relay block.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B14-1 and 3 - BATT FAN fuse terminal 2	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.

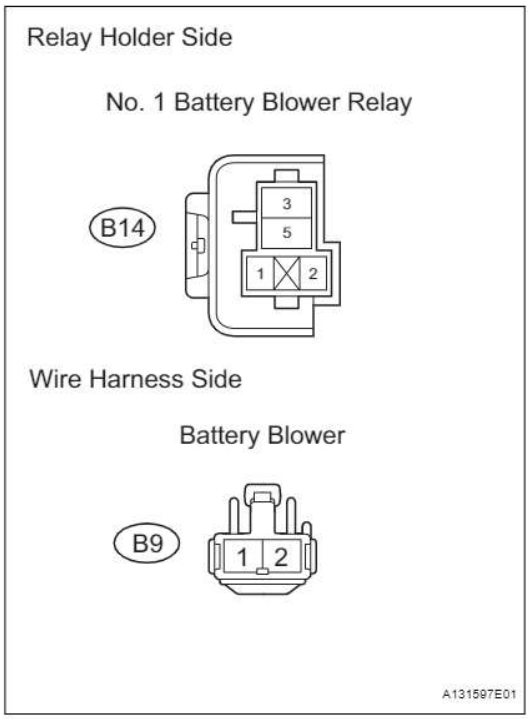
(d) Reinstall the No. 1 battery blower relay.
(e) Reinstall the BATT FAN fuse.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

HB

6 CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATTERY BLOWER)



(a) Remove the B14 No. 1 battery blower relay.
(b) Disconnect the B9 battery blower connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B14-5 - B9-2	Below 1 Ω

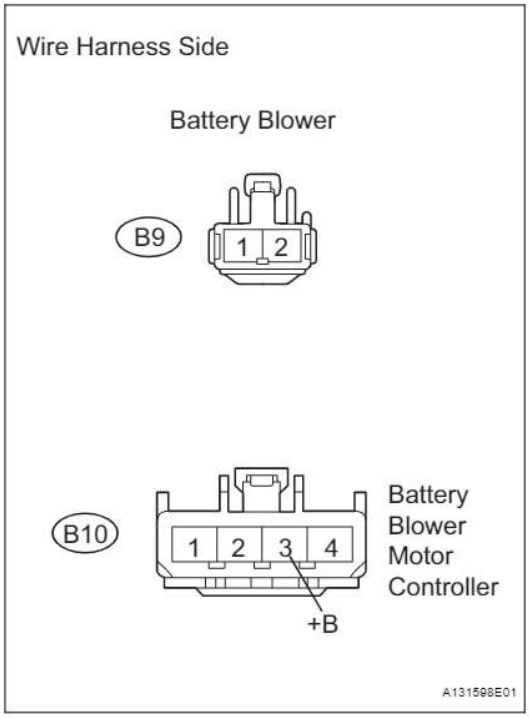
NOTICE:
When taking a measurement with a tester, do not apply excessive force to the tester probe to avoid damaging the holder.

(d) Reinstall the No. 1 battery blower relay.
(e) Reconnect the battery blower connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

7 CHECK WIRE HARNESS (BATTERY BLOWER - BATTERY BLOWER MOTOR CONTROLLER)



(a) Disconnect the B9 battery blower connector.
(b) Disconnect the B10 battery blower motor controller connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B9-2 - B10-3 (+B)	Below 1 Ω

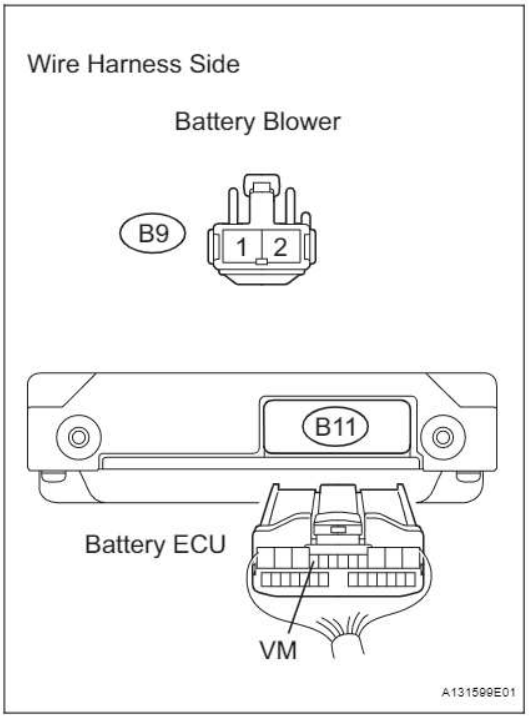
(d) Reconnect the battery blower connector.
(e) Reconnect the battery blower motor controller connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

HB

OK

8	CHECK WIRE HARNESS (BATTERY BLOWER - BATTERY ECU)



(a) Disconnect the B9 battery blower connector.
(b) Disconnect the B11 battery ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B9-1 - B11-9 (VM)	Below 1 Ω
B9-1 or B11-9 (VM) - Body ground	10 kΩ or higher

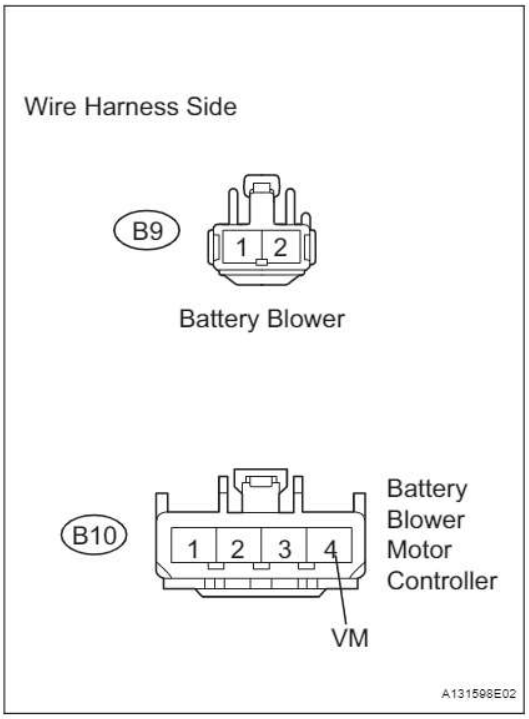
(d) Reconnect the battery blower connector.
(e) Reconnect the battery ECU connector.

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

9	CHECK WIRE HARNESS (BATTERY BLOWER - BATTERY BLOWER MOTOR CONTROLLER)

HB



(a) Disconnect the B9 battery blower connector.
(b) Disconnect the B10 battery blower motor controller connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

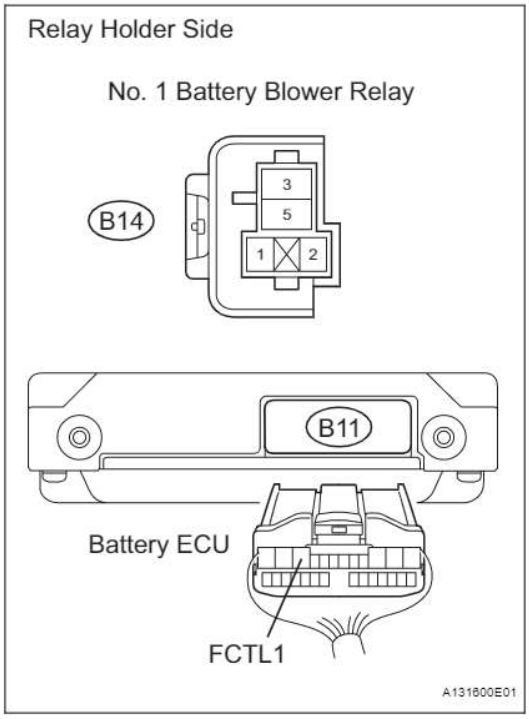
Tester Connection	Specified Condition
B9-1 - B10-4 (VM)	Below 1 Ω
B9-1 or B10-4 (VM) - Body ground	10 kΩ or higher

(d) Reconnect the battery blower connector.
(e) Reconnect the battery blower motor controller connector.

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

10 CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATTERY ECU)



(a) Remove the B14 No. 1 battery blower relay.
(b) Disconnect the B11 battery ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B14-2 - B11-10 (FCTL1)	Below 1 Ω
B14-2 or B11-10 (FCTL1) - Body ground	10 kΩ or higher

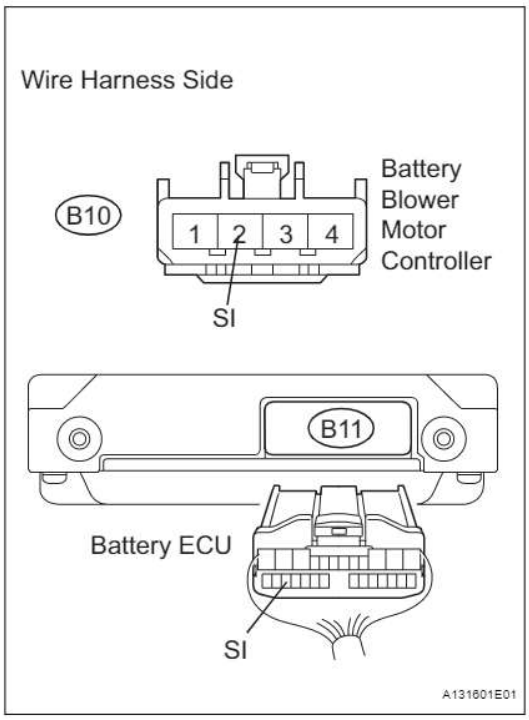
NOTICE:
When taking a measurement with a tester, do not apply excessive force to the tester probe to avoid damaging the holder.

(d) Reinstall the No. 1 battery blower relay.
(e) Reconnect the battery ECU connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

11 CHECK WIRE HARNESS (BATTERY BLOWER MOTOR CONTROLLER - BATTERY ECU)



(a) Disconnect the B10 battery blower motor controller connector.
(b) Disconnect the B11 battery ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B10-2 (SI) - B11-24 (SI)	Below 1 Ω
B10-2 (SI) or B11-24 (SI) - Body ground	10 kΩ or higher

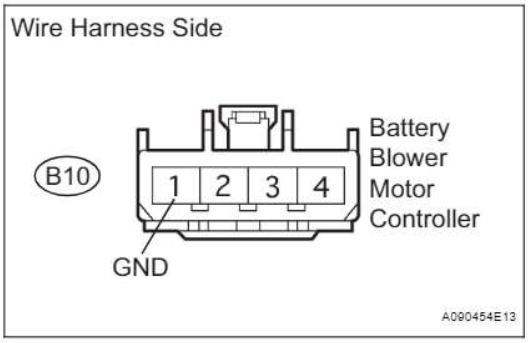
(d) Reconnect the battery blower motor controller connector.
(e) Reconnect the battery ECU connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

HB

OK

12	CHECK WIRE HARNESS (BATTERY BLOWER MOTOR CONTROLLER - BODY GROUND)



(a) Disconnect the B10 battery blower motor controller connector.
(b) Measure the resistance of the wire harness side connector.

Standard resistance

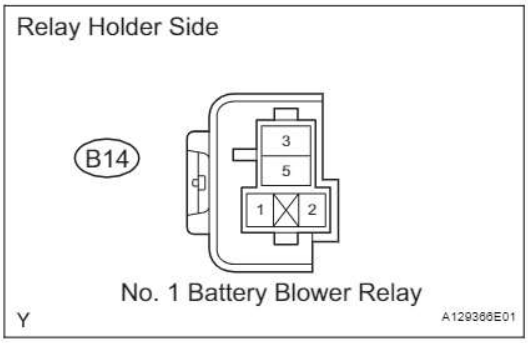
Tester Connection	Specified Condition
B10-1 (GND) - Body ground	Below 1 Ω

(c) Reconnect the battery blower motor controller connector.

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

13	CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY)



(a) Remove the B14 No. 1 battery blower relay.
(b) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B14-1 - B14-3	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.

(c) Reinstall the No. 1 battery blower relay.

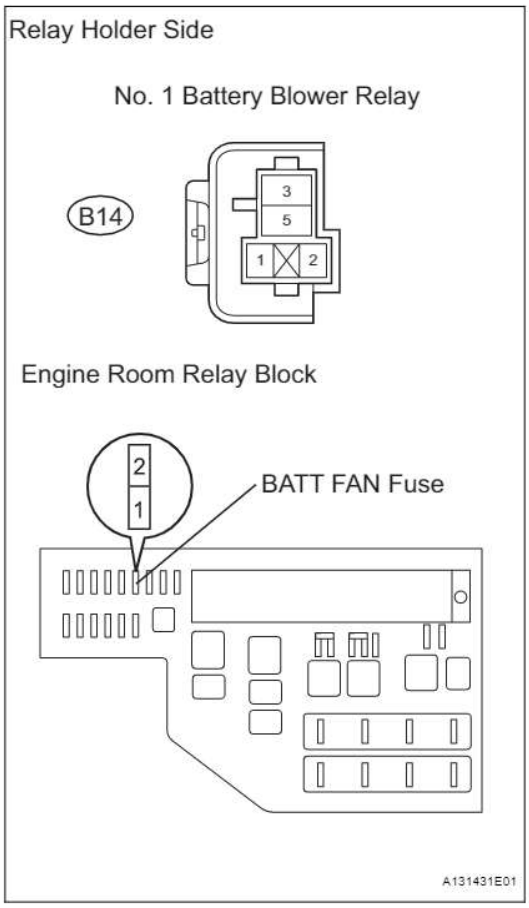
NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE BATTERY ECU

HB

14	CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATT FAN FUSE)



(a) Remove the B14 No. 1 battery blower relay.
(b) Remove the BATT FAN fuse from the engine room relay block.
(c) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
B14-3 or BATT FAN fuse terminal 2 - Body ground	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.

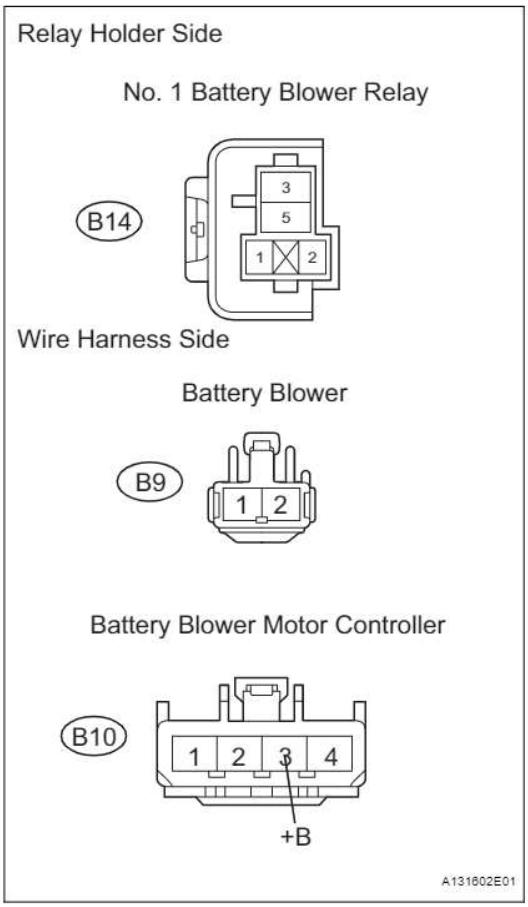
(d) Reinstall the No. 1 battery blower relay.
(e) Reinstall the BATT FAN fuse.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR AND REPLACE FUSE (BATT FAN)**

OK

HB

15	CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATTERY BLOWER)



(a) Remove the B14 No. 1 battery blower relay.
(b) Disconnect the B9 battery blower connector.
(c) Disconnect the B10 battery blower motor controller connector.
(d) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
B14-5, B9-2 or B10-3 (+B) - Body ground	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.

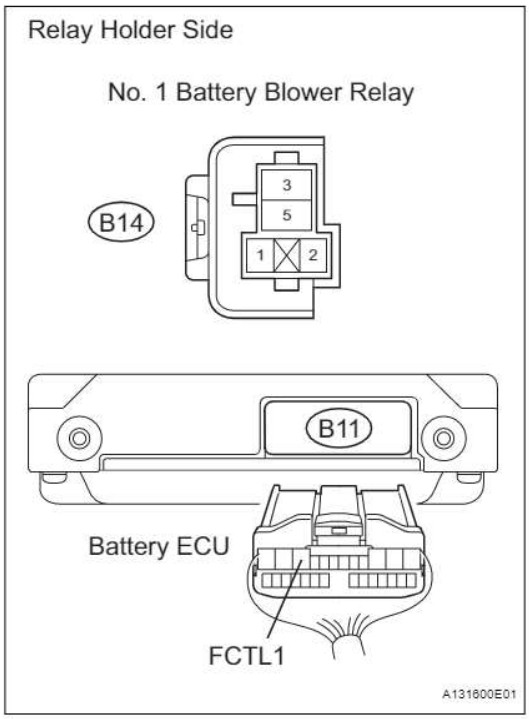
(e) Reinstall the No. 1 battery blower relay.
(f) Reconnect the battery blower connector.
(g) Reconnect the battery blower motor controller connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR AND REPLACE FUSE (BATT FAN)**

OK

HB

16	CHECK WIRE HARNESS (NO. 1 BATTERY BLOWER RELAY - BATTERY ECU)



(a) Remove the B14 No. 1 battery blower relay.
(b) Disconnect the B11 battery ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
B14-1, B14-3 or B11-10 (FCTL1) - Body ground	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.

(d) Reinstall the No. 1 battery blower relay.
(e) Reconnect the battery ECU connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR AND REPLACE FUSE (BATT FAN)**

OK

17	CHECK BATTERY BLOWER MOTOR CONTROLLER

(a) Check the battery blower motor controller (see page HB-159).

NG → **REPLACE QUARTER VENT DUCT (BATTERY BLOWER MOTOR CONTROLLER)**

OK

REPLACE BATTERY ECU

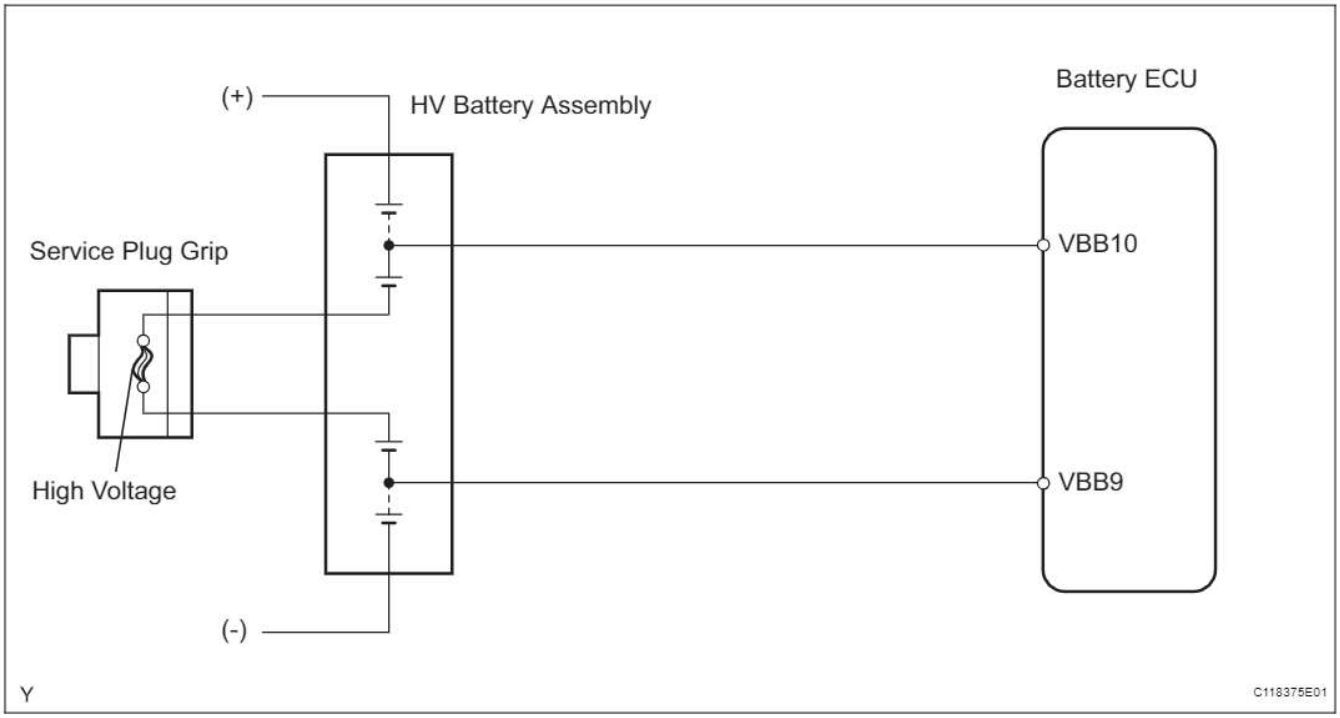
HB

DTC	P0A95	High Voltage Fuse

DESCRIPTION

DTC No.	DTC Detection Condition	Trouble Area
P0A95	Voltage between VBB9 and VBB10 terminals is below standard in spite of interlock switch being engaged (1 trip detection logic)	• High voltage fuse • Service plug grip • Battery plug • Battery ECU

WIRING DIAGRAM



HB

INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.**
- **After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.**

HINT:

At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

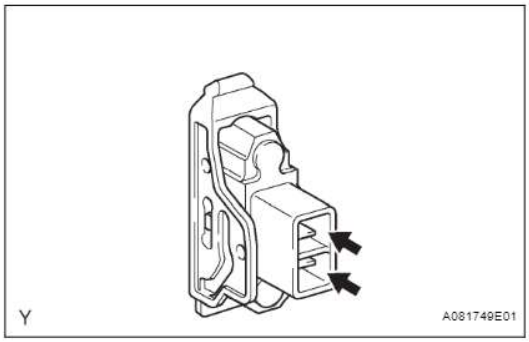
(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.

Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

2 INSPECT SERVICE PLUG GRIP

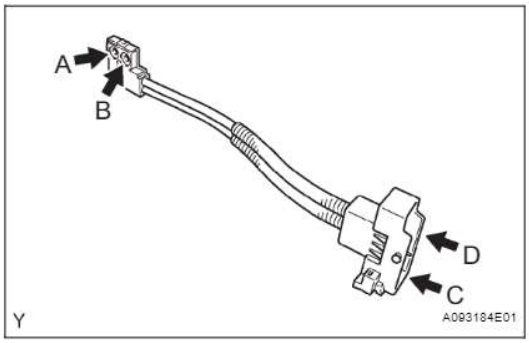


CAUTION:
Wear insulated gloves before performing the following operation.
(a) Turn the power switch OFF.
(b) Remove the service plug grip (see page HB-153).
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, never turn the power switch ON (READY) in this state.
(c) Measure the resistance of the service plug grip.
Standard resistance:
Below 1 Ω

NG → **Go to step 4**

OK

3 INSPECT BATTERY PLUG



CAUTION:
Wear insulated gloves and goggles before performing the following operation.
(a) Remove the HV battery assembly (see page HB-88).
(b) Remove the battery plug (see page HB-112).
(c) Measure the resistance of the battery plug.
Standard resistance

Tester Connection	Specified Condition
A - C	Below 1 Ω
B - D	Below 1 Ω

(d) Reinstall the battery plug (see page HB-112).
(e) Reinstall the HV battery assembly (see page HB-88).

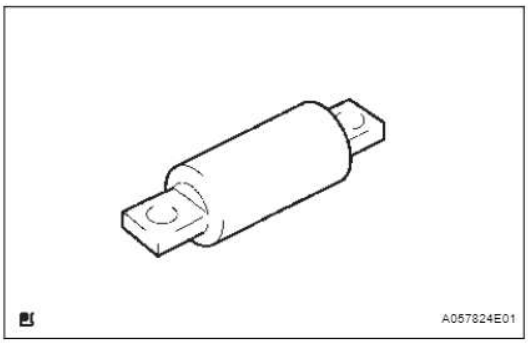
NG → **REPLACE BATTERY PLUG**

OK

REPLACE BATTERY ECU

HB

4	INSPECT HIGH VOLTAGE FUSE



CAUTION:
Wear insulated gloves before performing the following operation.

(a) Remove the high voltage fuse (see page HB-153).
HINT:
The high voltage fuse is enclosed in the service plug grip.

(b) Measure the resistance of the high voltage fuse.
Standard resistance:
Below 1 Ω

(c) Reinstall the high voltage fuse.

NG → **REPLACE HIGH VOLTAGE FUSE**

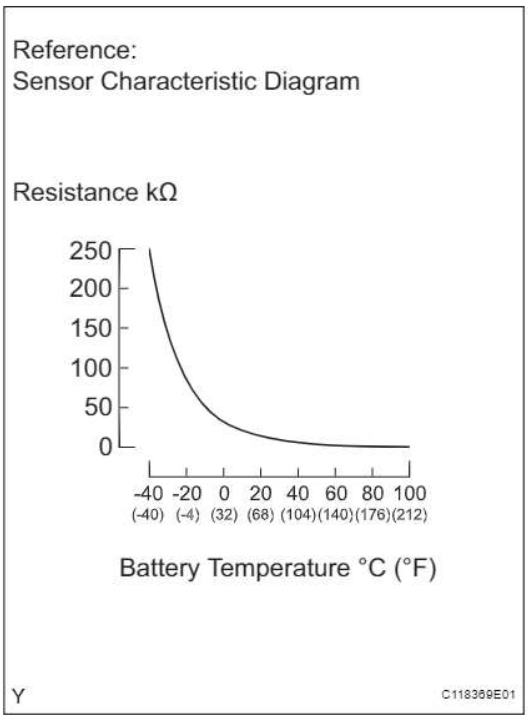
OK

REPLACE SERVICE PLUG GRIP

HB

DTC	P0A9C	Hybrid Battery Temperature Sensor "A"
DTC	P0A9D	Hybrid Battery Temperature Sensor "A" Circuit Low
DTC	P0A9E	Hybrid Battery Temperature Sensor "A" Circuit High

DESCRIPTION



HB

3 battery temperature sensors are located on the bottom of the HV battery assembly. The resistance of the thermistor, which is enclosed in each battery temperature sensor, changes in accordance with the changes in the temperature of the HV battery assembly. The lower the battery temperature, the higher the resistance of the thermistor. Conversely, the higher the temperature, the lower the resistance.
The battery ECU uses the battery temperature sensors to detect the temperature of the HV battery assembly. Based on the results of this detection, the battery ECU controls the battery blower. (Thus, the blower fan starts when the HV battery temperature rises to a predetermined level.)

DTC No.	DTC Detection Condition	Trouble Area
P0A9C	Battery temperature sensor malfunction	• HV battery assembly (HV battery temperature sensor) • Battery ECU
P0A9D	Low resistance in battery temperature sensor	• HV battery assembly (HV battery temperature sensor) • Battery ECU
P0A9E	High resistance in battery temperature sensor	• HV battery assembly (HV battery temperature sensor) • Battery ECU

HINT:
After confirming DTC P0A9C, P0A9D and P0A9E, enter the following menus on the intelligent tester: DIAGNOSIS / OBD/MOBD / HV BATTERY / DATA LIST. Then, confirm the temperature of the HV battery by checking "BATT TEMP 1 to 3".

Temperature Displayed	Malfunction
-45°C (-49°F) or less	Open or +B short circuit
95°C (203°F) or more	GND short circuit

MONITOR DESCRIPTION

If the temperature indicated by the battery temperature sensors is lower than the standard level (open), or is higher than the standard level (short), the battery ECU interprets this as a sensor malfunction. If the battery ECU detects that HV battery temperature is out of a normal range or its value is abnormal, it illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Case 1: Battery temperature sensor malfunction

Related DTCs	P0A9C
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

Case 2: Battery temperature sensor low resistance

Related DTCs	P0A9D
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

HB

Case 3: Battery temperature high resistance

Related DTCs	P0A9E
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Case 1: Battery temperature sensor malfunction

Temperature deviation among batteries (Maximum temperature - minimum temperature)	Exceeds standard level

Case 2: Battery temperature sensor low resistance

Resistance of battery temperature sensor	1.108 kΩ or less

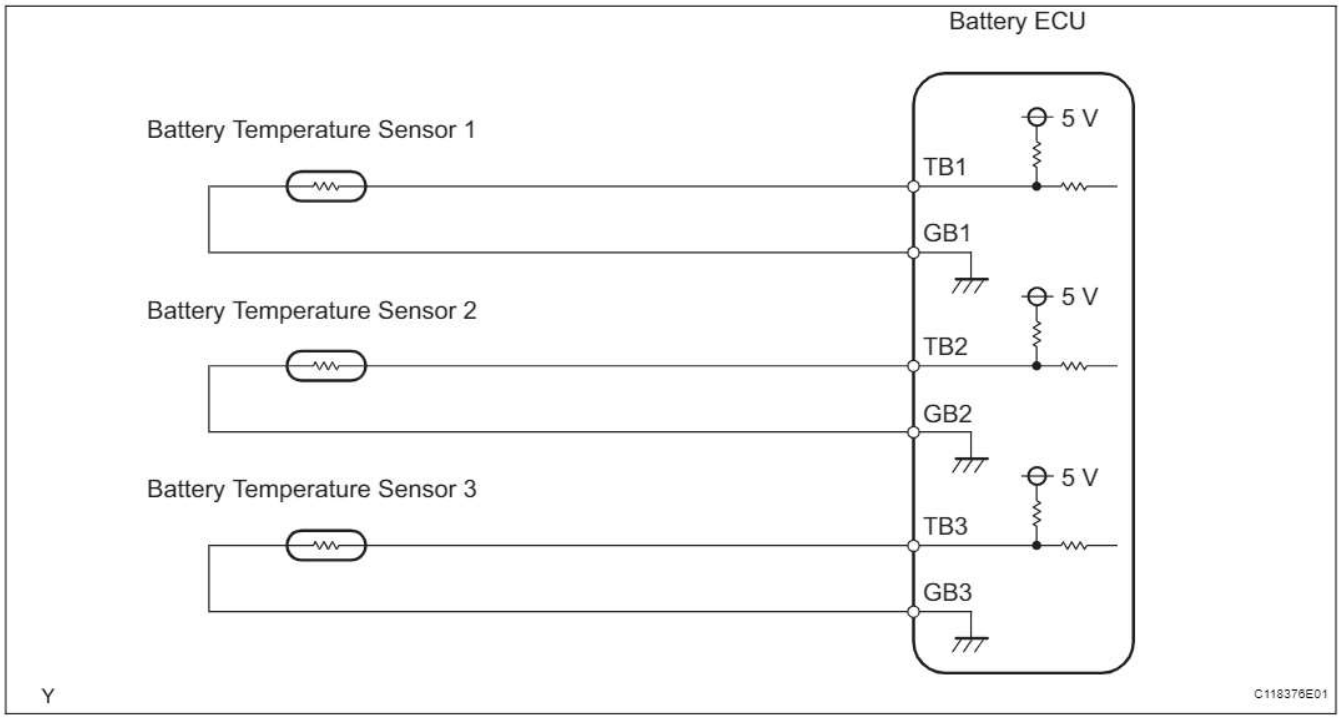
Case 3: Battery temperature high resistance

Resistance of battery temperature sensor	247.7 kΩ or more

COMPONENT OPERATING RANGE

Battery temperature sensor	9 to 11 kΩ (at 25°C (77°F))

WIRING DIAGRAM



HB

INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.**
- **After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.**

HINT:

At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

1	**READ DTC OUTPUT (DTC P0A1F IS OUTPUT)**

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.

Result:
DTC P0A1F is output

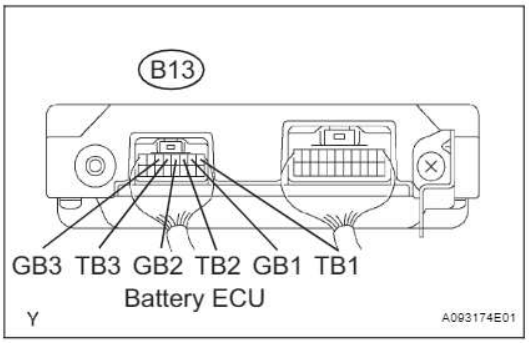
YES → **REPLACE BATTERY ECU**

NO

2 CHECK CONNECTION OF BATTERY TEMPERATURE SENSOR CONNECTOR

CAUTION:
Wear insulated gloves before performing the following operation.

(a) Turn the power switch OFF.
(b) Remove the service plug grip (see page HB-153).
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, never turn the power switch ON (READY) in this state.
(c) Check the connection condition of the B13 battery ECU connector.
OK:
Connector has been connected securely and there is no poor connection.
HINT:
Since the battery temperature sensor is not available by itself, if replacement is required, replace the entire HV battery assembly.



NG → **CONNECT SECURELY**

OK

REPLACE HV SUPPLY BATTERY ASSEMBLY

DTC	P0AAC	Hybrid Battery Pack Air Temperature Sensor "A" Circuit

DESCRIPTION

The intake air temperature sensor is provided on the HV battery assembly. Its resistance value varies with the changes in the intake air temperature. The characteristics of the intake air temperature sensor are the same as the battery temperature sensors (see page HB-55).
The battery ECU uses the signals from the intake air temperature sensor for adjusting the air flow speed of the battery blower.

DTC No.	DTC Detection Condition	Trouble Area
P0AAC	Temperature detected by intake air temperature sensor is lower than standard (open) or higher than standard (short) (1 trip detection logic)	• HV battery assembly (intake air temperature sensor) • Battery ECU

HINT:
After confirming DTC P0AAC, enter the following menus on the intelligent tester: DIAGNOSIS / OBD/ MOBD / HV BATTERY / DATA LIST. Then, confirm the temperature of the intake ambient air to the battery pack by checking "BATT INSIDE AIR".

Temperature Displayed	Malfunction
-45°C (-49°F) or less	Open or +B short circuit
95°C (203°F) or more	GND short circuit

MONITOR DESCRIPTION

If the temperature indicated by the intake air temperature sensor is lower than the standard level (open), or is higher than the standard level (short), the battery ECU determines that a malfunction has occurred. If the battery ECU detects an abnormal intake air temperature, it will illuminate the MIL and set a DTC.

MONITOR STRATEGY

Related DTCs	P0AAC: Intake cooling air temperature sensor/Range check
Required sensors/components	Intake air temperature sensor
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediate
Sequence of operation	None

HB

TYPICAL ENABLING CONDITIONS

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

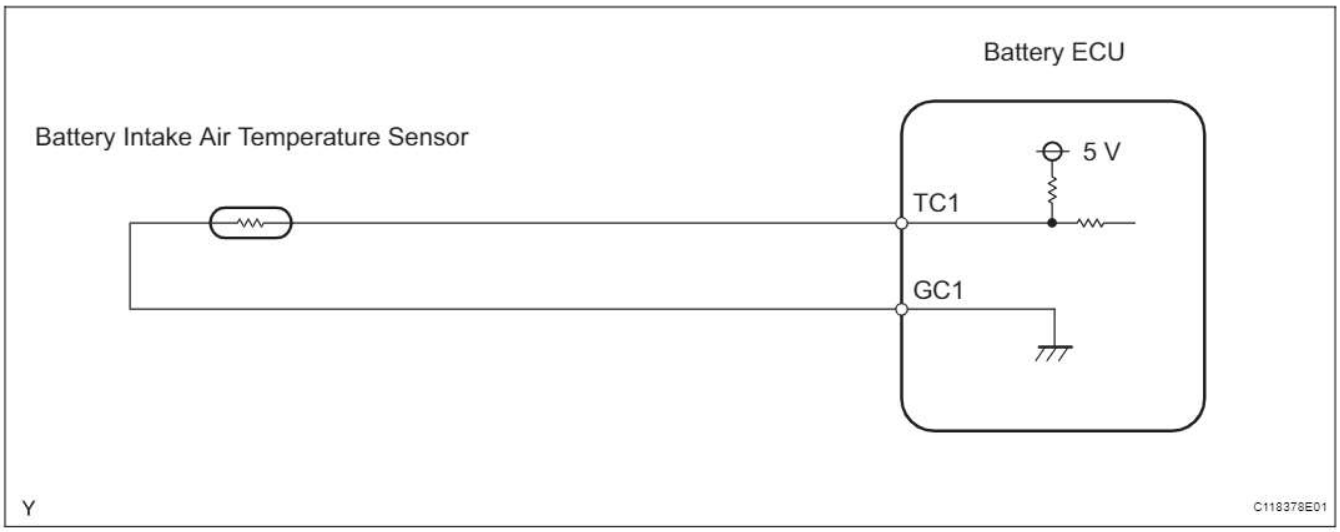
TYPICAL MALFUNCTION THRESHOLDS

Resistance of intake air temperature sensor	1.108 kΩ or less or 247.7 kΩ or more

COMPONENT OPERATING RANGE

Intake air temperature sensor	9 to 11 kΩ (at 25°C (77°F))

WIRING DIAGRAM



INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.**
- **After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.**

HINT:

At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

HB

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

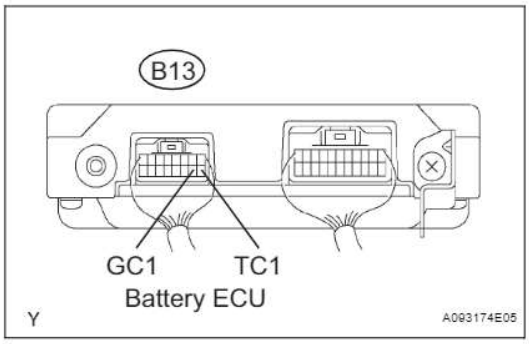
YES → **REPLACE BATTERY ECU**

NO

2	CHECK CONNECTION OF INTAKE AIR TEMPERATURE SENSOR CONNECTOR

CAUTION:
Wear insulated gloves before performing the following operation.

(a) Turn the power switch OFF.
(b) Remove the service plug grip (see page HB-153).



NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, never turn the power switch ON (READY) in this state.

(c) Check the connection condition of the B13 battery ECU connector.

OK:

Connector has been connected securely and there is no poor connection.

HINT:

Since the intake air temperature sensor is not available it self, if replacement is required, replace the entire HV battery assembly.

NG → **CONNECT SECURELY**

OK

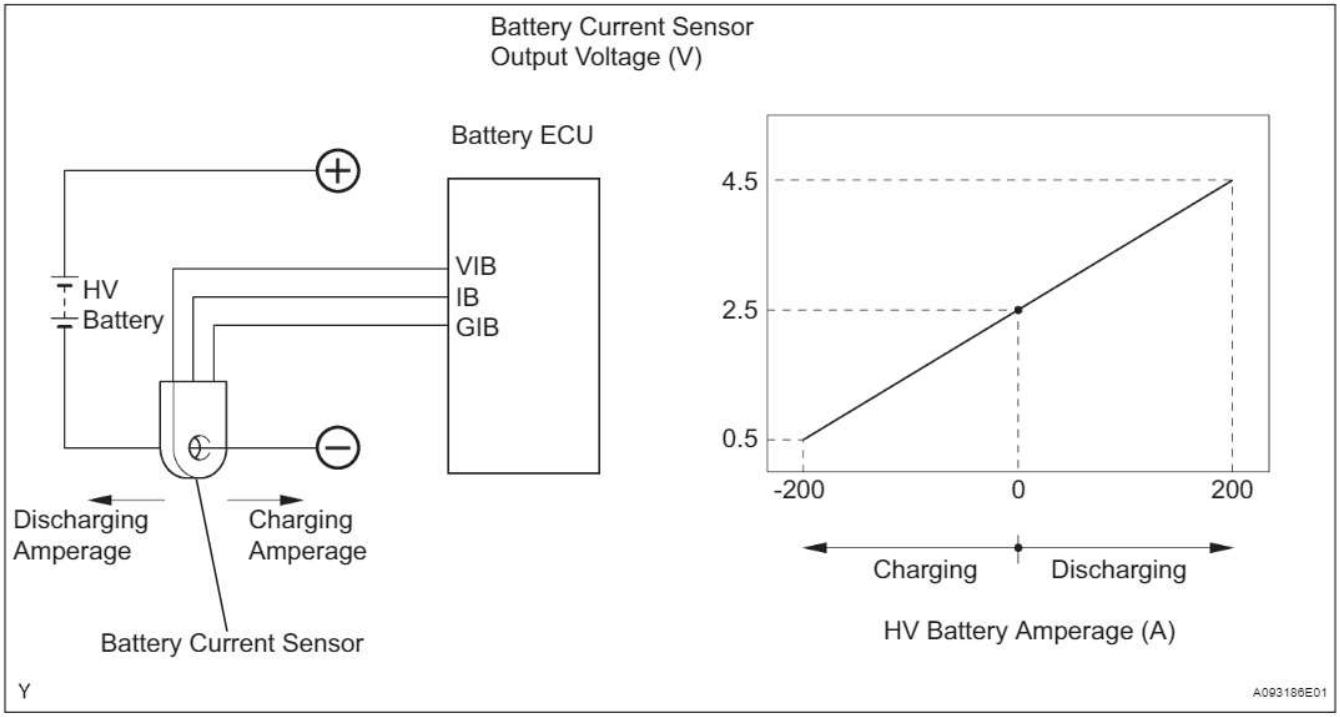
REPLACE HV SUPPLY BATTERY ASSEMBLY

HB

DTC	P0ABF	Hybrid Battery Pack Current Sensor Circuit
DTC	P0AC0	Hybrid Battery Pack Current Sensor Circuit Range/Performance
DTC	P0AC1	Hybrid Battery Pack Current Sensor Circuit Low
DTC	P0AC2	Hybrid Battery Pack Current Sensor Circuit High

DESCRIPTION

The battery current sensor, which is mounted on the negative cable side of the HV battery assembly, detects the amperage that flows into the HV battery. The battery current sensor inputs a voltage (which varies between 0 to 5 V in proportion to the amperage) into the IB terminal of the battery ECU. An output voltage of the battery current sensor below 2.5 V indicates that the HV battery assembly is being charged, and above 2.5 V indicates that the HV battery assembly is being discharged.
The battery ECU determines the charging and discharging amperage of the HV battery assembly based on the signals that are input to its IB terminal, and calculates the SOC (state of charge) of the HV battery through the estimation of the amperage.



DTC No.	DTC Detection Condition	Trouble Area
P0ABF	Power source of battery current sensor	• HV battery assembly (wire harness or connector) • Battery current sensor • Battery ECU
P0AC0	Battery current sensor malfunction	• HV battery assembly (wire harness or connector) • Battery current sensor • Battery ECU

DTC No.	DTC Detection Condition	Trouble Area
P0AC1	Low voltage in battery current sensor	• HV battery assembly (wire harness or connector) • Battery current sensor • Battery ECU
P0AC2	High voltage in battery current sensor	• HV battery assembly (wire harness or connector) • Battery current sensor • Battery ECU

MONITOR DESCRIPTION

If the battery ECU detects malfunction in the battery current sensor, it will illuminate the MIL and set a DTC.

MONITOR STRATEGY

Case 1: Power source of battery current sensor

Related DTCs	P0ABF
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

Case 2: Battery current sensor malfunction

Related DTCs	P0AC0
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	2 driving cycles
Sequence of Operation	None

HB

Case 3: Battery current sensor low voltage

Related DTCs	P0AC1
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

Case 4: Battery current sensor high voltage

Related DTCs	P0AC2
Related Sensor/Components (Main)	Battery temperature sensor
Related Sensor/Components (Related)	None
Frequency of Operation	Continuous
Duration	TOYOTA's intellectual property
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Case 1: Power source of battery current sensor

Power-supply voltage for current sensor	Exceeds standard level

Case 2: Battery current sensor malfunction

Sensor current	Exceeds standard level

Case 3: Battery current sensor low voltage

Sensor voltage	Exceeds standard level

Case 4: Battery current sensor high voltage

Sensor voltage	Exceeds standard level

COMPONENT OPERATING RANGE

Battery current sensor	DTC P0ABF, P0AC0, P0AC1 and P0AC2 are not detected

WIRING DIAGRAM



HB

INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.**
- **After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.**

HINT:
At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

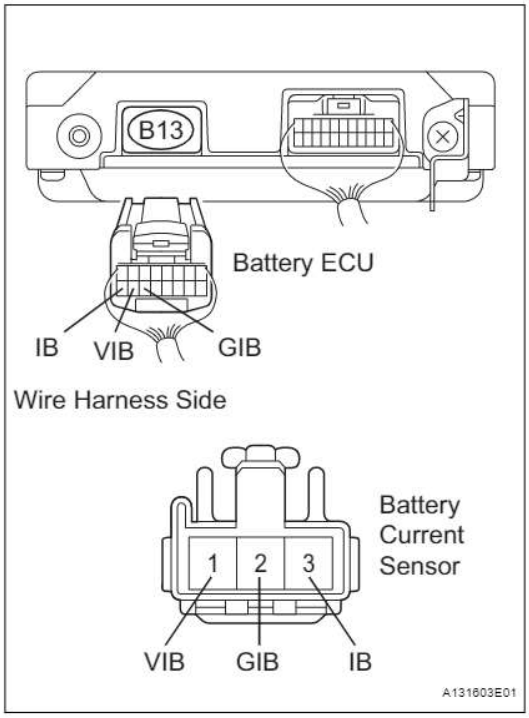
(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

2	CHECK WIRE HARNESS (BATTERY ECU - BATTERY CURRENT SENSOR)

CAUTION:
Wear insulated gloves before performing the following operation.
(a) Turn the power switch OFF.
(b) Remove the service plug grip (see page HB-153).
NOTICE:
Turning the power switch ON (READY) with the service plug grip removed could cause a malfunction. Therefore, never turn the power switch ON (READY) in this state.
(c) Disconnect the B13 battery ECU connector.
(d) Disconnect the battery current sensor connector.
(e) Turn the power switch ON (IG).
HINT:
DTCs for the interlock switch system are output when turning the power switch ON (IG) with the service plug grip removed.
(f) Measure the voltage of the battery ECU connector.
Standard voltage



Tester Connection	Specified Condition
B13-16 (IB) - Body ground	Below 1 V
B13-14 (GIB) - Body ground	Below 1 V
B13-15 (VIB) - Body ground	Below 1 V

(g) Turn the power switch OFF.
(h) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
B13-16 (IB) - 3 (battery current sensor)	Below 1 Ω
B13-14 (GIB) - 2 (battery current sensor)	Below 1 Ω
B13-15 (VIB) - 1 (battery current sensor)	Below 1 Ω

HB

Tester Connection	Specified Condition
B13-16 (IB) or 3 (battery current sensor) - Body ground	10 kΩ or higher
B13-14 (GIB) or 2 (battery current sensor) - Body ground	10 kΩ or higher
B13-15 (VIB) or 1 (battery current sensor) - Body ground	10 kΩ or higher

(i) Reconnect the battery current sensor connector.
(j) Reconnect the battery ECU connector.
(k) Reinstall the service plug grip (see page HB-153).
HINT:
Since the wire harness is not available by itself, if replacement is required, replace the entire HV battery assembly.

NG → **REPAIR HARNESS AND CONNECTOR, OR REPLACE HV SUPPLY BATTERY ASSEMBLY**

OK

3 REPLACE BATTERY CURRENT SENSOR

(a) Replace the battery current sensor (see page HB-141).
(b) Connect the intelligent tester to the DLC3.
(c) Turn the power switch ON (IG) and the tester ON.
(d) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(e) Perform a simulation test.
HINT:
Some of the steps involve the detection of 2 trips. Therefore, after performing a simulation test, turn the power switch OFF, and perform the simulation test again.

HB

NEXT

4 READ DTC OUTPUT (DTC P0ABF, P0AC0, P0AC1 AND P0AC2 IS NOT OUTPUT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0ABF, P0AC0, P0AC1 and P0AC2 is not output again

NO → **REPLACE BATTERY ECU**

YES

SYSTEM IS OK

DTC	P0AFA	Hybrid Battery System Voltage Low

DESCRIPTION

Refer to DTC P0A80 (see page HB-35).

DTC No.	DTC Detection Condition	Trouble Area
P0AFA	Either of the following conditions occurs (1 trip detection logic) • Voltage at each battery block is below 2 V • Voltage of all the battery blocks is -24 to 2 V	• Junction block assembly (busbar module) • No. 2 frame wire (busbar and wire harness) • Battery ECU

MONITOR DESCRIPTION

The battery ECU monitors a voltage of the battery blocks to detect an open malfunction in internal battery voltage sensor circuits of the battery ECU and the wire harness between each battery block and battery ECU. If a voltage at one of the battery blocks is below a standard level or of all the battery blocks is within a specified range, the battery ECU judges that there is an open in the internal sensor circuit(s) or wire harness. The battery ECU then illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0AFA: Battery voltage sensor/Range check
Required sensors/components	The wire harness from each battery block to the battery ECU
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediate
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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

HB

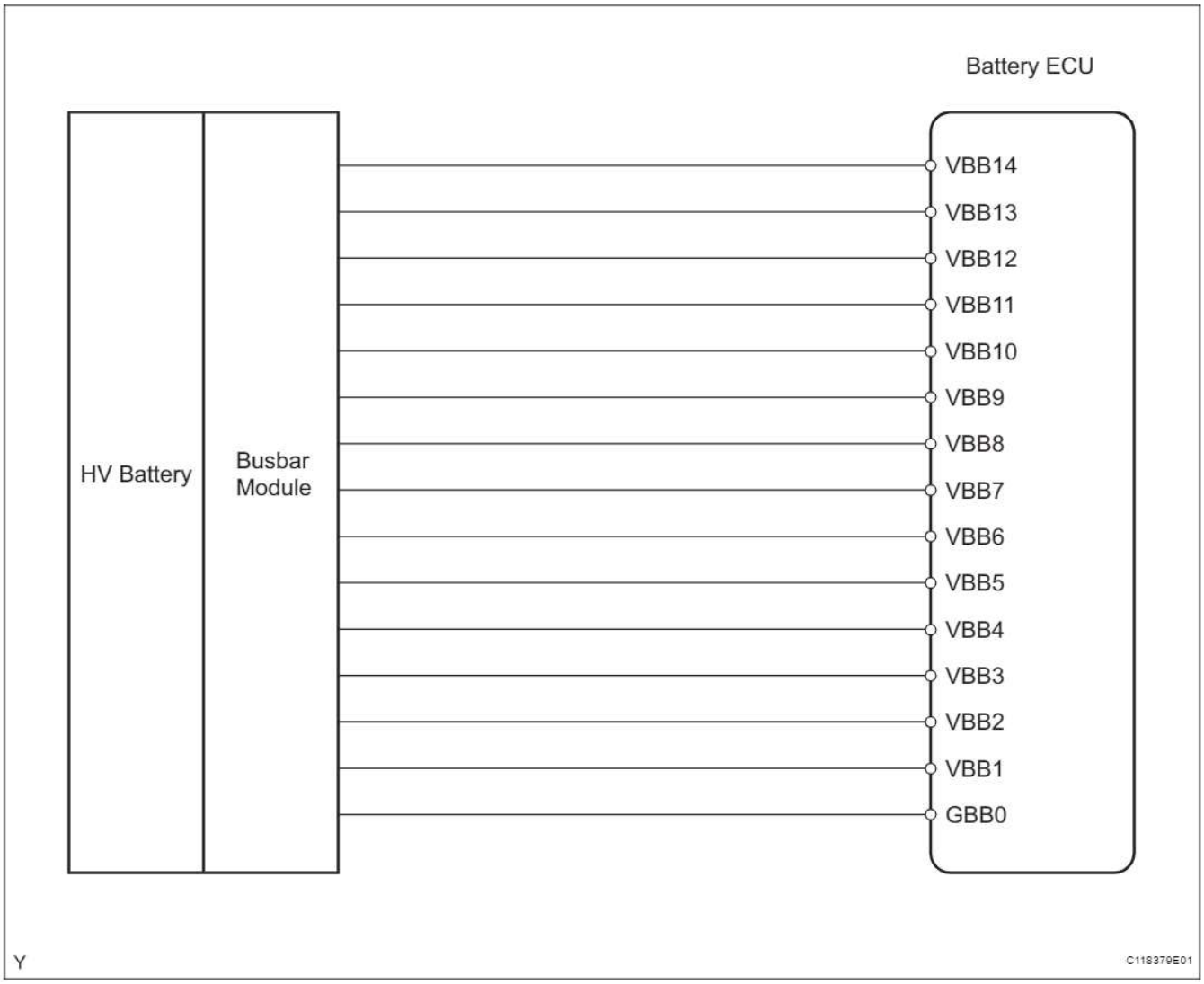
TYPICAL MALFUNCTION THRESHOLDS

Either of the following conditions is satisfied:	(a) or (b)
(a) Voltage at single battery block	Below 2 V
(b) Voltage of all battery blocks	-24 to 2 V

COMPONENT OPERATING RANGE

Battery ECU	No open malfunction

WIRING DIAGRAM



HB

INSPECTION PROCEDURE

CAUTION:

- **Before inspecting the high-voltage system, take safety precautions to prevent electrical shocks, such as wearing insulated gloves and removing the service plug grip. After removing the service plug grip, put it in your pocket to prevent other technicians from reconnecting it while you are servicing the high-voltage system.**
- **After disconnecting the service plug grip, wait for at least 5 minutes before touching any of the high-voltage connectors or terminals.**

HINT:

At least 5 minutes are required to discharge the high-voltage condenser inside the inverter.

1	**READ DTC OUTPUT (DTC P0A1F IS OUTPUT)**

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.

Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

2	READ VALUE OF INTELLIGENT TESTER (BATTERY BLOCK VOL-V01 TO V14)

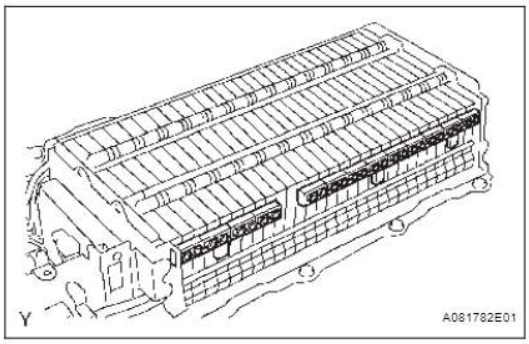
(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DATA LIST.
(d) Read "V1 to V14 BATTERY BLOCK" on the tester.
Standard voltage:
2 V or more

OK → **Go to step 5**

NG

3	CHECK JUNCTION BLOCK ASSEMBLY (BUSBAR MODULE)

CAUTION:
Wear insulated gloves and goggles before performing the following operation.



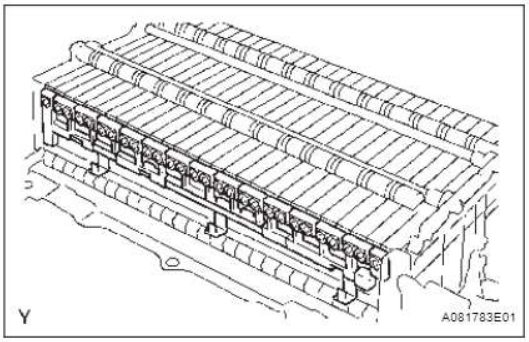
(a) Remove the battery assembly (see page HB-88).
(b) Remove the battery cover (see page HB-88).
(c) Check that the nuts of the junction block are tightened to the specified torque.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

NG → **TIGHTEN NUTS TO SPECIFIED TORQUE**

OK

4	CHECK NO. 2 FRAME WIRE (BUSBAR MODULE)

CAUTION:
Wear insulated gloves and goggles before performing the following operation.



(a) Check that the nuts of the No. 2 frame wire are tightened to the specified torque.

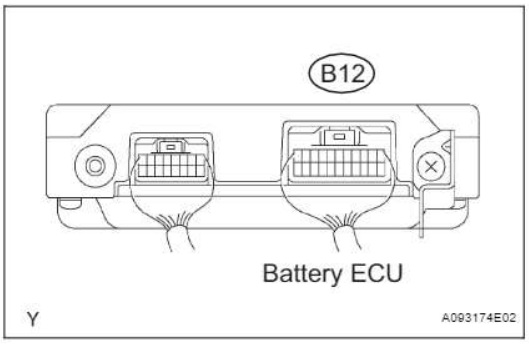
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

NG	TIGHTEN NUTS TO SPECIFIED TORQUE

OK

5	CHECK CONNECTION OF NO. 2 FRAME WIRE CONNECTOR

CAUTION:
Wear insulated gloves before performing the following operation.



(a) Check the connection condition of the B12 battery ECU connector.

OK:

Connector has been connected securely and there is no poor connection.

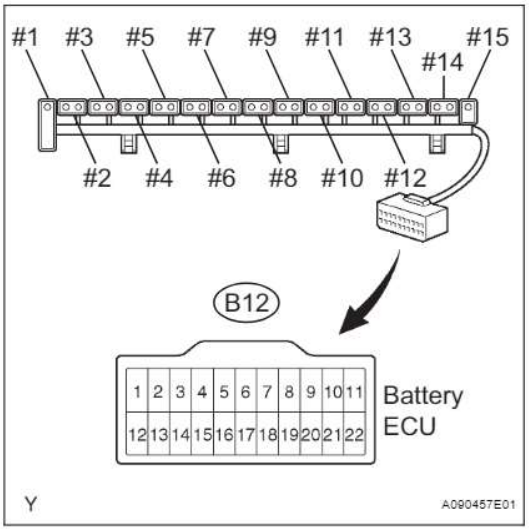
NG	CONNECT SECURELY

OK

HB

6	INSPECT NO. 2 FRAME WIRE (BUSBAR MODULE)

CAUTION:
Wear insulated gloves and goggles before performing the following operation.



(a) Remove the No. 2 frame wire (see page HB-108).

(b) Measure the resistance of each connector and the metal portions of the No. 2 frame wire.

Standard resistance

Tester Connection	Specified Condition
B12-22 (GBB0) - #1	Below 1 Ω
B12-11 (VBB1) - #2	Below 1 Ω
B12-21 (VBB2) - #3	Below 1 Ω
B12-10 (VBB3) - #4	Below 1 Ω
B12-20 (VBB4) - #5	Below 1 Ω
B12-9 (VBB5) - #6	Below 1 Ω
B12-19 (VBB6) - #7	Below 1 Ω
B12-8 (VBB7) - #8	Below 1 Ω
B12-18 (VBB8) - #9	Below 1 Ω
B12-7 (VBB9) - #10	Below 1 Ω
B12-17 (VBB10) - #11	Below 1 Ω

Tester Connection	Specified Condition
B12-6 (VBB11) - #12	Below 1 Ω
B12-16 (VBB12) - #13	Below 1 Ω
B12-5 (VBB13) - #14	Below 1 Ω
B12-15 (VBB14) - #15	Below 1 Ω

(c) Reinstall the No. 2 frame wire.

NG → REPLACE NO. 2 FRAME WIRE

OK

REPLACE BATTERY ECU

DTC	P3011	Battery Block 1 Becomes Weak
DTC	P3012	Battery Block 2 Becomes Weak
DTC	P3013	Battery Block 3 Becomes Weak
DTC	P3014	Battery Block 4 Becomes Weak
DTC	P3015	Battery Block 5 Becomes Weak
DTC	P3016	Battery Block 6 Becomes Weak
DTC	P3017	Battery Block 7 Becomes Weak
DTC	P3018	Battery Block 8 Becomes Weak
DTC	P3019	Battery Block 9 Becomes Weak
DTC	P3020	Battery Block 10 Becomes Weak
DTC	P3021	Battery Block 11 Becomes Weak
DTC	P3022	Battery Block 12 Becomes Weak
DTC	P3023	Battery Block 13 Becomes Weak
DTC	P3024	Battery Block 14 Becomes Weak

HB

DESCRIPTION

Refer to DTC P0A80 (see page HB-35).

DTC No.	DTC Detection Condition	Trouble Area
P3011 P3012 P3013 P3014 P3015 P3016 P3017 P3018 P3019 P3020 P3021 P3022 P3023 P3024	Presence of a malfunctioning block is determined based on the voltages from the battery blocks (1 trip detection logic)	• HV battery assembly • Battery ECU

MONITOR DESCRIPTION

If there is an abnormal internal resistance or electromotive voltage in the battery blocks, the battery ECU determines that a malfunction has occurred. When the malfunction detection condition is satisfied, the battery ECU illuminates the MIL and sets a DTC.

MONITOR STRATEGY

Related DTCs	P3011 to P3024: HV battery/Rationality
Required sensors/components	HV battery
Frequency of operation	Continuous
Duration	TOYOTA's intellectual property
MIL operation	Immediate
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

HV battery	Abnormal

COMPONENT OPERATING RANGE

HV battery	DTCs P3011 to P3024 are not detected

WIRING DIAGRAM

Refer to DTC P0AFA (see page HB-68).

INSPECTION PROCEDURE

HB

1	READ DTC OUTPUT (DTC P0A1F IS OUTPUT)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DTC INFO / TROUBLE CODES.
(d) Read DTCs.
Result:
DTC P0A1F is output

YES → **REPLACE BATTERY ECU**

NO

2	CHECK BATTERY BLOCK VOLTAGE

(a) Depress the brake pedal and turn the power switch ON (IG).
(b) Depress the brake pedal and accelerator pedal to charge with the HV battery.

(c) Read the battery block voltage in the DATA LIST. Enter the following menus: DIAGNOSIS / OBD/MOBD / HV BATTERY / DATA LIST. Read the values of "V1 BATT BLOCK" to "V14 BATT BLOCK".

(d) Compare the voltages as listed below.

- V1 BATT BLOCK and V2 BATT BLOCK
- V3 BATT BLOCK and V4 BATT BLOCK
- V5 BATT BLOCK and V6 BATT BLOCK
- V7 BATT BLOCK and V8 BATT BLOCK
- V9 BATT BLOCK and V10 BATT BLOCK
- V11 BATT BLOCK and V12 BATT BLOCK
- V13 BATT BLOCK and V14 BATT BLOCK

Result:

All of the battery voltage differences are 0.3 V or more.

YES → **REPLACE BATTERY ECU**

NO

REPLACE HV SUPPLY BATTERY ASSEMBLY

HB

DTC	U0100	Lost Communication with ECM/PCM "A"

DTC	U0293	Lost Communication with HV ECU

DESCRIPTION

The battery ECU receives signals from the hybrid vehicle control ECU, ECM, and gateway ECU via CAN (Controller Area Network) communication.

DTC No.	DTC Detection Condition	Trouble Area
U0100	CAN communication malfunction (no signal reception) with ECM	CAN communication system
U0293	CAN communication malfunction (no signal reception) with hybrid vehicle control ECU	CAN communication system

MONITOR DESCRIPTION

If the battery ECU detects malfunction in the CAN communication with the ECM or hybrid vehicle control ECU, it illuminates the MIL and sets a DTC.

MONITOR STRATEGY

U0100:

Related DTCs	U0100: Communication between ECM and battery ECU/Non-received check
Required sensors/components	Main: ECM Sub: CAN bus line
Frequency of operation	Continuous
Duration	0.68 seconds or more
MIL operation	Immediate or 1 driving cycle
Sequence of operation	None

U0293:

Related DTCs	U0293: Communication between hybrid vehicle control and battery ECU/Non-received check
Required sensors/components	Main: Hybrid vehicle control ECU Sub: CAN bus line
Frequency of operation	Continuous
Duration	0.68 seconds or more
MIL operation	Immediate
Sequence of operation	None

HB

TYPICAL ENABLING CONDITIONS

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

TYPICAL MALFUNCTION THRESHOLDS

Receiving data	No reception

COMPONENT OPERATING RANGE

ECM	DTC U0100 is not detected
Hybrid vehicle control ECU	DTC U0293 is not detected

INSPECTION PROCEDURE

1	READ DTC OUTPUT (CODES ALL)

(a) Connect the intelligent tester to the DLC3.
(b) Turn the power switch ON (IG) and the tester ON.
(c) Enter the following menus: DIAGNOSIS / OBD/MOBD / CODES (ALL).
(d) Read and record DTCs.
HINT:
When DTCs other than CAN communication malfunction DTCs are output simultaneously, first correct the CAN communication problem, and then perform troubleshooting for other DTCs.

NEXT

GO TO CAN COMMUNICATION SYSTEM

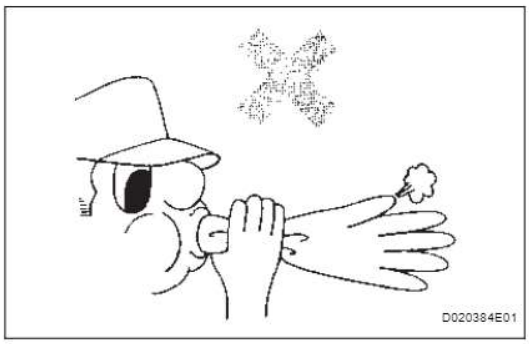
HB

HV BATTERY

PRECAUTION

CAUTION:
The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (e.g. installing or removing the parts, inspection, replacing the parts), be sure to follow the procedures below.

1. **DISCONNECT POWER SOURCE WHEN PERFORMING WORK ON HIGH VOLTAGE SYSTEM**
   (a) Ensure that the power switch is OFF.
   (b) Disconnect the negative terminal cable from the auxiliary battery (see page HB-153).
   (c) Always wear insulating gloves (see item 2 below).
   NOTICE:
   DTCs will also be erased, so if necessary check DTCs before disconnecting the power source OFF.
   (d) Remove the service plug grip (see page HB-153).
   NOTICE:
   - **After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.**
   - **Keep the removed service plug grip in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
   (e) Leave the vehicle for 5 minutes.
   HINT:
   It takes 5 minutes for the high voltage condenser in the inverter to discharge its electricity.

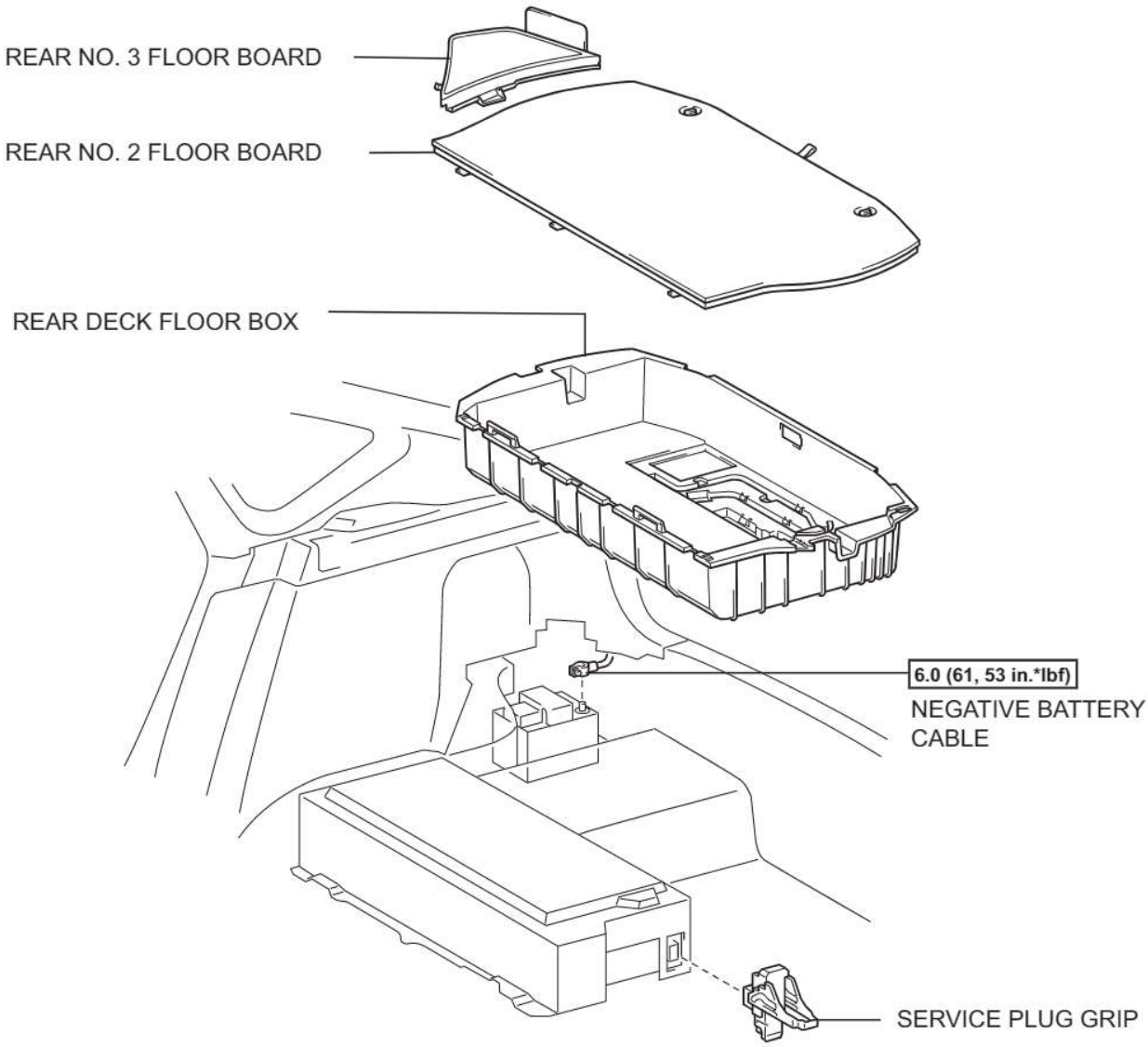


2. **PRECAUTIONS FOR INSULATING GLOVES**
   (a) Before wearing, ensure that the insulating gloves are not damaged with tears, holes or cracks.
   (b) Do not wear wet gloves.
3. **PRECAUTIONS FOR WIRE HARNESS AND CONNECTOR**
   (a) The wire harnesses and connectors with high voltage circuits are colored orange. In addition, high voltage parts such as the HV battery are affixed with a "High Voltage" caution label. Be careful not to touch these wires.
4. **PRECAUTIONS WHEN PERFORMING SERVICE OR INSPECTIONS**
   (a) Always disconnect the power source before starting work (see item 1 above).
   (b) Always wear insulating gloves when inspecting or servicing any high voltage wires and parts.
   (c) Alert other technicians that you are working on the high voltage systems with a warning sign such as "High Voltage Work: Do Not Touch".

HB

(d) Do not carry any metal objects such as a mechanical pencil or a measuring tape that could fall and cause a short circuit.
(e) After removing any high voltage wires, insulate them immediately with insulation tape.
(f) Always tighten the high voltage screw terminals to the specified torque. Insufficient or excessive torque will cause malfunctions.
(g) After finishing work on the high voltage systems and before reinstalling the service plug, reconfirm that you have not left any parts or tools lying around, that the high voltage terminals are tightened and that the connectors are connected.

COMPONENTS

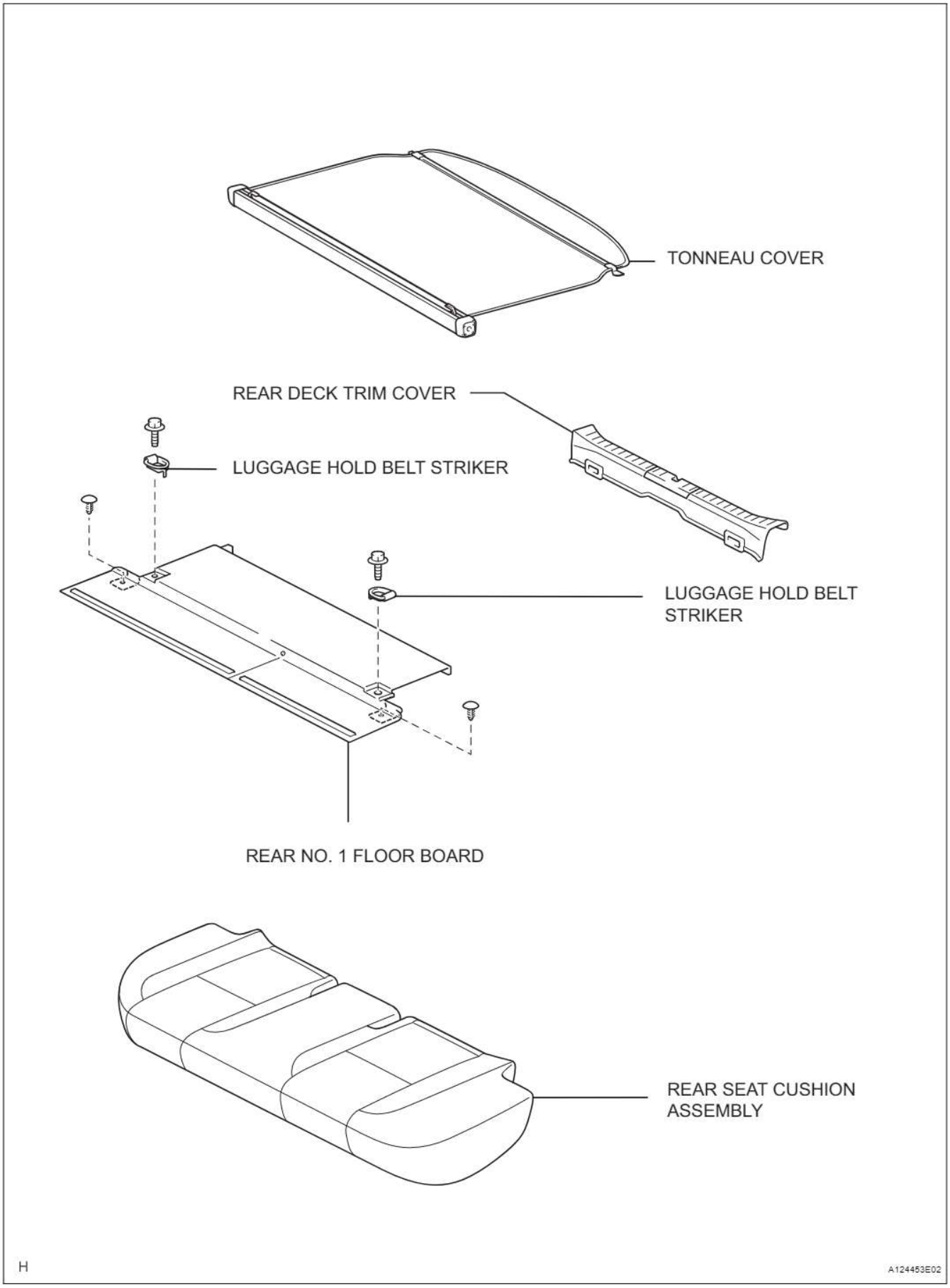


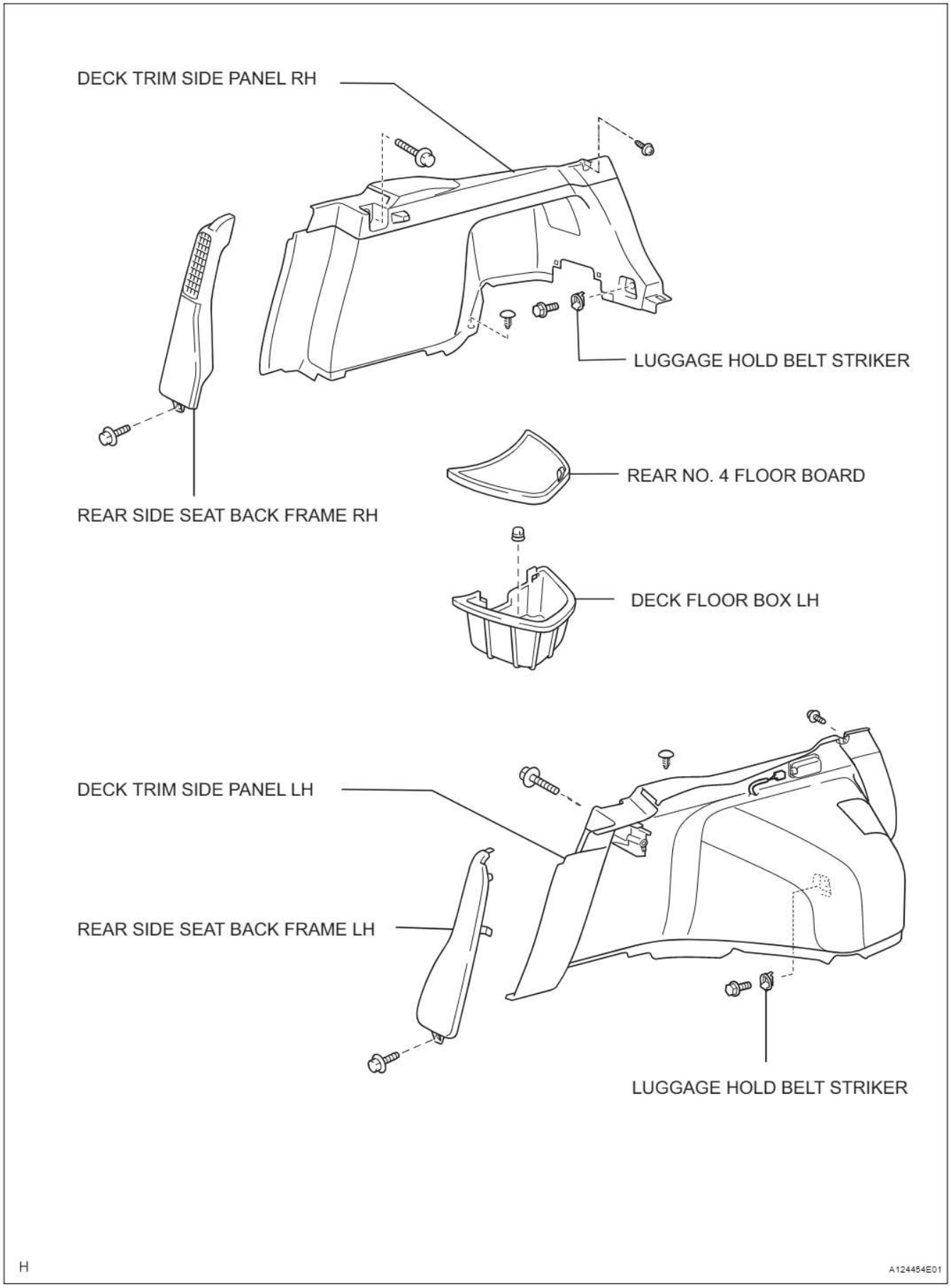
N*m (kgf*cm, ft.*lbf) : Specified torque

O

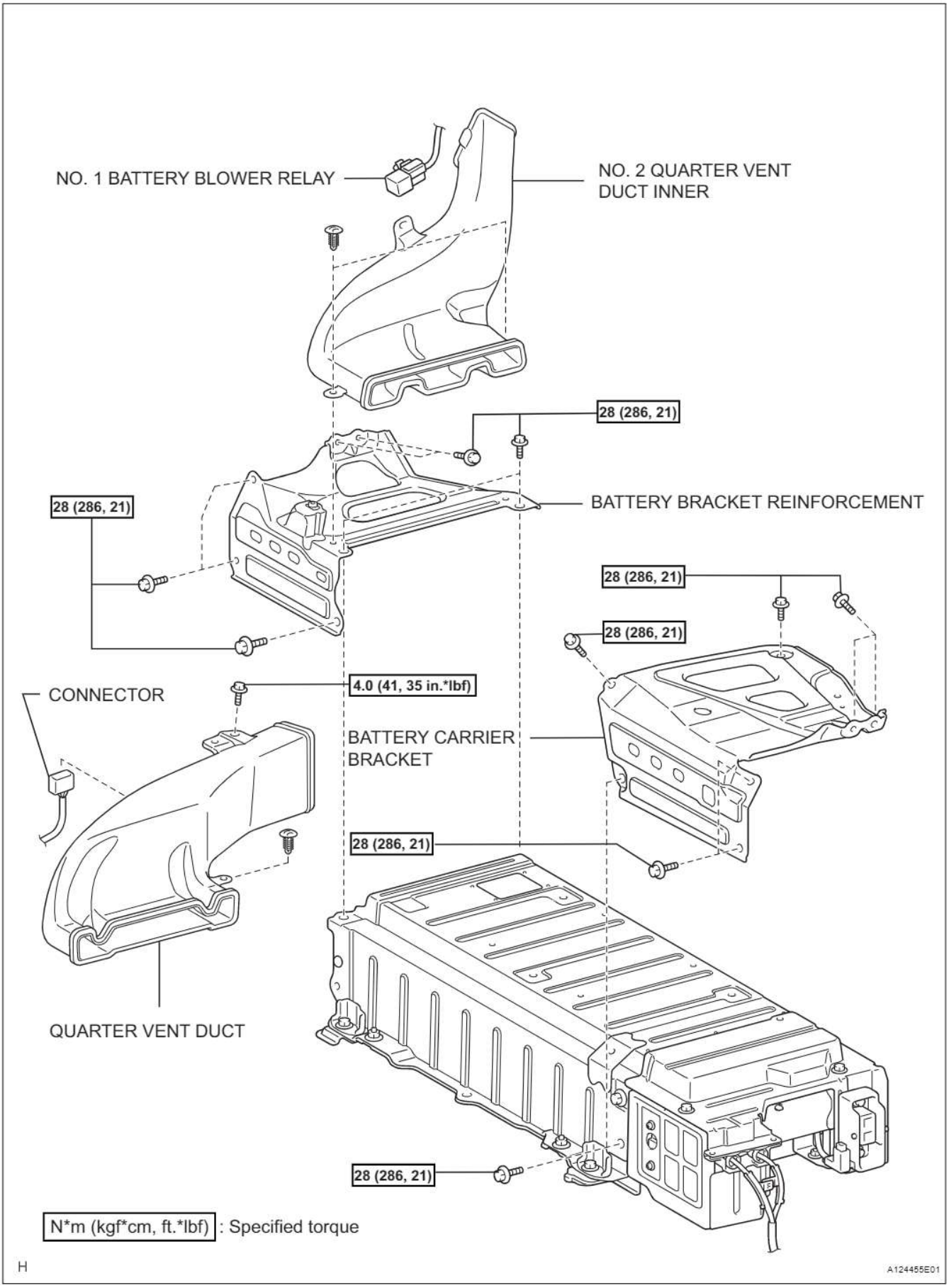
A124443E05

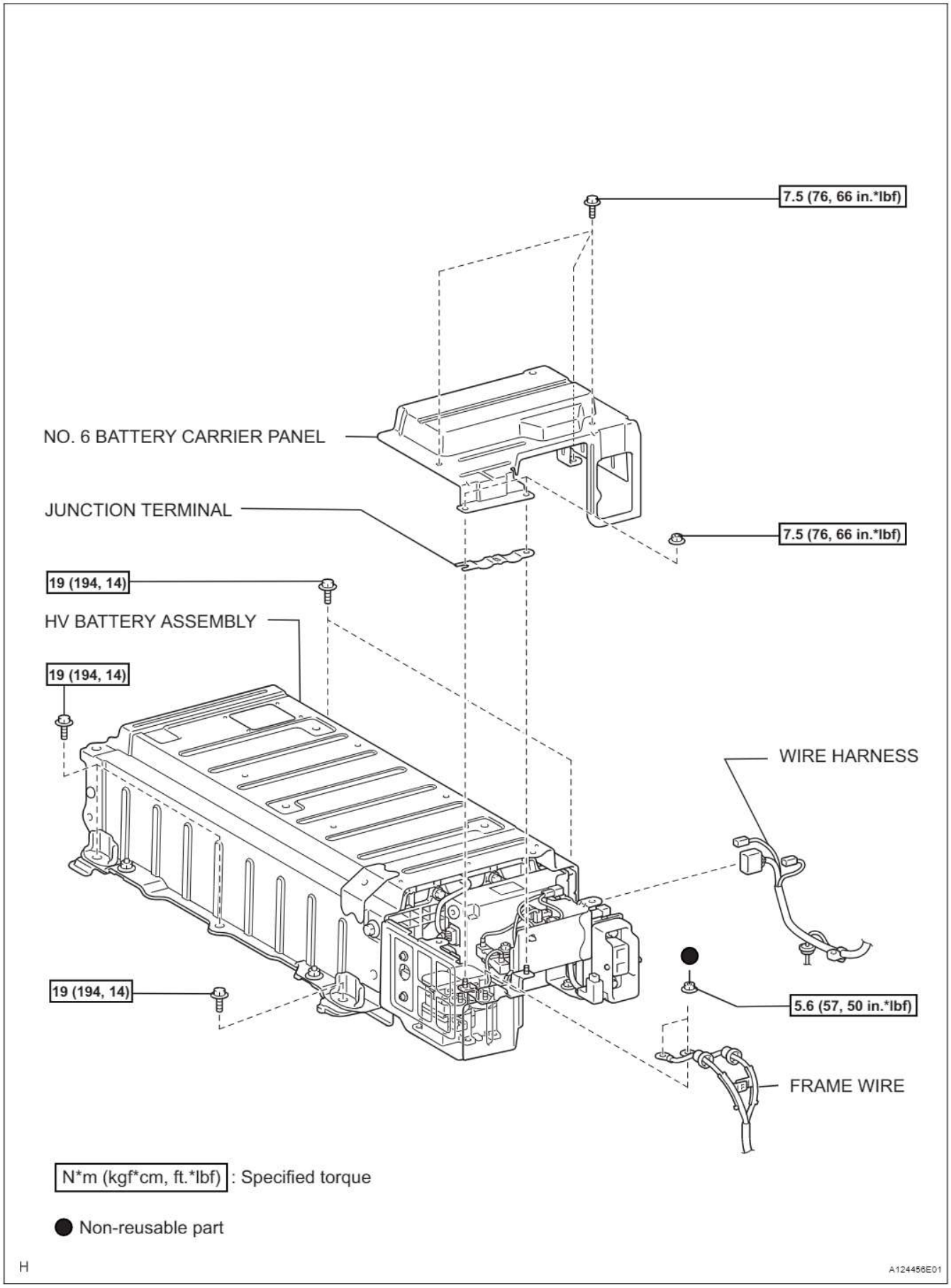
HB

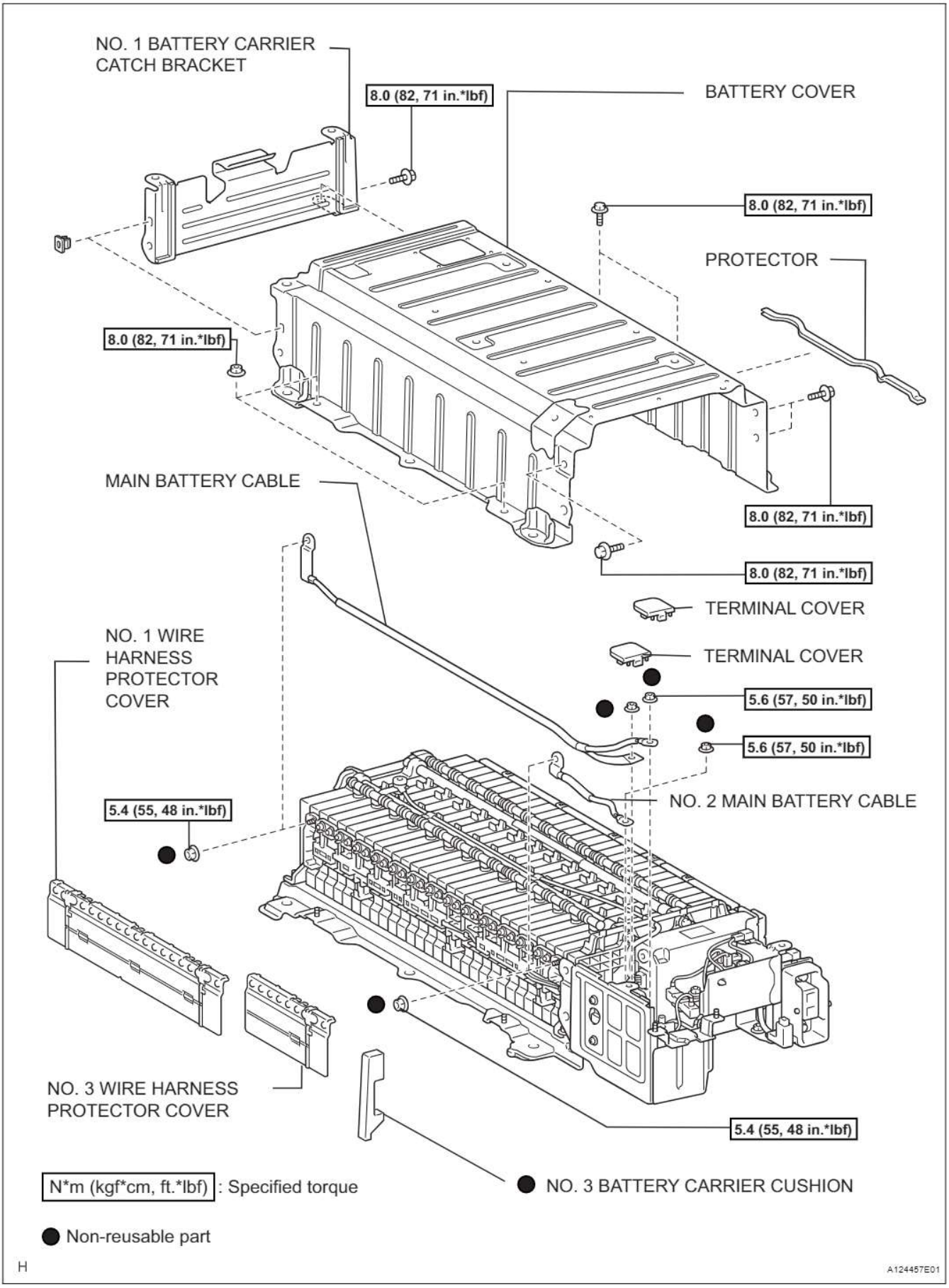

TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E02

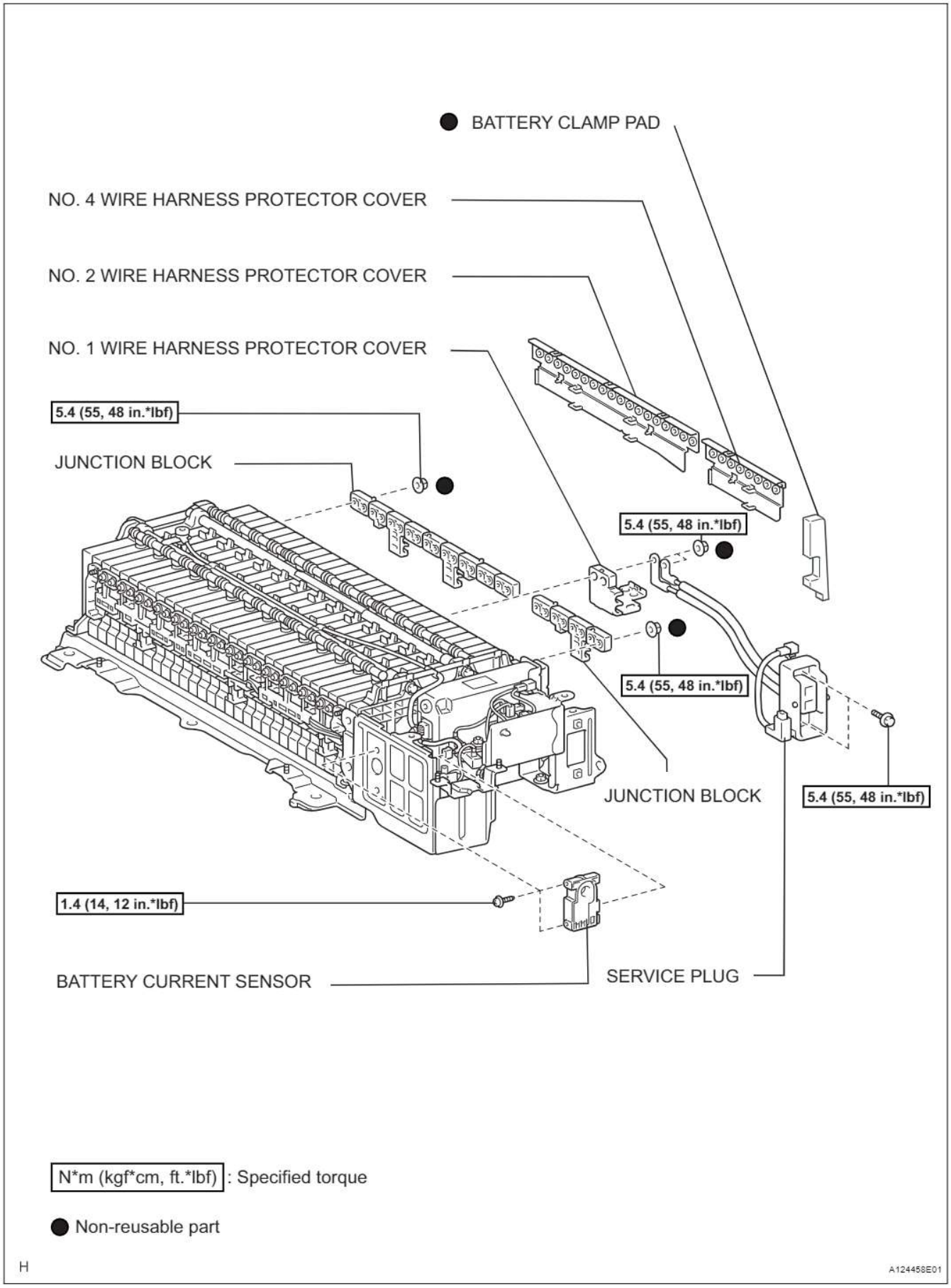

DECK TRIM SIDE PANEL RH
LUGGAGE HOLD BELT STRIKER
REAR NO. 4 FLOOR BOARD
REAR SIDE SEAT BACK FRAME RH
DECK FLOOR BOX LH
DECK TRIM SIDE PANEL LH
REAR SIDE SEAT BACK FRAME LH
LUGGAGE HOLD BELT STRIKER
H
A124454E01

HB

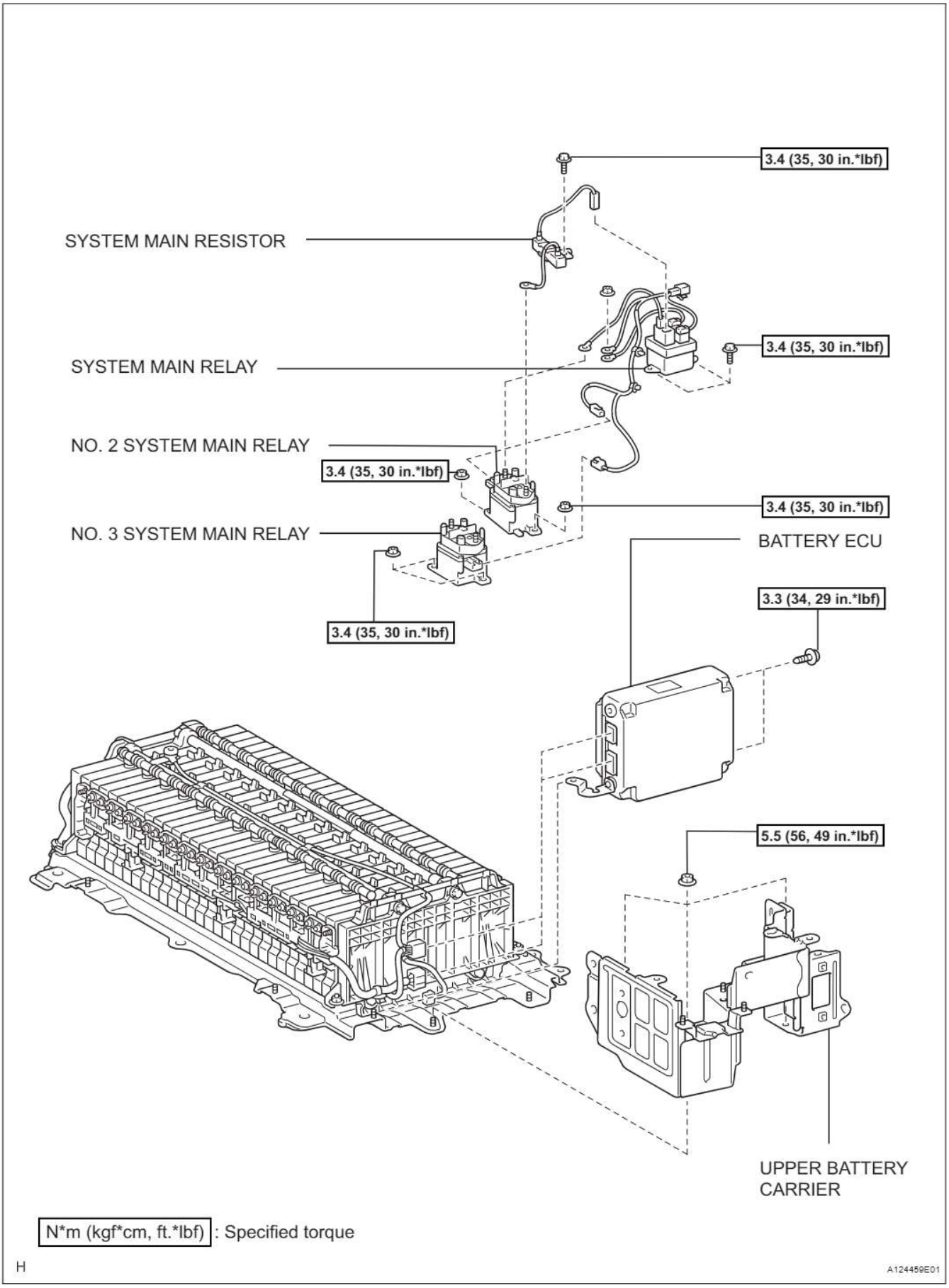

NO. 1 BATTERY BLOWER RELAY
NO. 2 QUARTER VENT DUCT INNER
28 (286, 21)
28 (286, 21)
BATTERY BRACKET REINFORCEMENT
28 (286, 21)
28 (286, 21)
CONNECTOR
4.0 (41, 35 in.*lbf)
BATTERY CARRIER BRACKET
28 (286, 21)
QUARTER VENT DUCT
28 (286, 21)
N*m (kgf*cm, ft.*lbf) : Specified torque
H
A124455E01

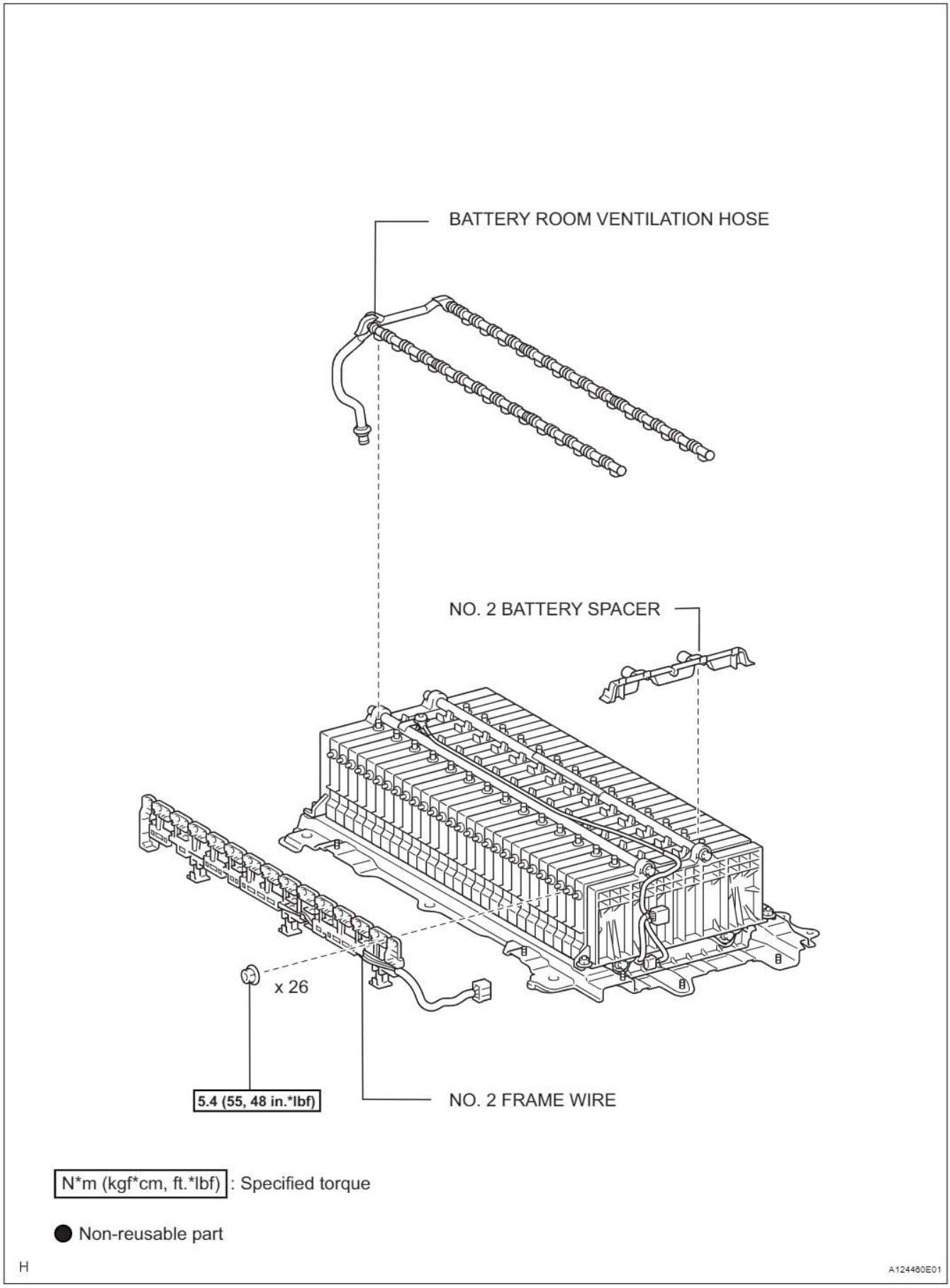

7.5 (76, 66 in.*lbf)
NO. 6 BATTERY CARRIER PANEL
JUNCTION TERMINAL
7.5 (76, 66 in.*lbf)
19 (194, 14)
HV BATTERY ASSEMBLY
19 (194, 14)
WIRE HARNESS
19 (194, 14)
5.6 (57, 50 in.*lbf)
FRAME WIRE
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A124456E01


NO. 1 BATTERY CARRIER CATCH BRACKET
8.0 (82, 71 in.*lbf)
BATTERY COVER
8.0 (82, 71 in.*lbf)
PROTECTOR
8.0 (82, 71 in.*lbf)
MAIN BATTERY CABLE
8.0 (82, 71 in.*lbf)
8.0 (82, 71 in.*lbf)
TERMINAL COVER
NO. 1 WIRE HARNESS PROTECTOR COVER
TERMINAL COVER
5.6 (57, 50 in.*lbf)
5.6 (57, 50 in.*lbf)
NO. 2 MAIN BATTERY CABLE
5.4 (55, 48 in.*lbf)
NO. 3 WIRE HARNESS PROTECTOR COVER
5.4 (55, 48 in.*lbf)
N*m (kgf*cm, ft.*lbf) : Specified torque
NO. 3 BATTERY CARRIER CUSHION
Non-reusable part
H
A124457E01


BATTERY CLAMP PAD
NO. 4 WIRE HARNESS PROTECTOR COVER
NO. 2 WIRE HARNESS PROTECTOR COVER
NO. 1 WIRE HARNESS PROTECTOR COVER
5.4 (55, 48 in.*lbf)
JUNCTION BLOCK
5.4 (55, 48 in.*lbf)
5.4 (55, 48 in.*lbf)
JUNCTION BLOCK
5.4 (55, 48 in.*lbf)
1.4 (14, 12 in.*lbf)
BATTERY CURRENT SENSOR
SERVICE PLUG
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A124458E01

HB


3.4 (35, 30 in.*lbf)
SYSTEM MAIN RESISTOR
3.4 (35, 30 in.*lbf)
SYSTEM MAIN RELAY
NO. 2 SYSTEM MAIN RELAY
3.4 (35, 30 in.*lbf)
3.4 (35, 30 in.*lbf)
NO. 3 SYSTEM MAIN RELAY
BATTERY ECU
3.4 (35, 30 in.*lbf)
3.3 (34, 29 in.*lbf)
5.5 (56, 49 in.*lbf)
UPPER BATTERY CARRIER
N*m (kgf*cm, ft.*lbf) : Specified torque
H
A124459E01

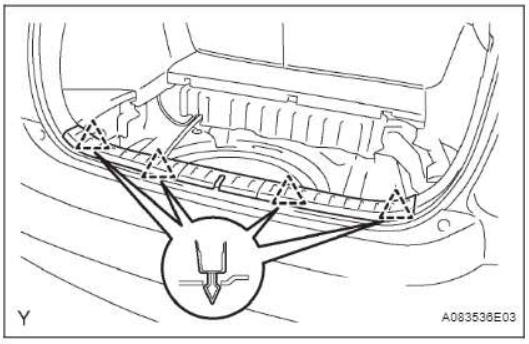

BATTERY ROOM VENTILATION HOSE
NO. 2 BATTERY SPACER
x 26
5.4 (55, 48 in.*lbf)
NO. 2 FRAME WIRE
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A124460E01

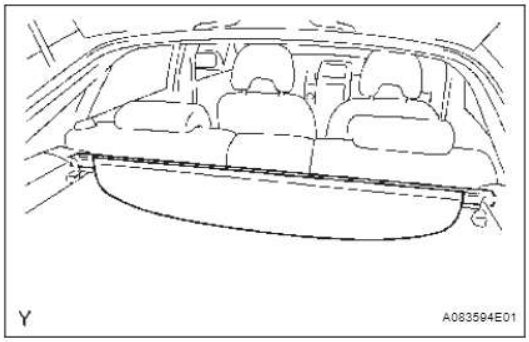
REMOVAL

CAUTION:
- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

NOTICE:
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

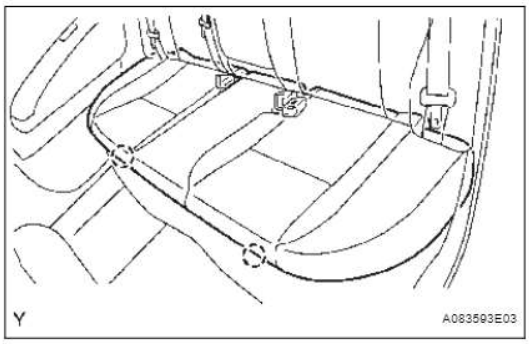
1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE REAR DECK TRIM COVER**
   (a) Detach the 4 clips shown in the illustration, then remove the deck trim cover.





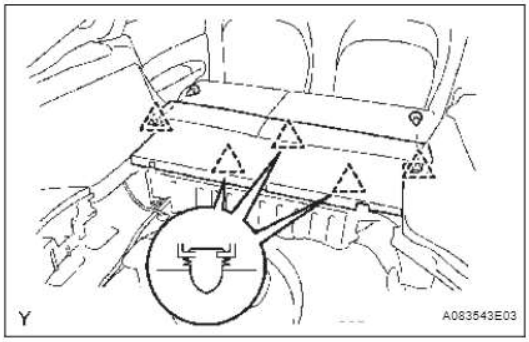
8. REMOVE TONNEAU COVER

(a) Remove the tonneau cover from the vehicle.



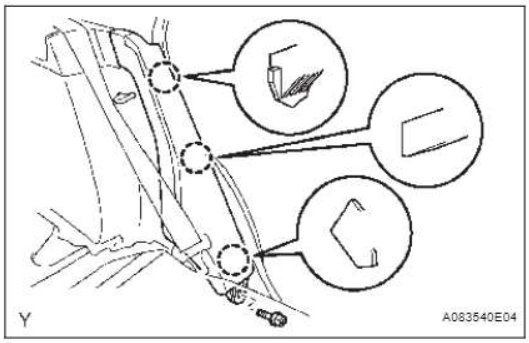
9. REMOVE REAR SEAT CUSHION ASSEMBLY

(a) Undo the 2 joints shown in the illustration, then remove the rear seat cushion.



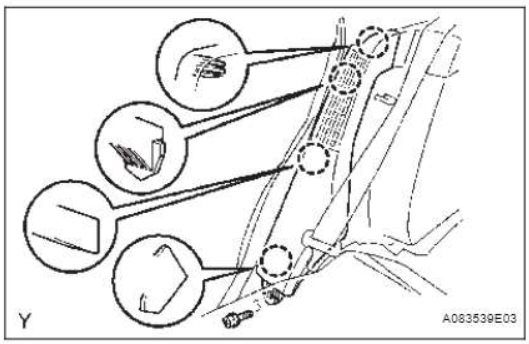
10. REMOVE REAR NO. 1 FLOOR BOARD

(a) Remove the 2 bolts and luggage hold belt strikers.
(b) Remove the 5 clips shown in the illustration and the rear floor board.



11. REMOVE REAR SIDE SEAT BACK FRAME LH

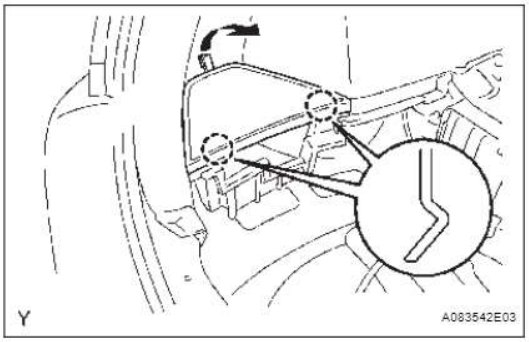
(a) Remove the bolt from the rear side seat back frame LH.
(b) Undo the 3 joints, then remove the rear side seat back frame LH.



12. REMOVE REAR SIDE SEAT BACK FRAME RH

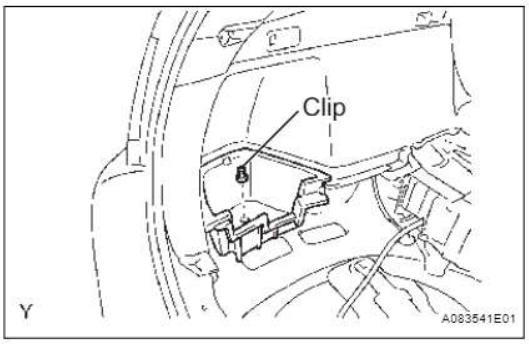
(a) Remove the bolt from the rear side seat back frame RH.
(b) Undo the 4 joints, then remove the rear side seat back frame RH.

HB



13. REMOVE REAR NO. 4 FLOOR BOARD

(a) While lifting up the rear floor board as shown in the illustration, undo the 2 joints and remove the rear floor board.

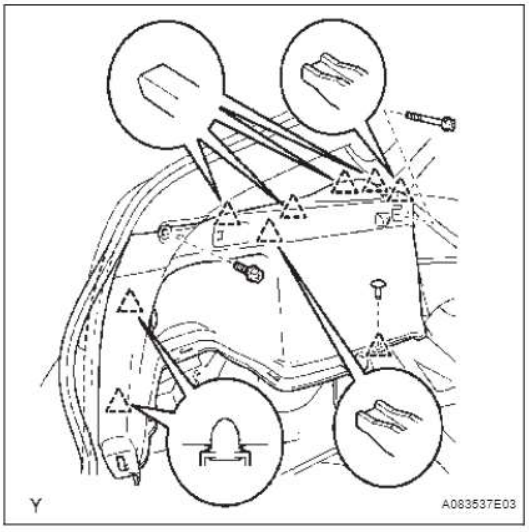


14. REMOVE DECK FLOOR BOX LH

(a) Remove the clip and deck floor box LH.

15. REMOVE DECK TRIM SIDE PANEL LH

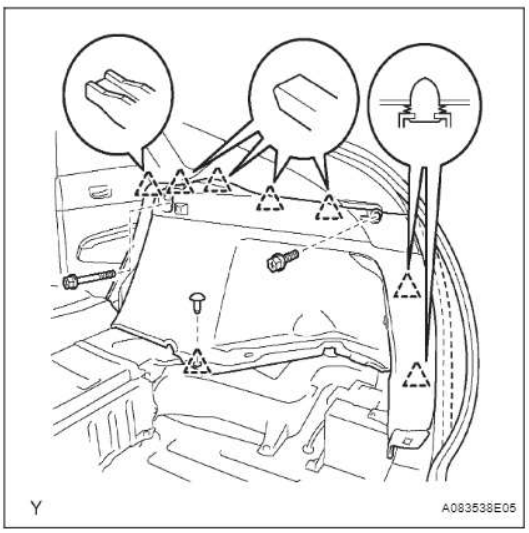
(a) Remove the bolt and luggage hold belt striker.



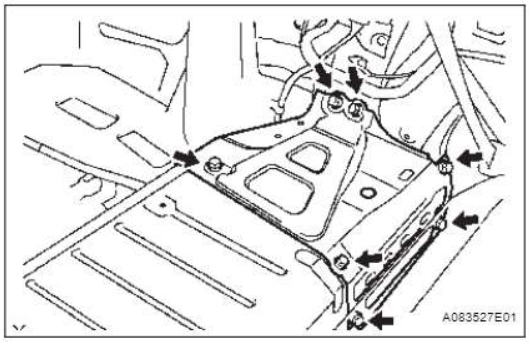
(b) Remove the 2 bolts from the deck trim side panel LH.
(c) Remove the clip from the deck trim side panel LH.
(d) Undo the 8 clips, then pull out a part of the weather strip and remove the deck trim side panel LH.
(e) Disconnect the lighting connector.

16. REMOVE DECK TRIM SIDE PANEL RH

(a) Remove the bolt and luggage hold belt striker.

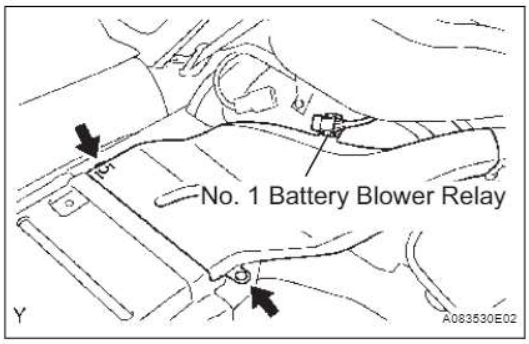


(b) Remove the 2 bolts from the deck trim side panel RH.
(c) Remove the clip from the deck trim side panel RH.
(d) Undo the 7 clips, then pull out a part of the weather strip and remove the deck trim side panel RH.



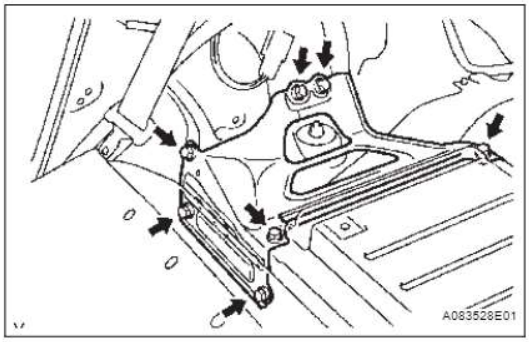
17. REMOVE BATTERY CARRIER BRACKET

(a) Remove the 7 bolts and battery carrier bracket.



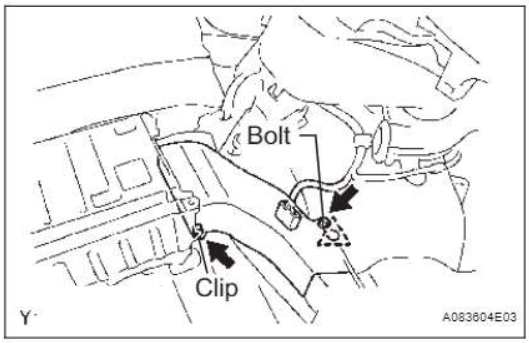
18. REMOVE NO. 2 QUARTER VENT DUCT INNER

(a) Disconnect the clamp and No. 1 battery blower relay.
(b) Remove the 2 clips.
(c) Slide the vent duct to the battery side, then remove it.



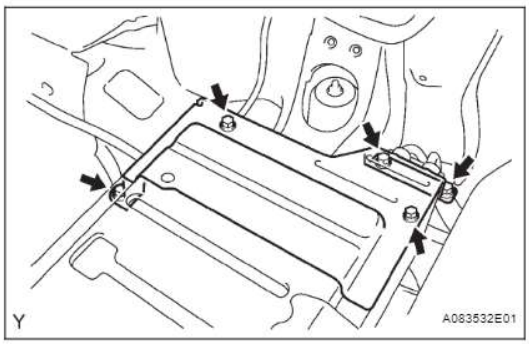
19. REMOVE BATTERY BRACKET REINFORCEMENT

(a) Remove the 7 bolts and battery bracket reinforcement.



20. REMOVE QUARTER VENT DUCT

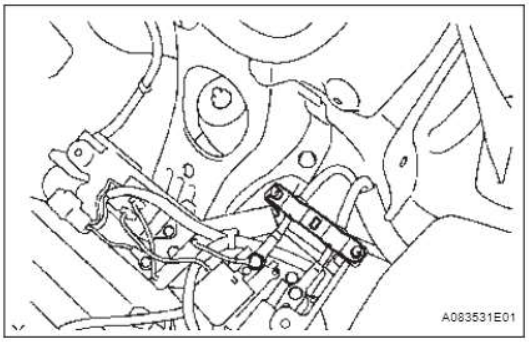
(a) Disconnect the connector.
(b) Remove the clamp, then disconnect the wire harness.
(c) Remove the bolt, clip and quarter vent duct.



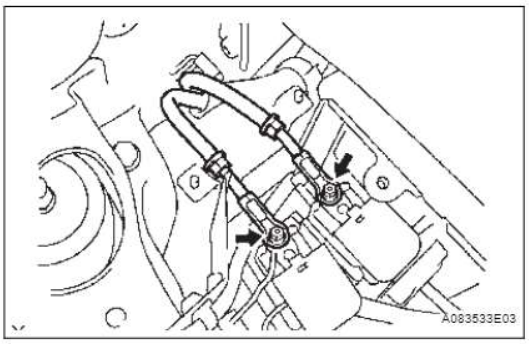
21. REMOVE NO. 6 BATTERY CARRIER PANEL

(a) Remove the 3 bolts, 2 nuts and battery carrier panel.

HB

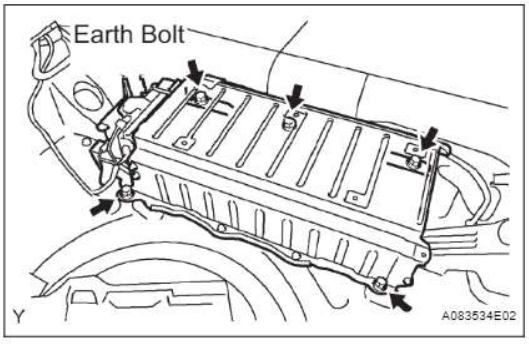


22. REMOVE JUNCTION TERMINAL
CAUTION:
Wear insulating gloves.



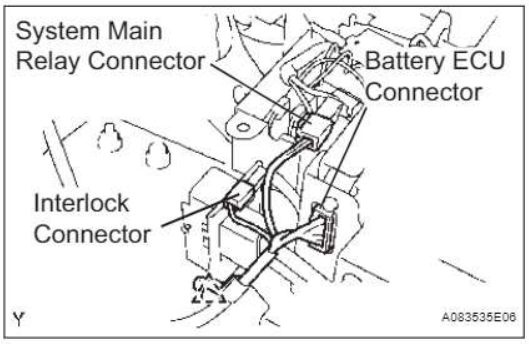
23. REMOVE FRAME WIRE
CAUTION:
- **Wear insulating gloves.**
- **Insulate the removed terminals with insulating tape.**

(a) Remove the 2 nuts, then disconnect the frame wire from the No. 2 and No. 3 system main relay.



24. REMOVE HV BATTERY ASSEMBLY

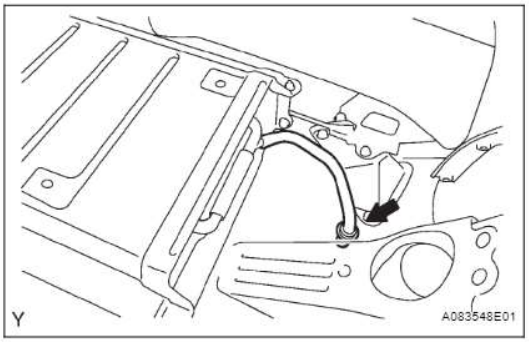
(a) Remove the earth bolt and 4 bolts shown in the illustration.



(b) Disconnect the system main relay connector.
CAUTION:
Wear insulating gloves.

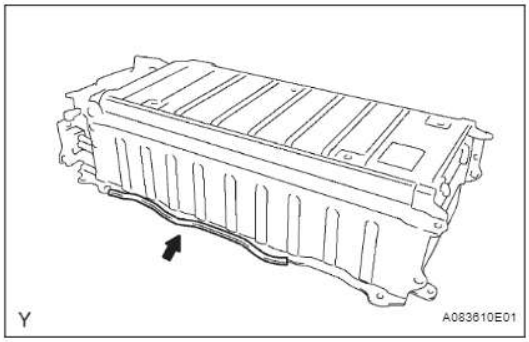
(c) Disconnect the interlock connector.
CAUTION:
Wear insulating gloves.

(d) Remove the clamp, then disconnect the battery ECU connector.
CAUTION:
Wear insulating gloves.



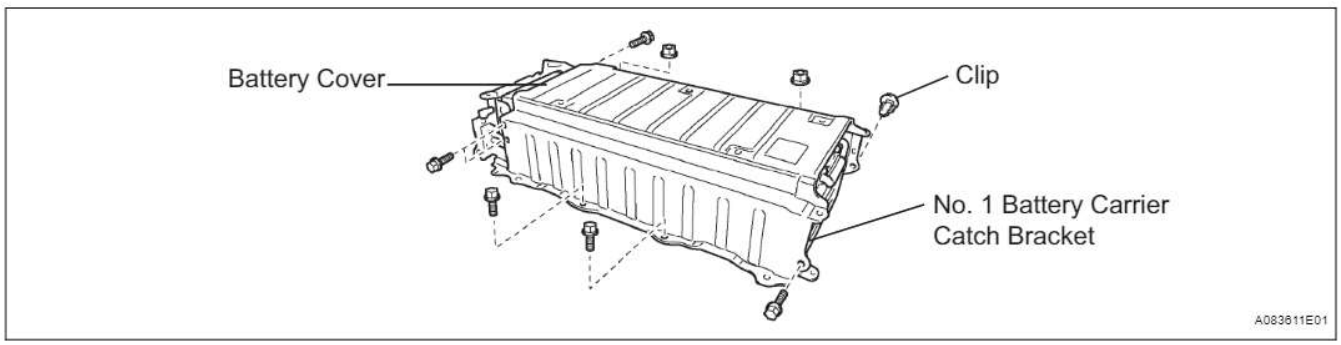
(e) Disconnect the battery room ventilation hose from the floor panel.
CAUTION:
Wear insulating gloves.

(f) Remove the HV battery.
CAUTION:
Wear insulating gloves.



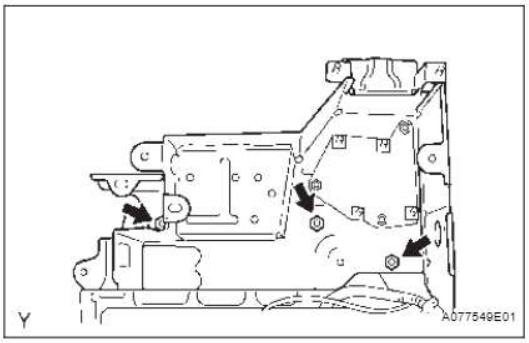
DISASSEMBLY

1. **REMOVE BATTERY COVER**
   (a) Remove the protector shown in the illustration.
   (b) Remove the 6 bolts, 2 nuts, clip, battery cover and battery carrier catch bracket.

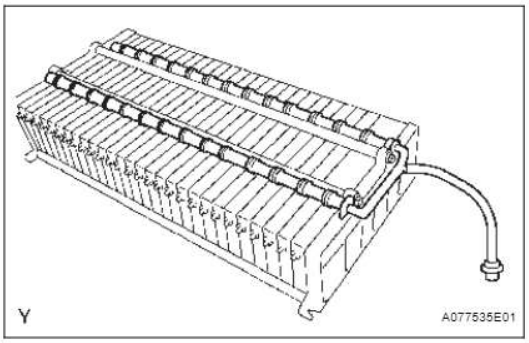


2. **REMOVE NO. 1 WIRE HARNESS PROTECTOR COVER (See page HB-102)**
3. **REMOVE NO. 3 WIRE HARNESS PROTECTOR COVER (See page HB-102)**
4. **REMOVE NO. 3 BATTERY CARRIER CUSHION (See page HB-103)**
5. **REMOVE MAIN BATTERY CABLE (See page HB-103)**
6. **REMOVE NO. 2 MAIN BATTERY CABLE (See page HB-103)**
7. **REMOVE BATTERY CURRENT SENSOR (See page HB-142)**
8. **REMOVE NO. 2 WIRE HARNESS PROTECTOR COVER (See page HB-116)**
9. **REMOVE NO. 4 WIRE HARNESS PROTECTOR COVER (See page HB-116)**
10. **REMOVE BATTERY CLAMP PAD (See page HB-112)**
11. **REMOVE NO. 1 WIRE HARNESS PROTECTOR COVER (See page HB-113)**
12. **REMOVE BATTERY PLUG (See page HB-113)**
13. **REMOVE JUNCTION BLOCK (See page HB-117)**
14. **REMOVE NO. 2 SYSTEM MAIN RELAY (See page HB-123)**
15. **REMOVE NO. 3 SYSTEM MAIN RELAY (See page HB-124)**
16. **REMOVE SYSTEM MAIN RESISTOR (See page HB-136)**

17. **REMOVE NO. 1 SYSTEM MAIN RELAY (See page HB-124)**
18. **REMOVE BATTERY ECU (See page HB-149)**
19. **REMOVE UPPER BATTERY CARRIER**
    CAUTION:
    Wear insulating gloves.
    (a) Remove the 3 nuts and upper battery carrier.
20. **REMOVE NO. 2 BATTERY SPACER**
    CAUTION:
    Wear insulating gloves.
21. **REMOVE NO. 2 FRAME WIRE (See page HB-109)**

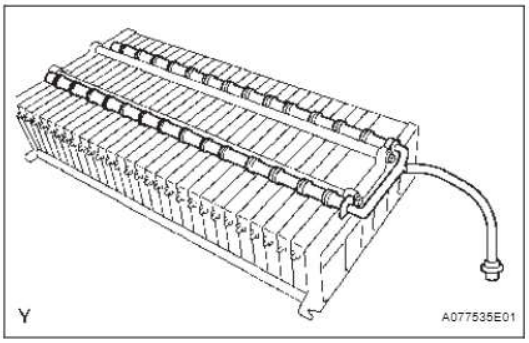


22. **REMOVE BATTERY ROOM VENTILATION HOSE**
    CAUTION:
    Wear insulating gloves.

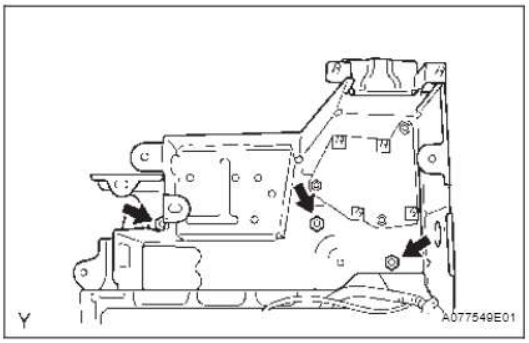


REASSEMBLY

1. **INSTALL BATTERY ROOM VENTILATION HOSE**
   CAUTION:
   Wear insulating gloves and protective glasses.
2. **INSTALL NO. 2 FRAME WIRE (See page HB-109)**
3. **INSTALL NO. 2 BATTERY SPACER**
   CAUTION:
   Wear insulating gloves and protective glasses.

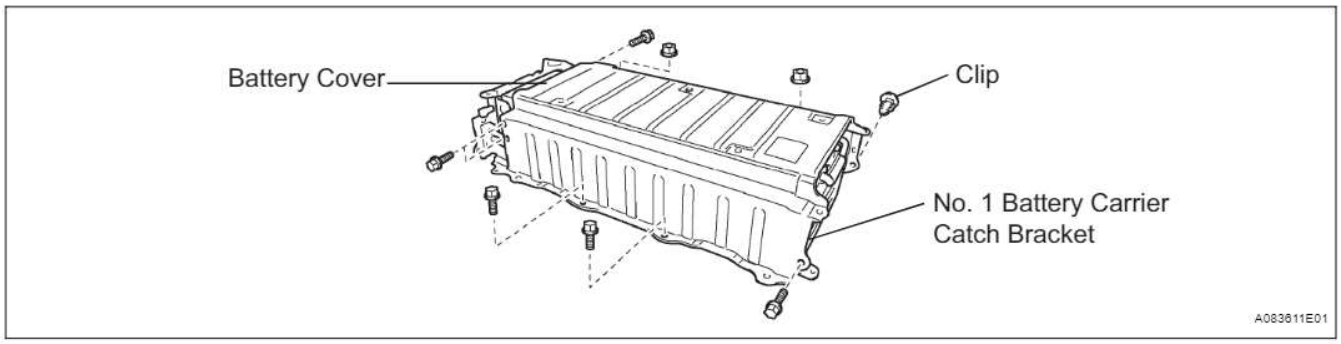


4. **INSTALL UPPER BATTERY CARRIER**
   CAUTION:
   Wear insulating gloves and protective glasses.
   (a) Install the upper battery carrier with the 3 nuts.
   Torque: 5.5 N*m (56 kgf*cm, 49 in.*lbf)
5. **INSTALL BATTERY ECU (See page HB-149)**
6. **INSTALL NO. 1 SYSTEM MAIN RELAY (See page HB-127)**
7. **INSTALL SYSTEM MAIN RESISTOR (See page HB-136)**
8. **INSTALL NO. 3 SYSTEM MAIN RELAY (See page HB-127)**
9. **INSTALL NO. 2 SYSTEM MAIN RELAY (See page HB-127)**
10. **INSPECT CONTACT CONDITION (See page HB-128)**



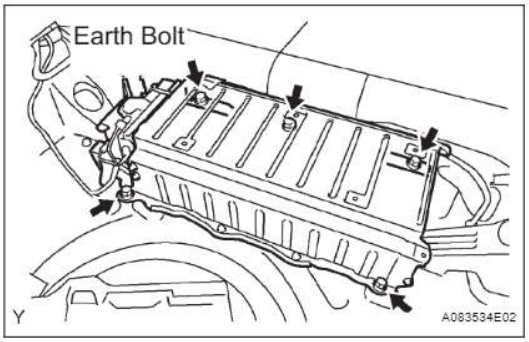
HB

11. INSTALL JUNCTION BLOCK (See page HB-117)
12. INSTALL BATTERY PLUG (See page HB-114)
13. INSTALL NO. 1 WIRE HARNESS PROTECTOR COVER (See page HB-114)
14. INSTALL BATTERY CLAMP PAD (See page HB-114)
15. INSTALL NO. 4 WIRE HARNESS PROTECTOR COVER
CAUTION:
Wear insulating gloves.
16. INSTALL NO. 2 WIRE HARNESS PROTECTOR COVER
CAUTION:
Wear insulating gloves.
17. INSTALL BATTERY CURRENT SENSOR (See page HB-143)
18. INSTALL NO. 2 MAIN BATTERY CABLE (See page HB-104)
19. INSTALL MAIN BATTERY CABLE (See page HB-104)
20. INSTALL NO. 3 BATTERY CARRIER CUSHION (See page HB-105)
21. INSTALL NO. 3 WIRE HARNESS PROTECTOR COVER
CAUTION:
Wear insulating gloves.
22. INSTALL NO. 1 WIRE HARNESS PROTECTOR COVER
CAUTION:
Wear insulating gloves.
23. INSTALL BATTERY COVER
CAUTION:
Wear insulating gloves.
    (a) Temporarily fasten the battery carrier catch bracket to the battery room ventilation hose.
    (b) Install the battery cover with the 6 bolts, 2 nuts and clip.



Torque: 8.0 N*m (82 kgf*cm, 71 in.*lbf)

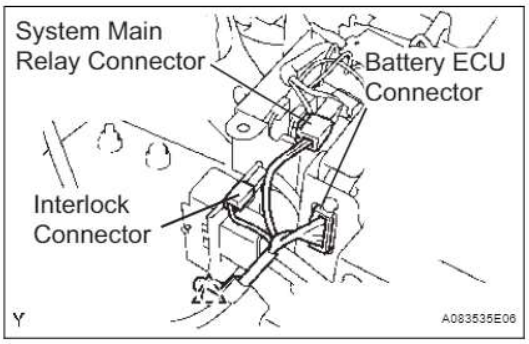
    (c) Install the protector on the battery cover.



INSTALLATION

1. INSTALL HV BATTERY ASSEMBLY

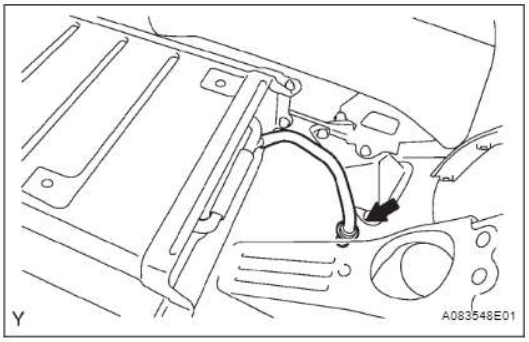
(a) Install the HV battery with the earth bolt and 4 bolts.
Torque: 19 N*m (194 kgf*cm, 14 in.*lbf)



(b) Connect the system main relay connector.
CAUTION:
Wear insulating gloves.

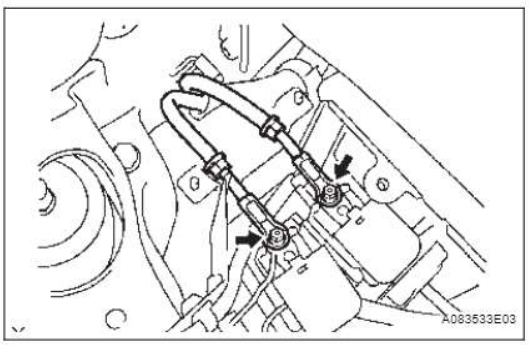
(c) Connect the interlock connector.
CAUTION:
Wear insulating gloves.

(d) Connect the battery ECU connector.
CAUTION:
Wear insulating gloves.



(e) Connect the battery room ventilation hose to the floor panel.

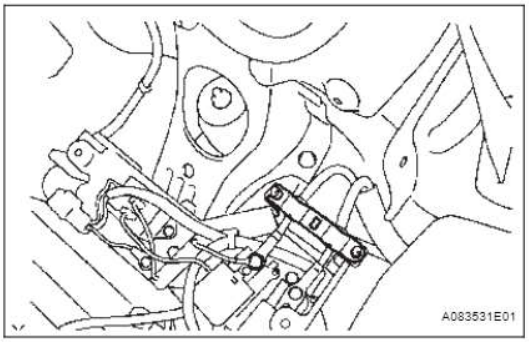
HB



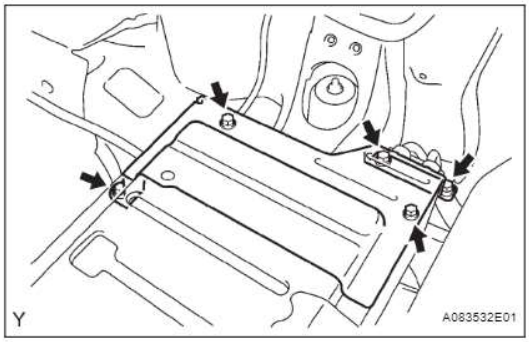
2. INSTALL FRAME WIRE
CAUTION:
Wear insulating gloves.

(a) Install the frame wire on the No. 2 and No. 3 system main relay with 2 new nuts.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)

(b) Connect the 2 clamps, then install the frame wire to the upper battery carrier.

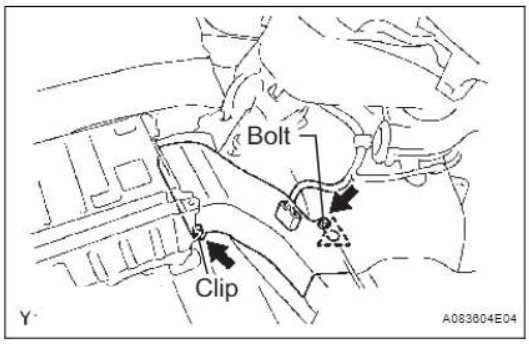


3. INSTALL JUNCTION TERMINAL
CAUTION:
Wear insulating gloves.



4. INSTALL NO. 6 BATTERY CARRIER PANEL

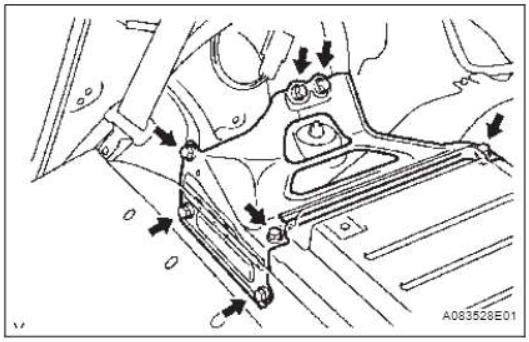
(a) Install the battery carrier panel with the bolt and 2 nuts.
Torque: 7.5 N*m (76 kgf*cm, 66 in.*lbf)



5. INSTALL QUARTER VENT DUCT

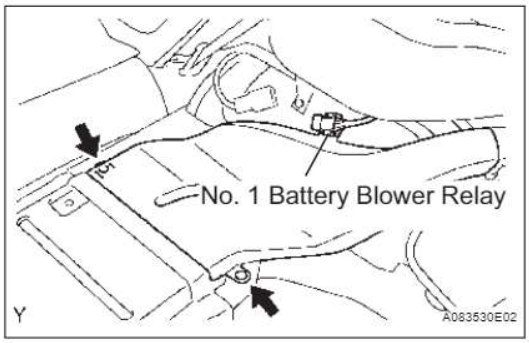
NOTICE:
Ensure that the duct is installed securely.

(a) Install the quarter vent duct with the bolt and clip.
Torque: 4.0 N*m (41 kgf*cm, 35 in.*lbf)
(b) Connect the connector.
(c) Install the clamp.



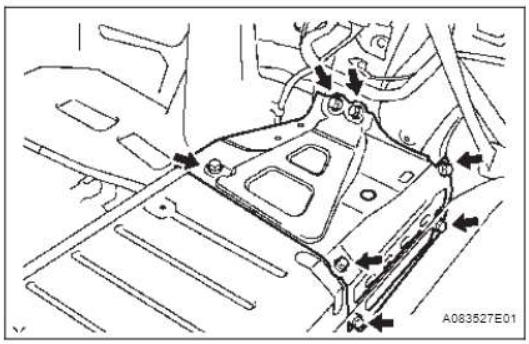
6. INSTALL BATTERY BRACKET REINFORCEMENT

(a) Install the battery bracket reinforcement with the 7 bolts.
Torque: 28 N*m (286 kgf*cm, 21 in.*lbf)



7. INSTALL NO. 2 QUARTER VENT DUCT INNER

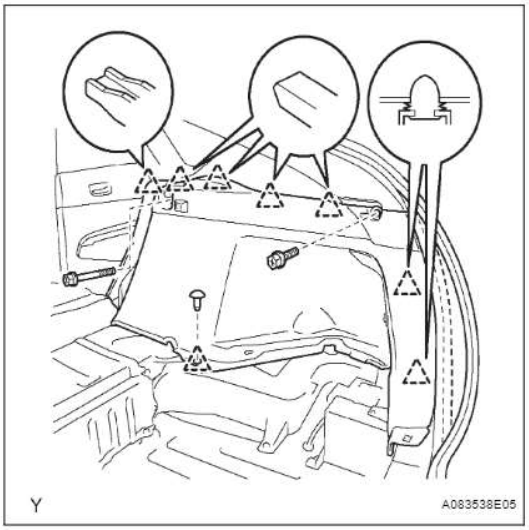
(a) Insert the quarter vent duct inner until it touches the backside of the HV battery.
(b) Slide the fitting surface of the quarter vent duct inner downward, then attach it to the battery blower assembly.
NOTICE:
Ensure that the duct is installed securely.
(c) Install the 2 clips on the vent duct.
(d) Install the battery blower relay.



8. INSTALL BATTERY CARRIER BRACKET

(a) Install the battery carrier bracket with the 7 bolts.
Torque: 28 N*m (286 kgf*cm, 21 in.*lbf)

HB



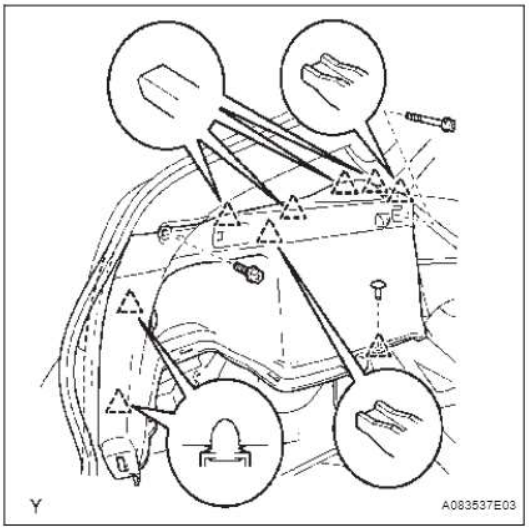
9. INSTALL DECK TRIM SIDE PANEL RH

(a) Install the deck trim side panel with the 7 clips and 2 bolts, and then install the part of the weather strip.

(b) Install the luggage hold belt striker with the bolt.

10. INSTALL DECK TRIM SIDE PANEL LH

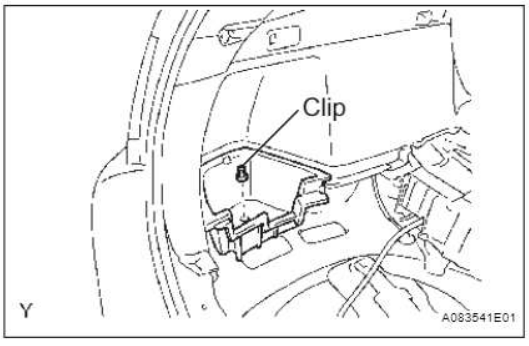
(a) Connect the lighting connector.



(b) Install the deck trim side panel with the 8 clips and 2 bolts, and then install the part of the weather strip.

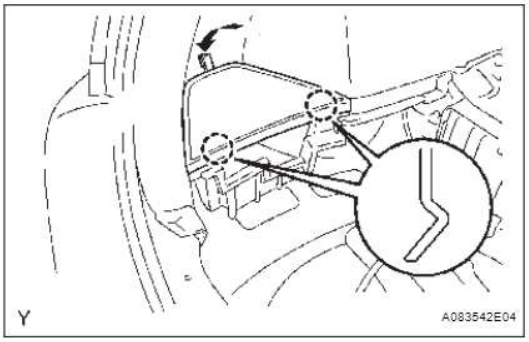
(c) Install the luggage hold belt striker with the bolt.

HB

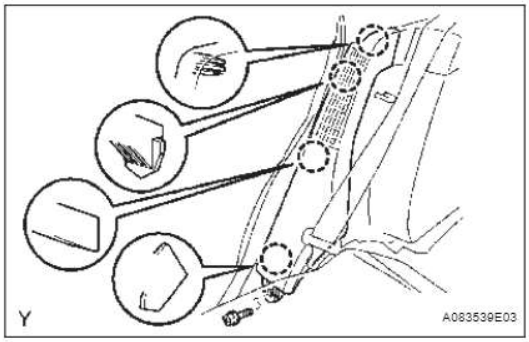


11. INSTALL DECK FLOOR BOX LH

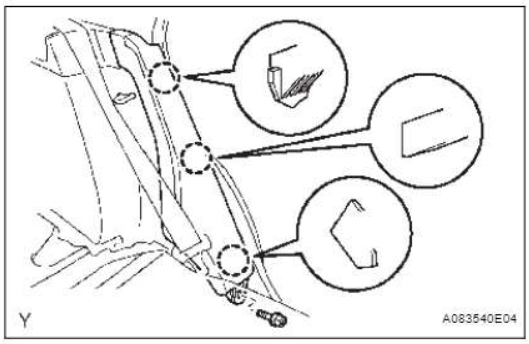
(a) Install the deck floor box with the clip.



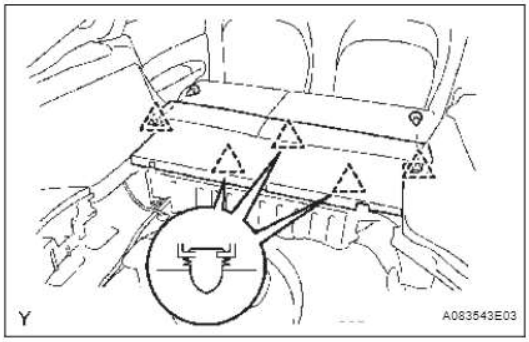
12. INSTALL REAR NO. 4 FLOOR BOARD



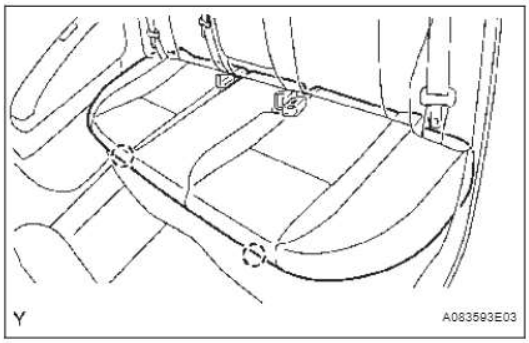
13. **INSTALL REAR SIDE SEAT BACK FRAME RH**
    (a) Install the seat back frame with the bolt.



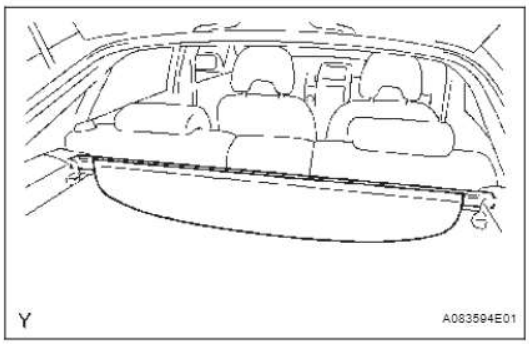
14. **INSTALL REAR SIDE SEAT BACK FRAME LH**
    (a) Install the seat back frame with the bolt.



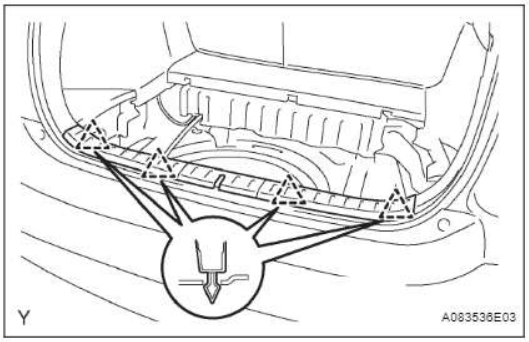
15. **INSTALL REAR NO. 1 FLOOR BOARD**
    (a) Install the floor board.
    (b) Install the 2 luggage strikers with the 2 bolts.



16. **INSTALL REAR SEAT CUSHION ASSEMBLY**



17. **INSTALL TONNEAU COVER**



18. **INSTALL REAR DECK TRIM COVER**

19. **INSTALL SERVICE PLUG GRIP (See page HB-154)**

20. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**

21. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**

22. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**

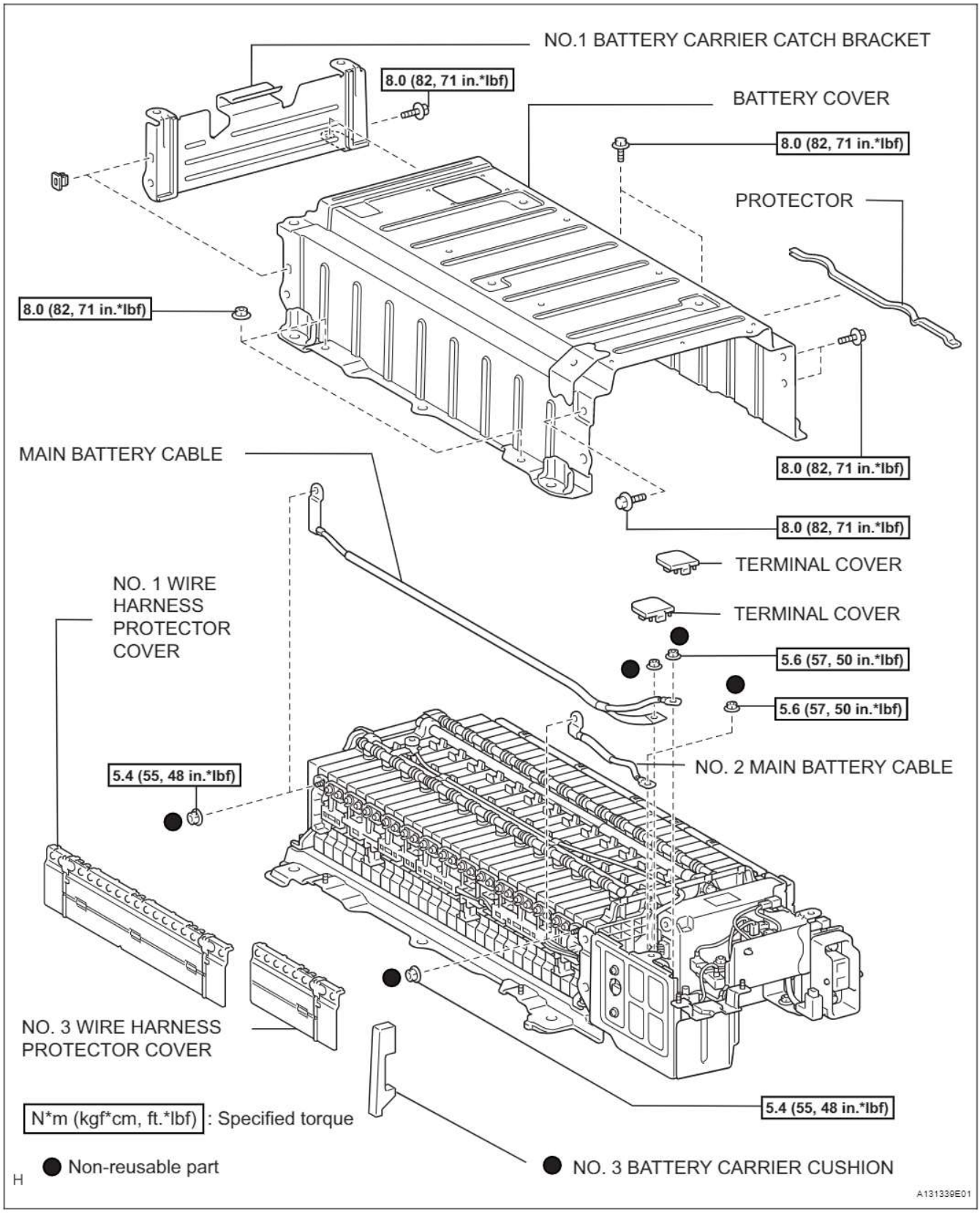
23. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**

24. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB

MAIN BATTERY CABLE

COMPONENTS



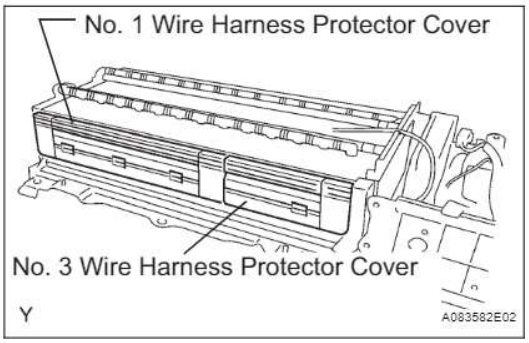
HB

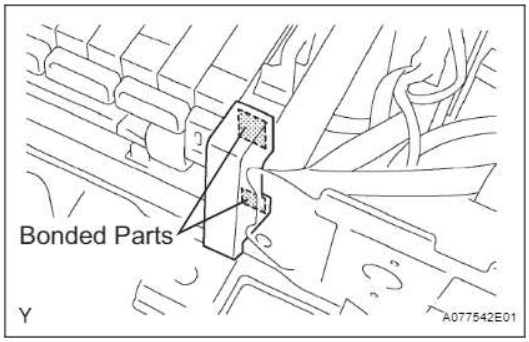
REMOVAL

CAUTION:
- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

NOTICE:
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE HV BATTERY ASSEMBLY**
   (a) Remove the HV battery from the vehicle (see page HB-88).
8. **REMOVE BATTERY COVER (See page HB-93)**
9. **REMOVE NO. 1 WIRE HARNESS PROTECTOR COVER**
   CAUTION:
   Wear insulating gloves.
10. **REMOVE NO. 3 WIRE HARNESS PROTECTOR COVER**
    CAUTION:
    Wear insulating gloves.



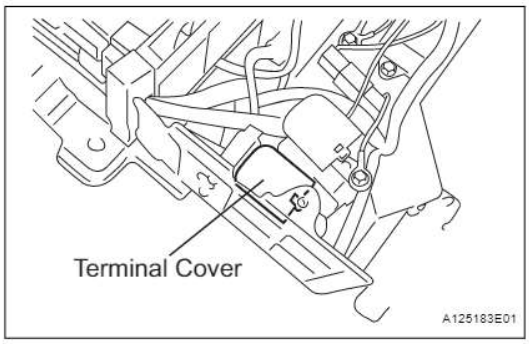


11. REMOVE NO. 3 BATTERY CARRIER CUSHION

CAUTION:

Wear insulating gloves.

(a) Peel off the bonded parts, then remove the battery carrier cushion.

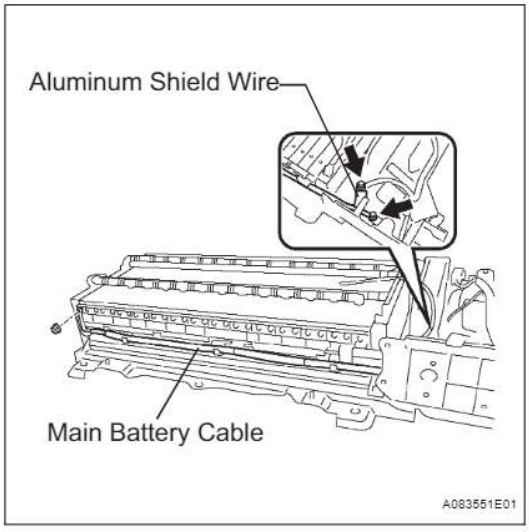


12. REMOVE MAIN BATTERY CABLE

CAUTION:

Wear insulating gloves.

(a) Remove the terminal cover shown in the illustration.

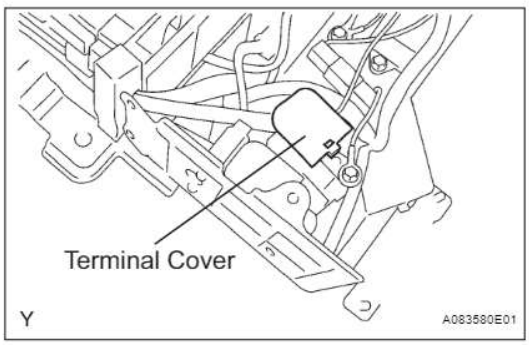


(b) Remove the nut, then disconnect the aluminum shield wire.

(c) Remove the nut, then disconnect the main battery cable from the No. 3 system main relay.

(d) Remove the nut, then disconnect the main battery cable from the No. 2 frame wire.

(e) Remove the main battery cable from the HV battery.

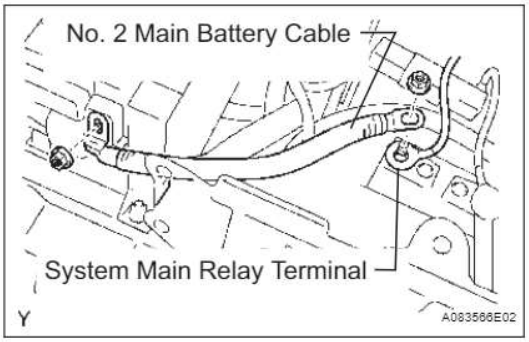


13. REMOVE NO. 2 MAIN BATTERY CABLE

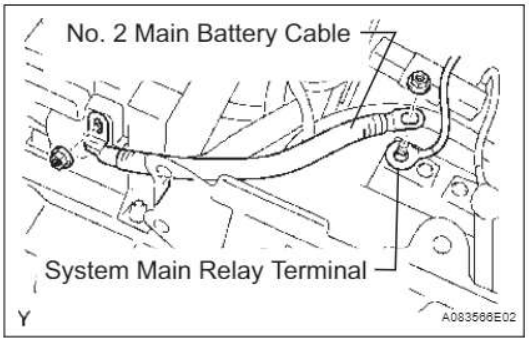
CAUTION:

Wear insulating gloves.

(a) Remove the terminal cover shown in the illustration.



(b) Remove the nut, then disconnect the system main relay terminal and No. 2 main battery cable from the No. 2 system main relay.
(c) Remove the nut, then disconnect the No. 2 main battery cable from the frame wire.
(d) Remove the No. 2 main battery cable from the HV battery.

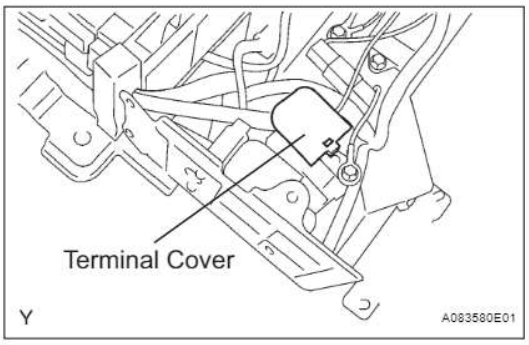


INSTALLATION

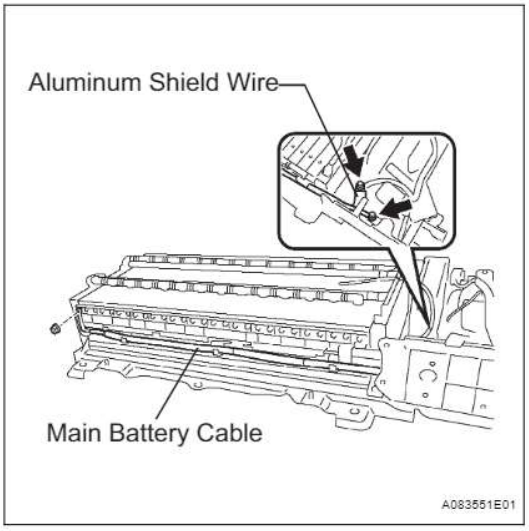
1. INSTALL NO. 2 MAIN BATTERY CABLE

CAUTION:
Wear insulating gloves.

(a) Temporarily install the No. 2 main battery cable to the HV battery.
(b) Install the No. 2 main battery cable to the No. 2 frame wire with a new nut.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
(c) Temporarily install the main battery cable and system main relay terminal, in that order, to the No. 2 system main relay, then tighten the new nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)
(d) Install the terminal cover shown in the illustration.



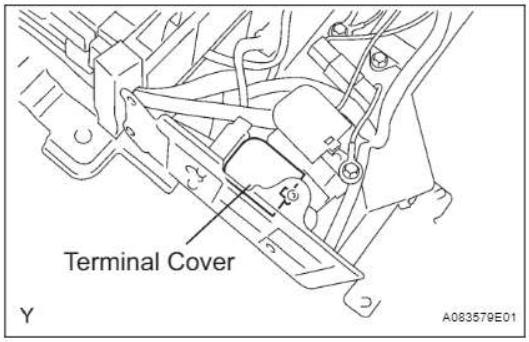
HB



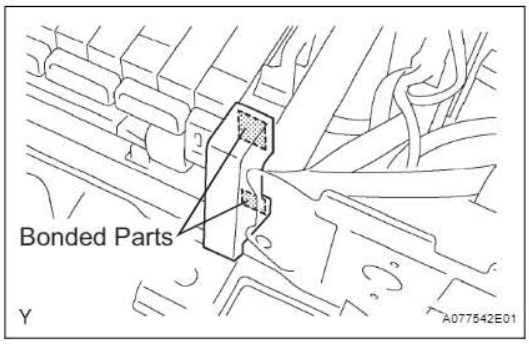
2. INSTALL MAIN BATTERY CABLE

CAUTION:
Wear insulating gloves.

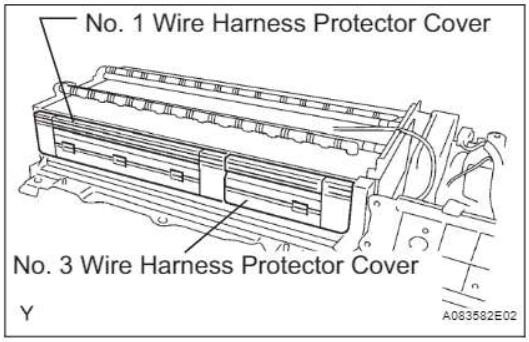
(a) Temporarily install the main battery cable to the HV battery.
(b) Install the main battery cable to the No. 2 frame wire with a new nut.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
(c) Install the main battery cable to the No. 3 system main relay with a new nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)
(d) Install the aluminum shield wire with a new nut.
Torque: 3.3 N*m (34 kgf*cm, 29 in.*lbf)



(e) Install the terminal cover shown in the illustration.



3. **INSTALL NO. 3 BATTERY CARRIER CUSHION**
CAUTION:
Wear insulating gloves.
(a) Degrease and clean the installation surface of the battery carrier cushion.
(b) Install a new battery carrier cushion.



4. **INSTALL NO. 1 WIRE HARNESS PROTECTOR COVER**
CAUTION:
Wear insulating gloves.

5. **INSTALL NO. 3 WIRE HARNESS PROTECTOR COVER**
CAUTION:
Wear insulating gloves.

6. **INSTALL BATTERY COVER (See page HB-95)**

7. **INSTALL HV BATTERY ASSEMBLY**
(a) Install the HV battery to the vehicle (see page HB-96).

8. **INSTALL SERVICE PLUG GRIP (See page HB-114)**

9. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**

10. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**

11. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**

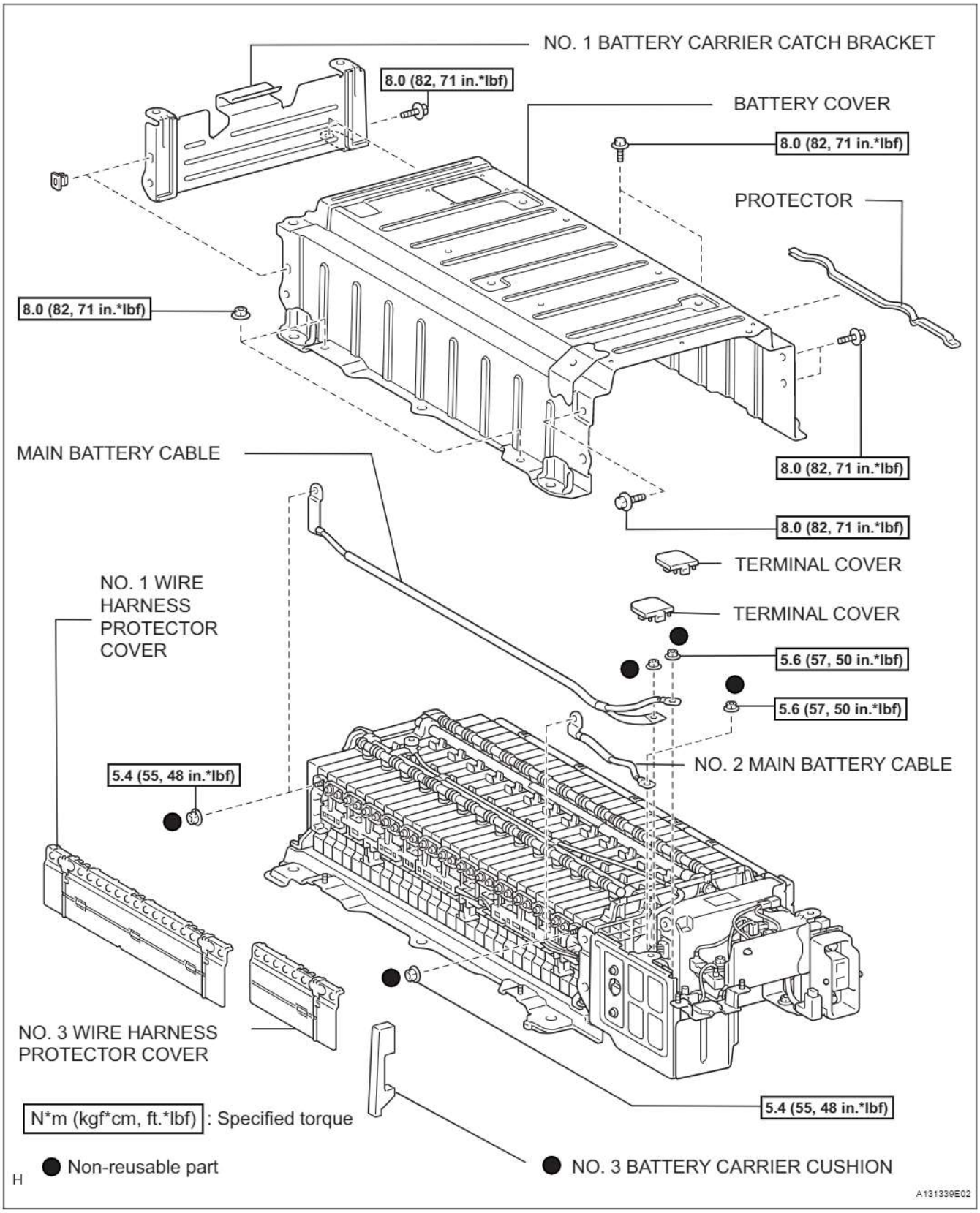
12. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**

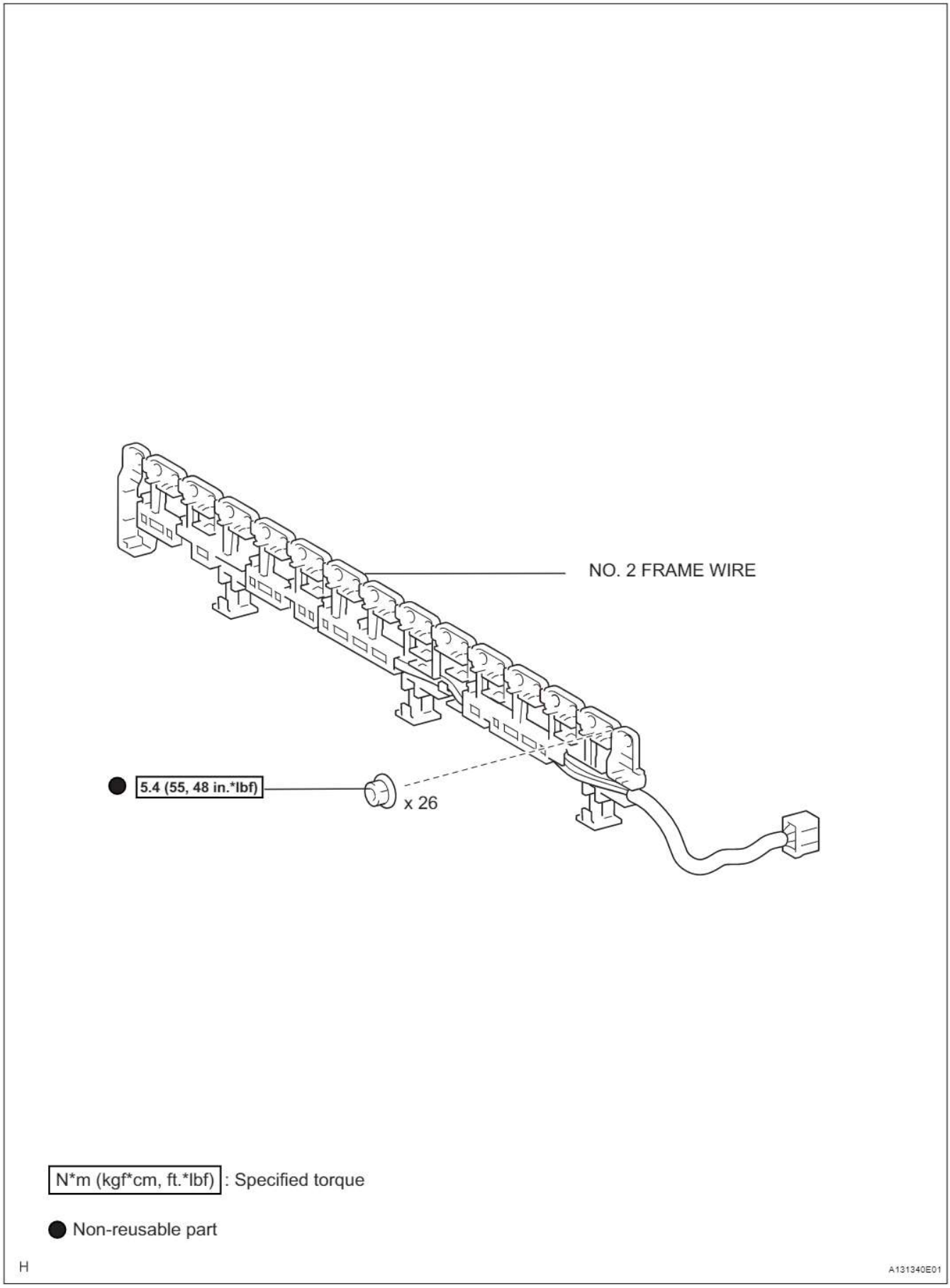
13. **PERFORM INITIALIZATION**
(a) Perform initialization (see page IN-32).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB

FRAME WIRE

COMPONENTS




NO. 2 FRAME WIRE
5.4 (55, 48 in.*lbf)
x 26
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A131340E01

REMOVAL

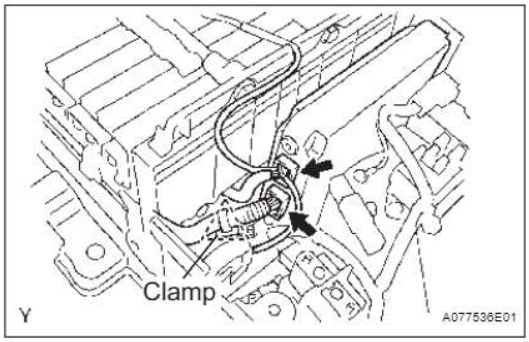
CAUTION:

- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

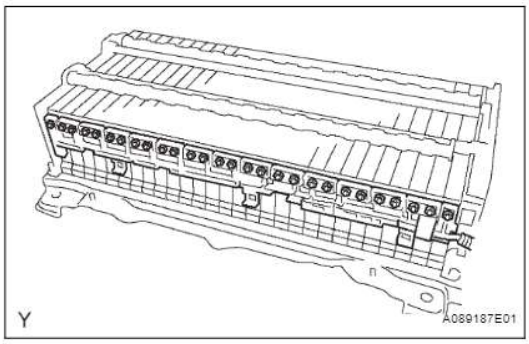
NOTICE:

After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE HV BATTERY ASSEMBLY**
   (a) Remove the HV battery from the vehicle (see page HB-88).
8. **REMOVE BATTERY COVER (See page HB-93)**
9. **REMOVE NO. 1 WIRE HARNESS PROTECTOR COVER (See page HB-102)**
10. **REMOVE NO. 3 WIRE HARNESS PROTECTOR COVER (See page HB-102)**
11. **REMOVE NO. 3 BATTERY CARRIER CUSHION (See page HB-103)**
12. **REMOVE MAIN BATTERY CABLE (See page HB-103)**
13. **REMOVE NO. 2 MAIN BATTERY CABLE (See page HB-103)**

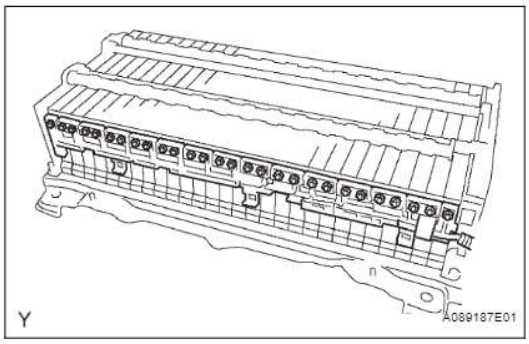


14. **REMOVE NO. 2 FRAME WIRE**
CAUTION:
Wear insulating gloves.
(a) Disconnect the temperature sensor connector from the battery ECU.
(b) Remove the clamp, then disconnect the No. 2 frame wire connector from the battery ECU.

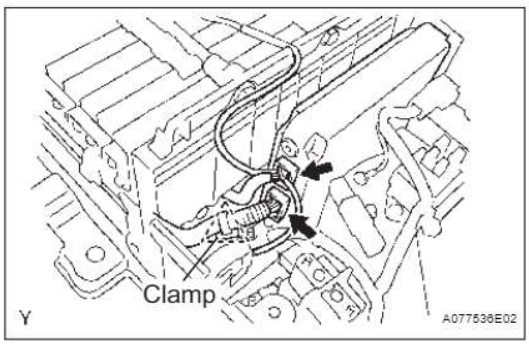


(c) Remove the 26 nuts and No. 2 frame wire.

INSTALLATION



1. **INSTALL NO. 2 FRAME WIRE**
CAUTION:
Wear insulating gloves.
(a) Install the No. 2 frame wire with new 26 nuts.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)



(b) Connect the No. 2 frame wire connector to the battery ECU, then connect the clamp.
(c) Connect the temperature sensor connector to the battery ECU.

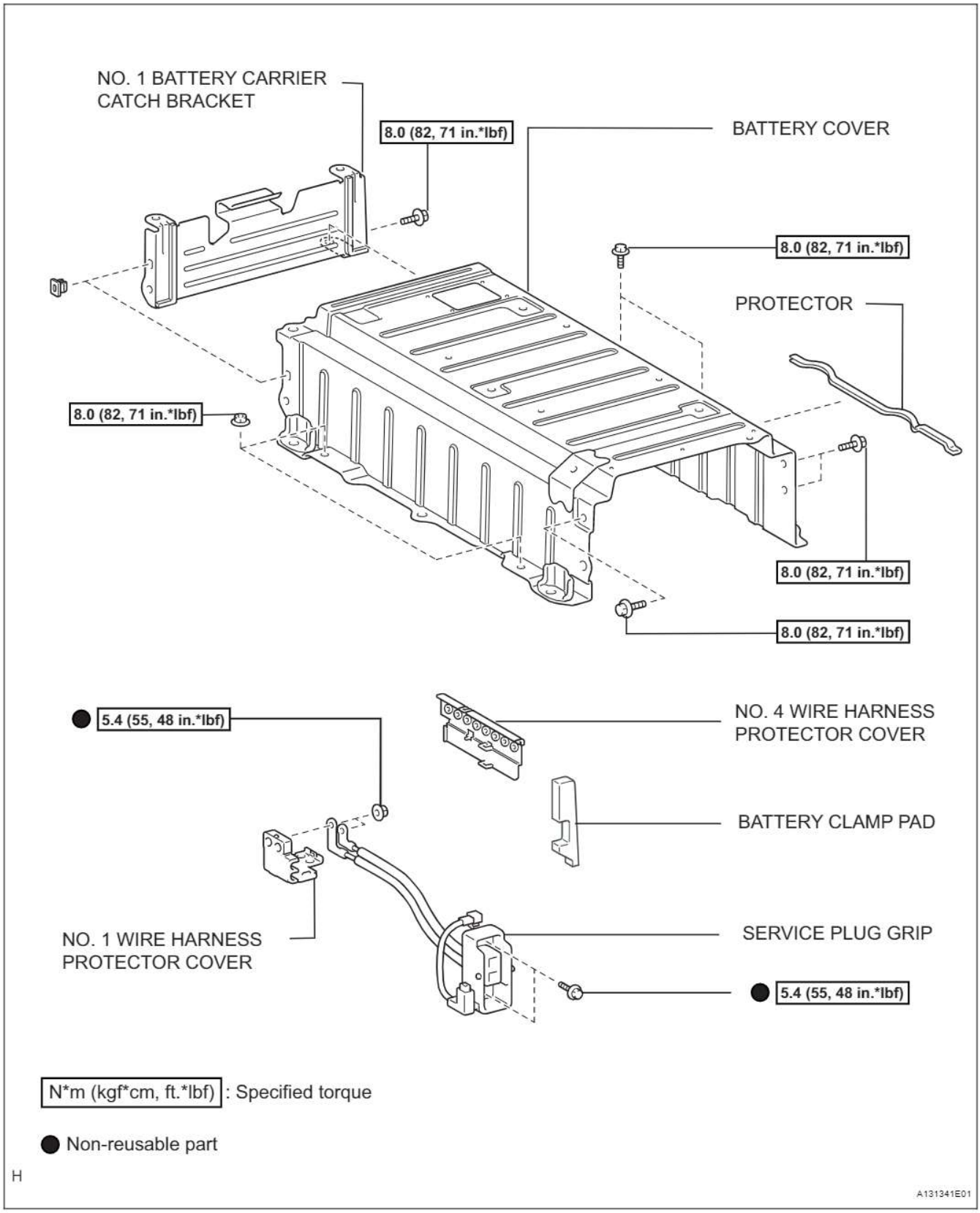
2. **INSTALL NO. 2 MAIN BATTERY CABLE (See page HB-104)**
3. **INSTALL MAIN BATTERY CABLE (See page HB-104)**
4. **INSTALL NO. 3 BATTERY CARRIER CUSHION (See page HB-105)**
5. **INSTALL NO. 1 WIRE HARNESS PROTECTOR COVER (See page HB-105)**
6. **INSTALL NO. 3 WIRE HARNESS PROTECTOR COVER (See page HB-105)**
7. **INSTALL BATTERY COVER (See page HB-95)**
8. **INSTALL HV BATTERY ASSEMBLY**
(a) Install the HV battery to the vehicle (see page HB-96).
9. **INSTALL SERVICE PLUG GRIP (See page HB-154)**

HB

10. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
11. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
12. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
13. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
14. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

BATTERY PLUG

COMPONENTS



HB

REMOVAL

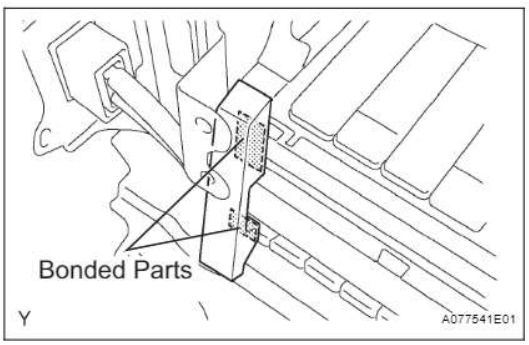
CAUTION:

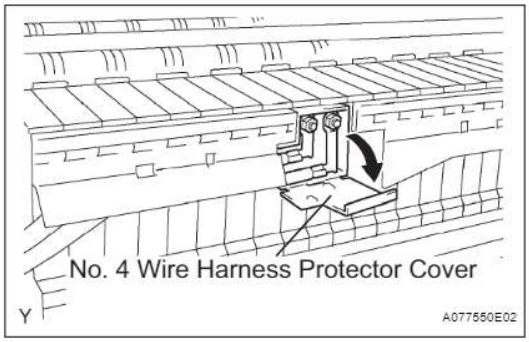
- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

NOTICE:

After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

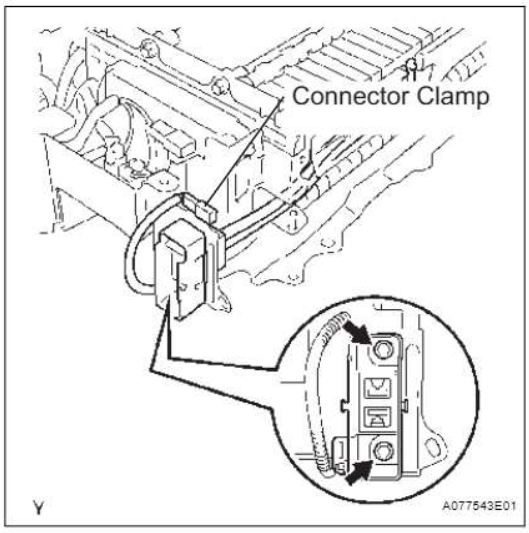
1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE HV BATTERY ASSEMBLY**
   (a) Remove the HV battery from the vehicle (see page HB-88).
8. **REMOVE BATTERY COVER (See page HB-93)**
9. **REMOVE BATTERY CLAMP PAD**
   CAUTION:
   Wear insulating gloves.
   (a) Peel off the bonded parts, then remove the battery clamp pad (the battery carrier cushion).





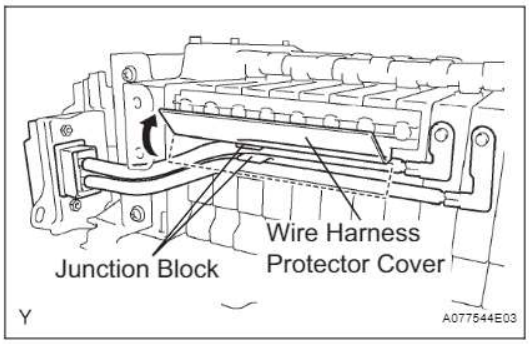
10. REMOVE NO. 1 WIRE HARNESS PROTECTOR COVER

(a) Open the wire harness protector cover.
(b) Remove the 2 nuts, then disconnect the service plug.
(c) Remove the wire harness protector cover.

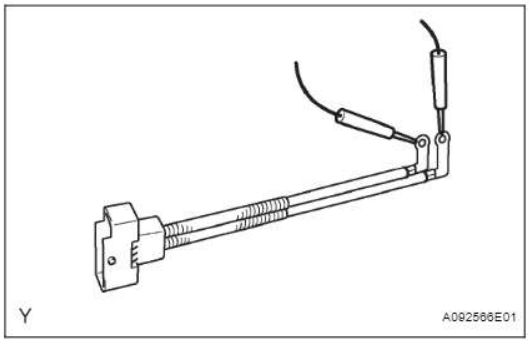


11. REMOVE BATTERY PLUG

(a) Disconnect the connector clamp.
(b) Remove the 2 bolts, then disconnect the service plug from the upper battery carrier.



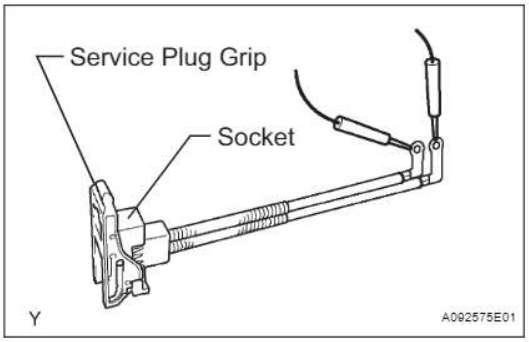
(c) Open the wire harness protector cover as shown in the illustration. Then remove the service plug from the junction block.



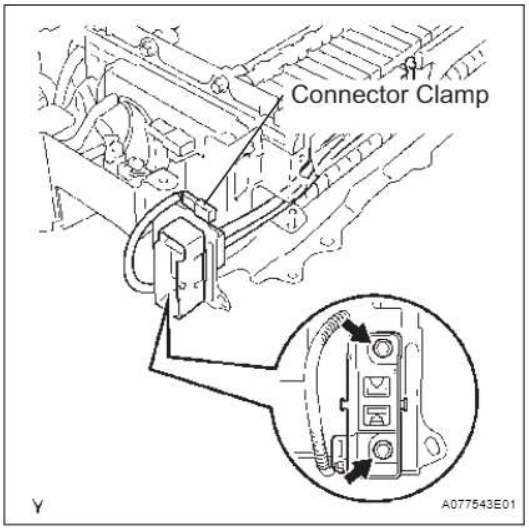
INSPECTION

1. INSPECT BATTERY PLUG

(a) Check the resistance.
(1) Measure the resistance between the terminals.
Standard resistance:
10 kΩ or higher
If the result is not as specified, replace the battery plug.

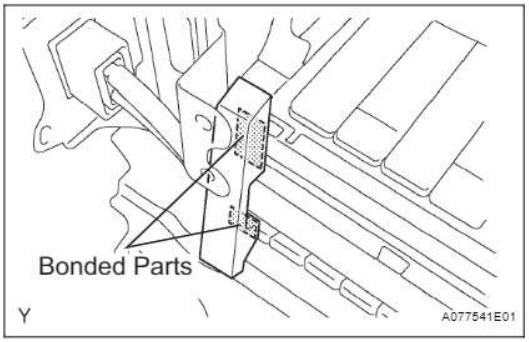


(2) Install the service plug grip to the socket.
(3) Measure the resistance between the terminals.
Standard resistance:
Below 1 Ω
If the result is not as specified, replace the battery plug.



INSTALLATION

1. **INSTALL BATTERY PLUG**
   (a) Temporarily fasten the service plug.
   (b) Install the service plug to the upper battery carrier with the 2 bolts.
   Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
   (c) Assemble the connector clamp.
2. **INSTALL NO. 1 WIRE HARNESS PROTECTOR COVER**
   (a) Temporarily fasten the wire harness protector cover to the service plug.
   (b) Install the wiring harness protector cover through the service plug with 2 new nuts.
   Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

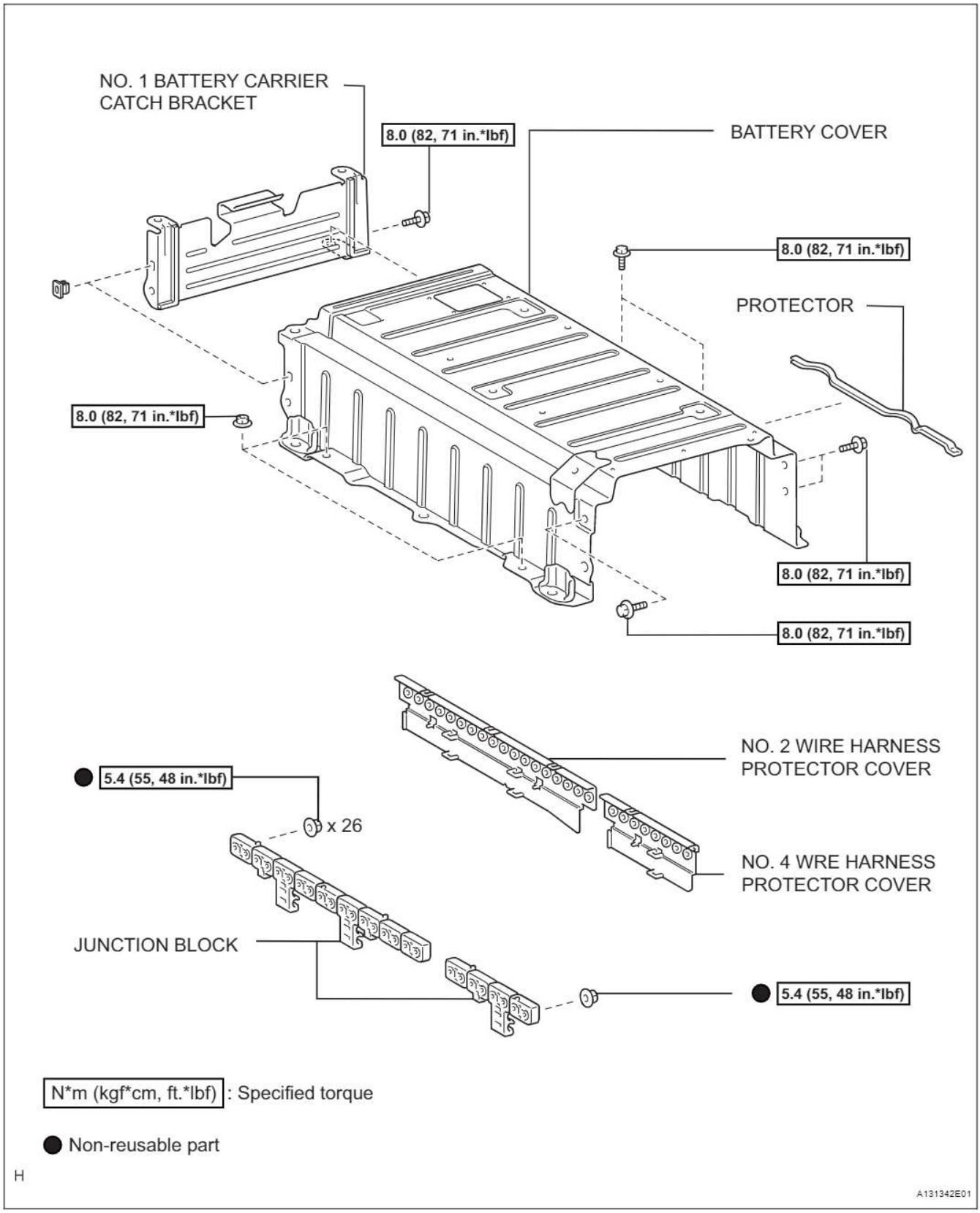


3. **INSTALL BATTERY CLAMP PAD**
   CAUTION:
   Wear insulating gloves.
   (a) Install a new clamp pad (the battery carrier cushion).
4. **INSTALL BATTERY COVER (See page HB-95)**
5. **INSTALL HV BATTERY ASSEMBLY**
   (a) Install the HV battery to the vehicle (see page HB-96).
6. **INSTALL SERVICE PLUG GRIP (See page HB-154)**
7. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
8. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
9. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
10. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
11. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB

JUNCTION BLOCK

COMPONENTS



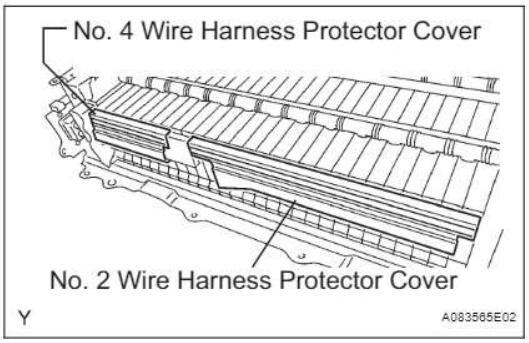
HB

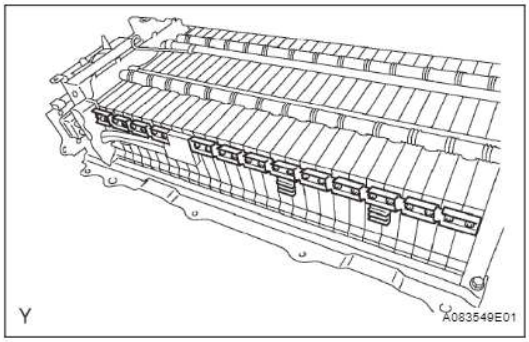
REMOVAL

CAUTION:
- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

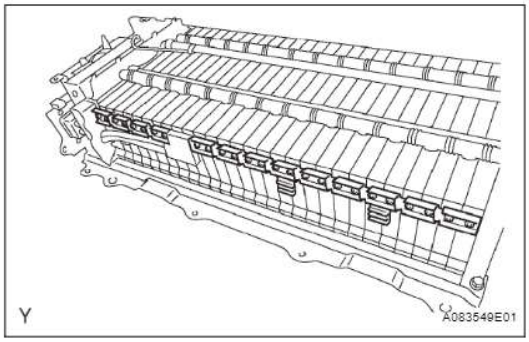
NOTICE:
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE HV BATTERY ASSEMBLY**
   (a) Remove the HV battery from the vehicle (see page HB-88).
8. **REMOVE BATTERY COVER (See page HB-93)**
9. **REMOVE NO. 2 WIRE HARNESS PROTECTOR COVER**
   CAUTION:
   Wear insulating gloves.
10. **REMOVE NO. 4 WIRE HARNESS PROTECTOR COVER**
    CAUTION:
    Wear insulating gloves.



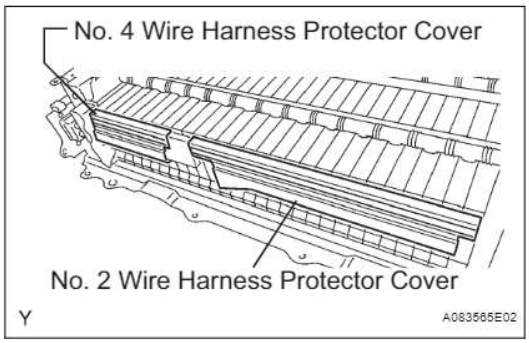


11. **REMOVE JUNCTION BLOCK**
CAUTION:
Wear insulating gloves.
(a) Remove the 26 nuts and junction block.



INSTALLATION

1. **INSTALL JUNCTION BLOCK**
CAUTION:
Wear insulating gloves.
(a) Install the junction block assembly with 26 new nuts.
Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)

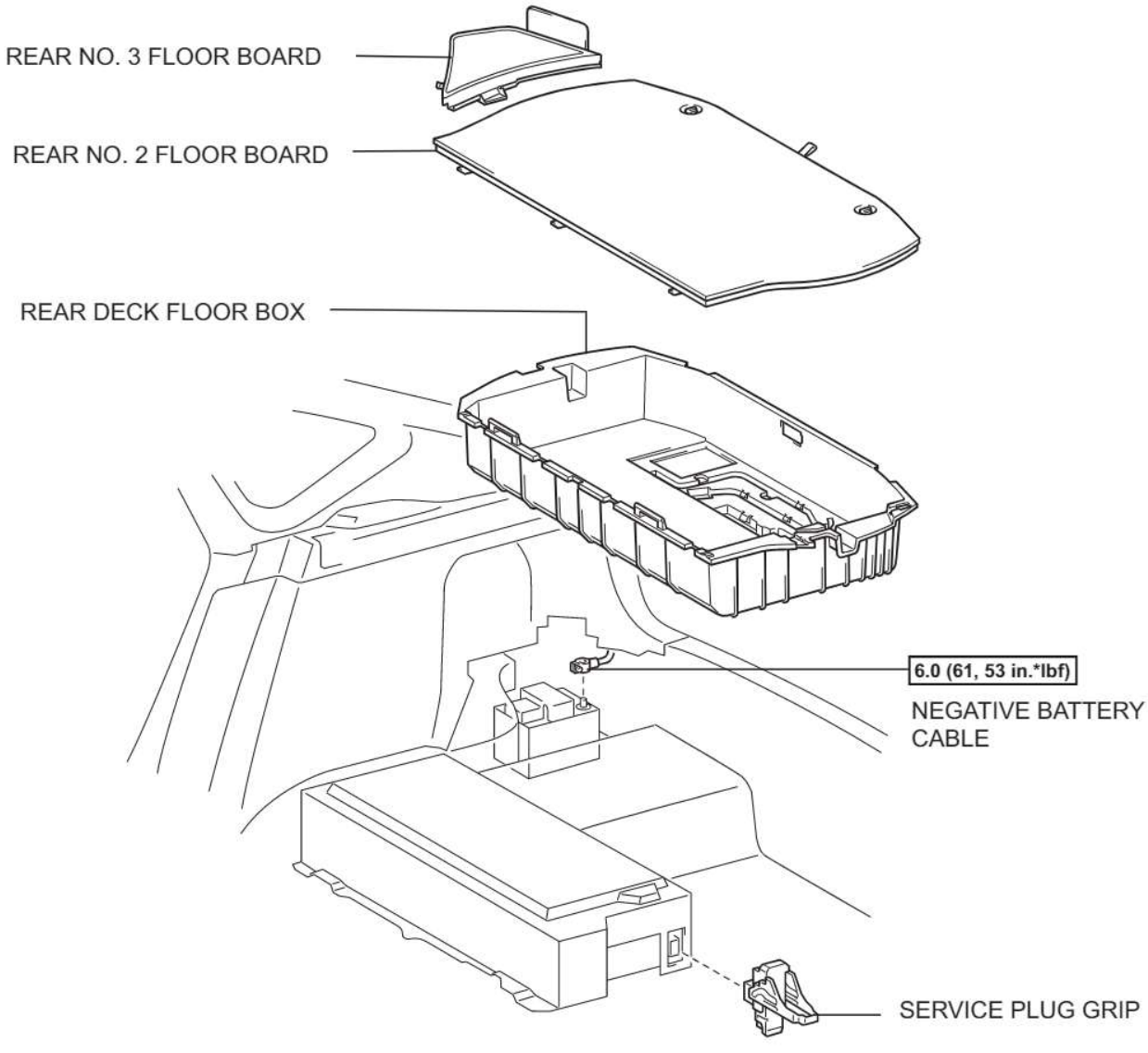


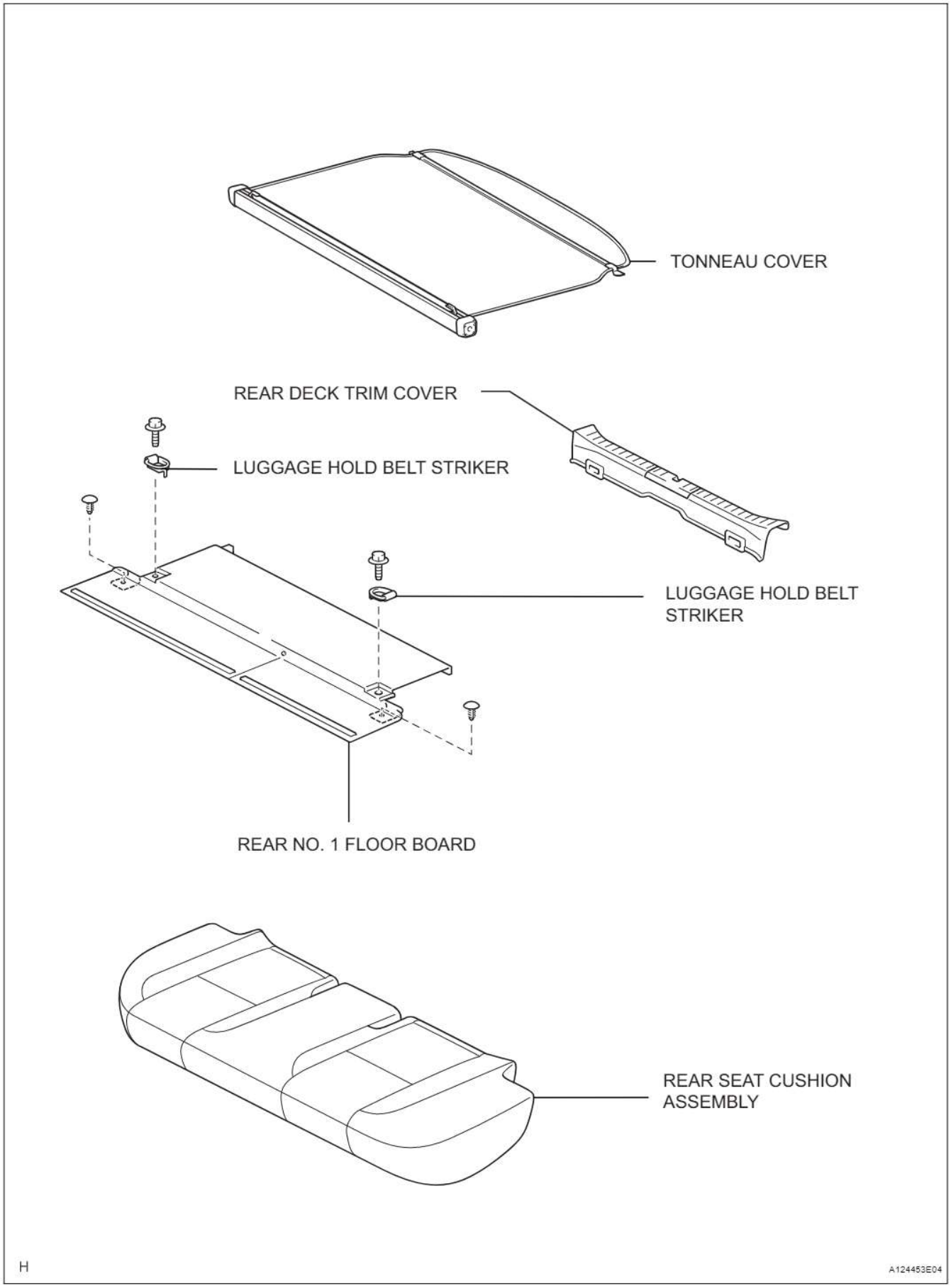
2. **INSTALL NO. 2 WIRE HARNESS PROTECTOR COVER**
CAUTION:
Wear insulating gloves.
3. **INSTALL NO. 4 WIRE HARNESS PROTECTOR COVER**
CAUTION:
Wear insulating gloves.
4. **INSTALL BATTERY COVER (See page HB-95)**
5. **INSTALL HV BATTERY ASSEMBLY**
(a) Install the HV battery to the vehicle (see page HB-96).
6. **INSTALL SERVICE PLUG GRIP (See page HB-154)**
7. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
8. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
9. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
10. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
11. **PERFORM INITIALIZATION**
(a) Perform initialization (see page IN-32).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

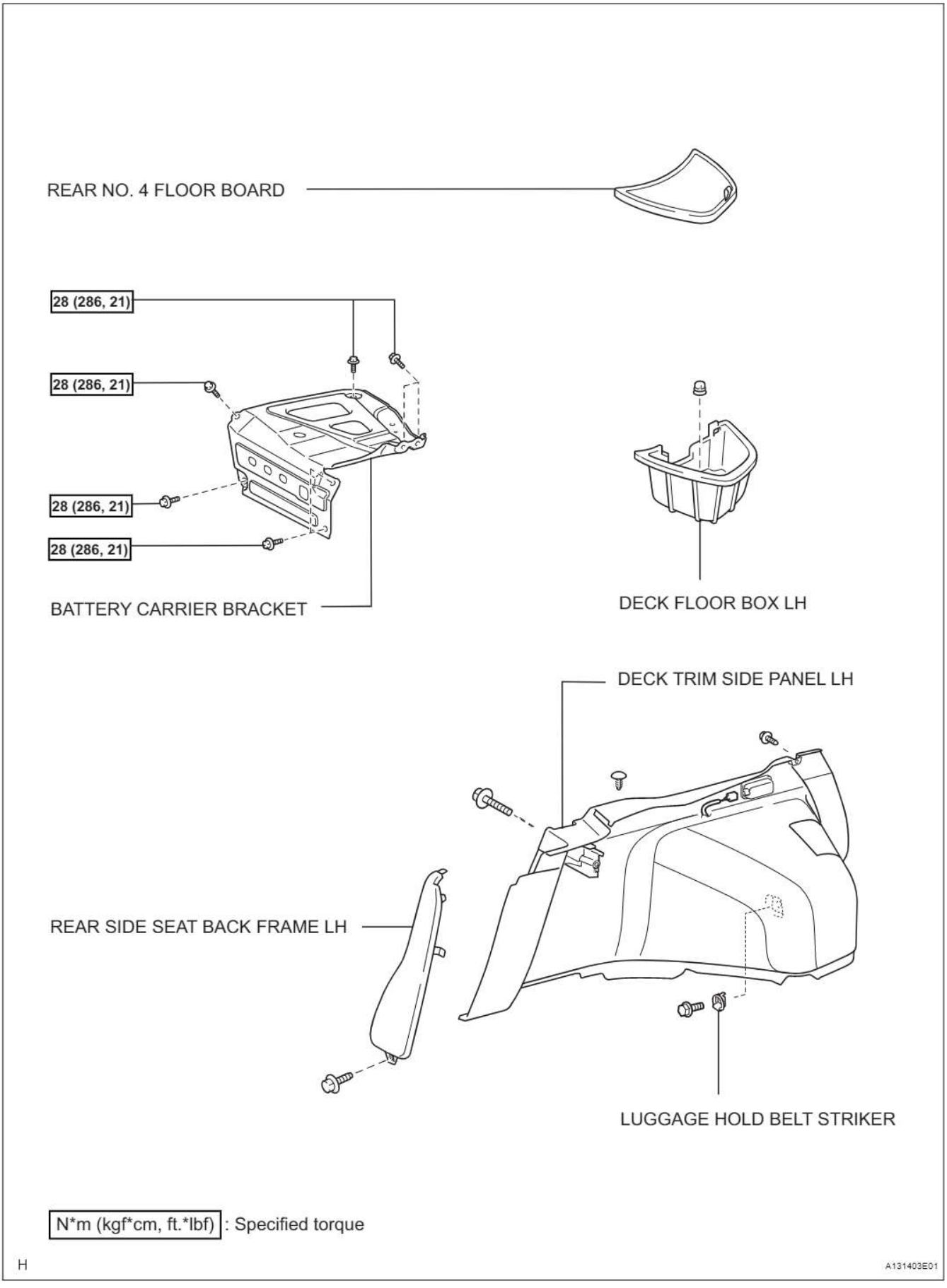
HB

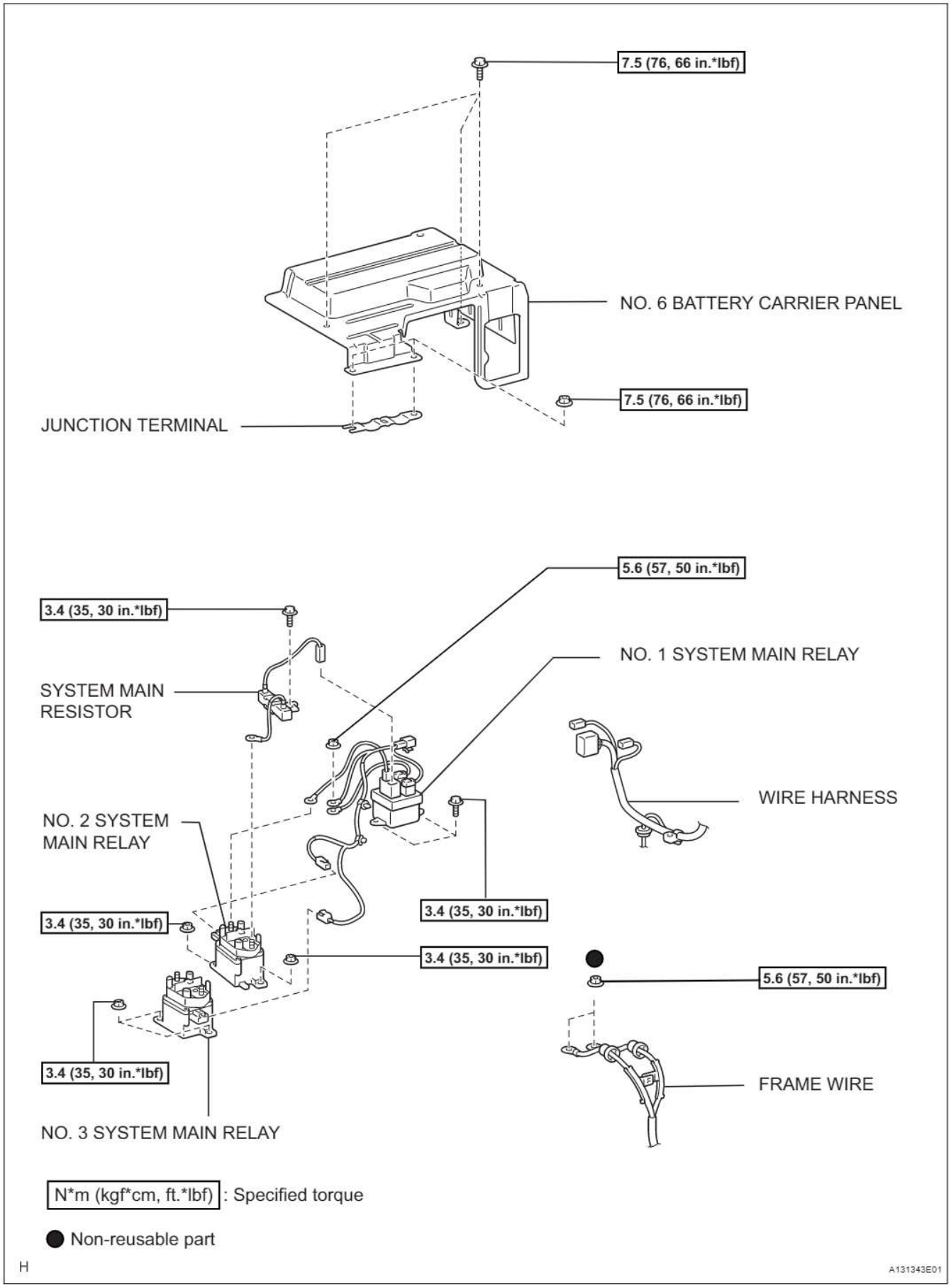
SYSTEM MAIN RELAY

COMPONENTS




TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E04


REAR NO. 4 FLOOR BOARD
28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
BATTERY CARRIER BRACKET
DECK FLOOR BOX LH
DECK TRIM SIDE PANEL LH
REAR SIDE SEAT BACK FRAME LH
LUGGAGE HOLD BELT STRIKER
N*m (kgf*cm, ft.*lbf) : Specified torque
H
A131403E01


7.5 (76, 66 in.*lbf)
NO. 6 BATTERY CARRIER PANEL
7.5 (76, 66 in.*lbf)
JUNCTION TERMINAL
5.6 (57, 50 in.*lbf)
3.4 (35, 30 in.*lbf)
NO. 1 SYSTEM MAIN RELAY
SYSTEM MAIN RESISTOR
WIRE HARNESS
NO. 2 SYSTEM MAIN RELAY
3.4 (35, 30 in.*lbf)
3.4 (35, 30 in.*lbf)
3.4 (35, 30 in.*lbf)
5.6 (57, 50 in.*lbf)
3.4 (35, 30 in.*lbf)
FRAME WIRE
NO. 3 SYSTEM MAIN RELAY
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A131343E01

HB

REMOVAL

CAUTION:

- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

NOTICE:

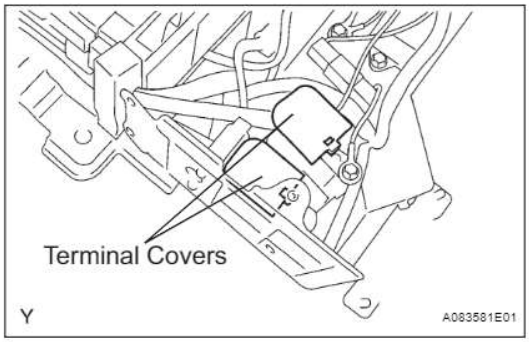
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. **PRECAUTION**
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. **REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)**
3. **REMOVE REAR DECK FLOOR BOX (See page CH-4)**
4. **REMOVE REAR NO. 3 FLOOR BOARD (See page CH-8)**
5. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. **REMOVE SERVICE PLUG GRIP (See page HB-154)**
7. **REMOVE REAR DECK TRIM COVER (See page HB-88)**
8. **REMOVE TONNEAU COVER (See page HB-89)**
9. **REMOVE REAR SEAT CUSHION ASSEMBLY (See page HB-89)**
10. **REMOVE REAR NO. 1 FLOOR BOARD (See page HB-89)**
11. **REMOVE REAR SIDE SEAT BACK FRAME LH (See page HB-89)**
12. **REMOVE REAR NO. 4 FLOOR BOARD (See page HB-90)**
13. **REMOVE DECK FLOOR BOX LH (See page HB-90)**
14. **REMOVE DECK TRIM SIDE PANEL LH (See page HB-90)**

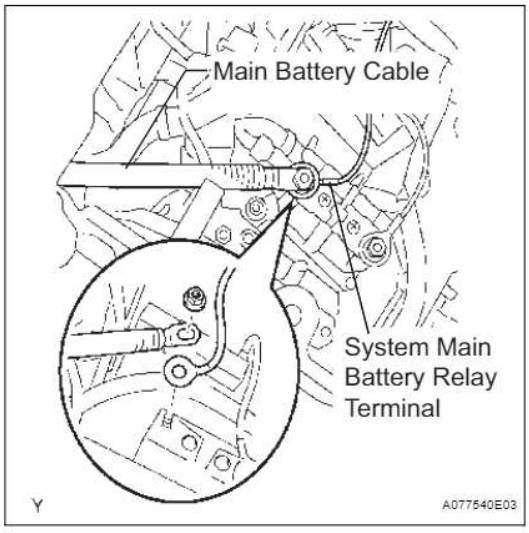
15. **REMOVE BATTERY CARRIER BRACKET (See page HB-91)**
16. **REMOVE NO. 6 BATTERY CARRIER PANEL (See page HB-91)**
17. **REMOVE JUNCTION TERMINAL (See page HB-92)**
18. **SEPARATE FRAME WIRE (See page HB-92)**
19. **REMOVE NO. 2 SYSTEM MAIN RELAY**

CAUTION:
Wear insulating gloves.

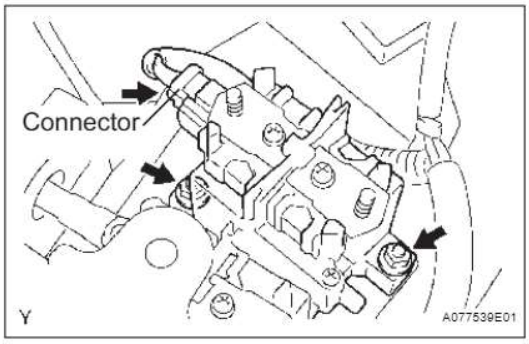
(a) Remove the 2 terminal covers.

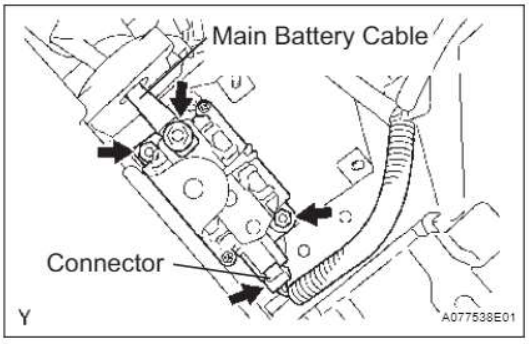


(b) Remove the nut, then disconnect the system main battery relay terminal and main battery cable.



(c) Disconnect the connector.
(d) Remove the 2 nuts and No. 2 system main relay.





20. REMOVE NO. 3 SYSTEM MAIN RELAY

NOTICE:

Wear insulating gloves.

(a) Remove the nut, then disconnect the main battery cable.

(b) Remove the 2 nuts, then disconnect the No. 3 system main relay.

(c) Disconnect the connector and remove the No. 3 system main relay.

21. REMOVE NO. 1 SYSTEM MAIN RELAY

CAUTION:

Wear insulating gloves.

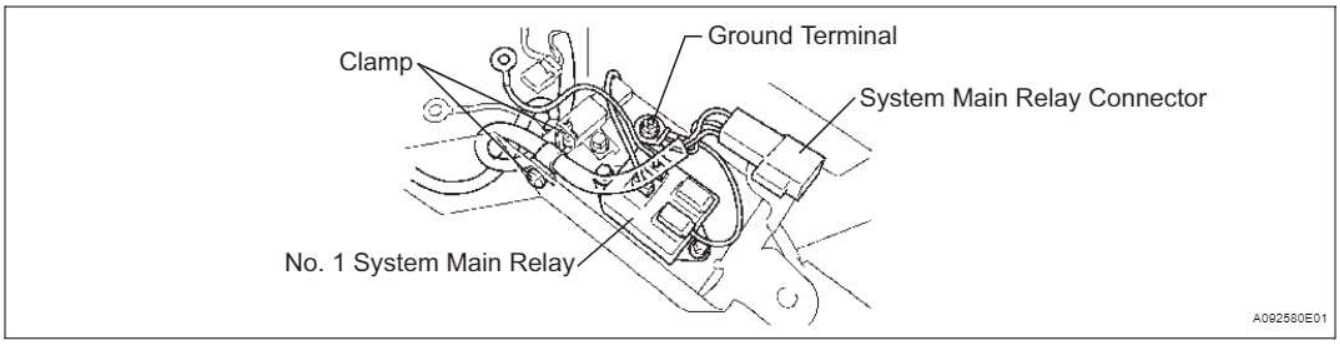
(a) Disconnect the connector.

(b) Remove the nut, then disconnect the ground terminal.

(c) Disconnect the 2 clamps.

(d) Remove the system main relay connector.

(e) Remove the 2 bolts and No. 1 system main relay.



HB

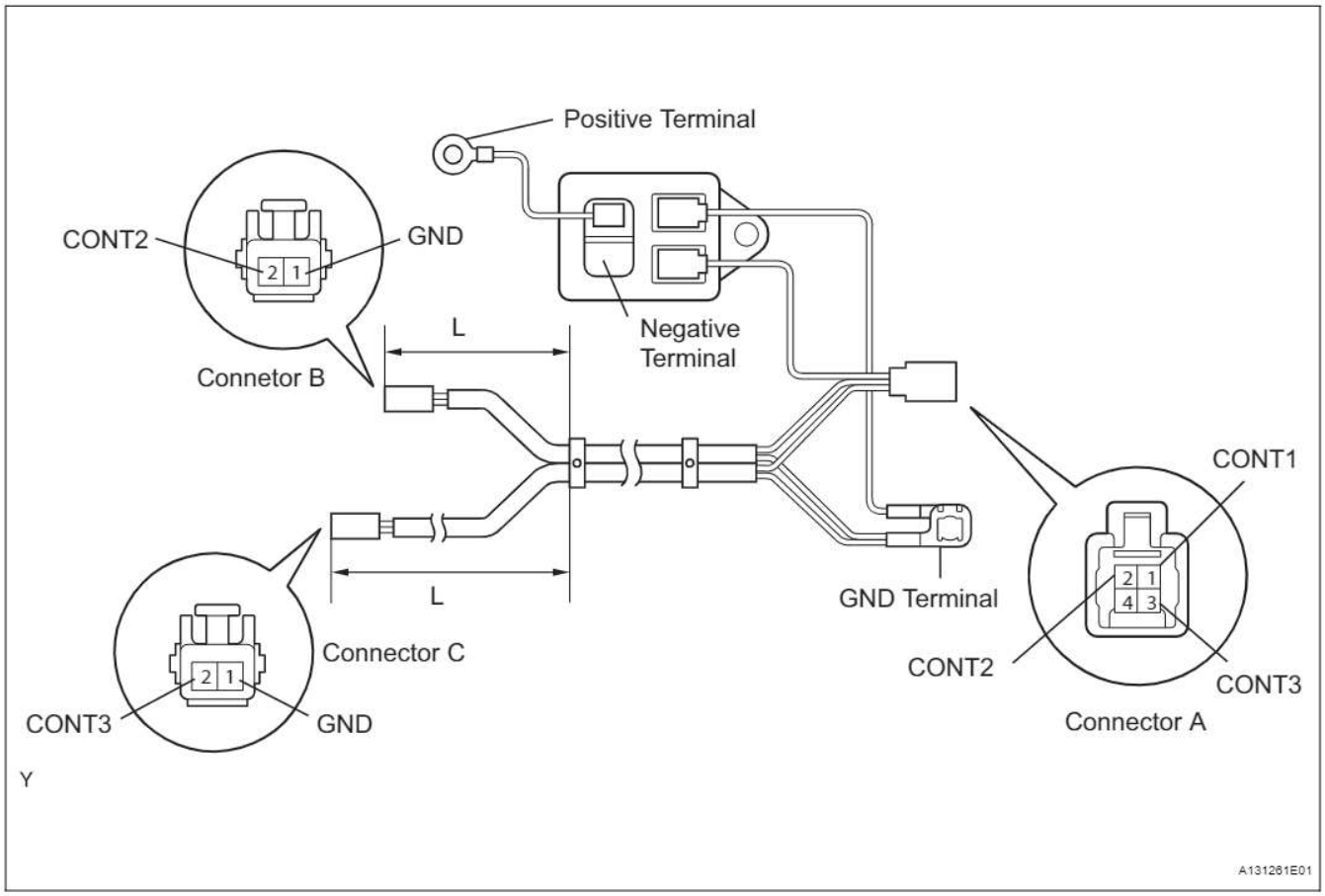
INSPECTION

1. INSPECT NO. 1 SYSTEM MAIN RELAY

NOTICE:

Connectors B and C have the same shape. Identify each connector by the wire harness length (L) and the wire harness color on the terminal 2 side.

Connector	Wire Harness Length (L)	Wire Harness Color
B	Short	Yellow
C	Long	Black



(a) Check the resistance.

(1) Measure the resistance between the connectors.

Standard resistance

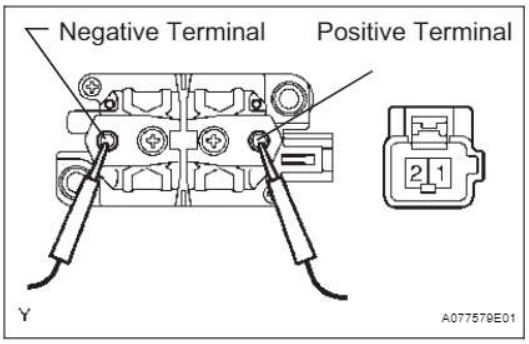
Tester Connection	Specified Condition
Positive terminal - Negative terminal	10 kΩ or higher
A-2 (CONT2) - B-2 (CONT2)	Below 1 Ω
A-3 (CONT3) - C-2 (CONT3)	Below 1 Ω
B-1 (GND) - GND	Below 1 Ω
C-1 (GND) - GND	Below 1 Ω

If the results are not as specified, replace the No. 1 system main relay.

HB

(2) Apply battery voltage between the GND terminal and CONT1 terminal of the connector A, then measure the resistance between the positive and negative terminals.
Standard resistance:
Below 1 Ω
If the results are not as specified, replace the No. 1 system main relay.

(b) Inspect the resistance.
(1) Measure the resistance between the GND terminal and CONT1 terminal of the connector A.
Standard resistance:
70 to 160 kΩ
If the the results are not as specified, replace the No. 1 system main relay.

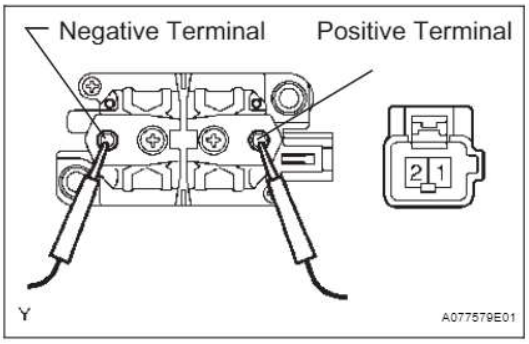


2. INSPECT NO. 2 SYSTEM MAIN RELAY

(a) Install the 2 installed nuts to the negative and positive terminals.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)

(b) Check the resistance.
(1) Measure the resistance between the positive and negative terminals.
Standard resistance:
10 kΩ or higher
If the result is not as specified, replace the No. 2 system main relay.
(2) Apply battery voltage between the connector terminals, then measure the resistance between the positive and negative terminals.
Standard resistance:
Below 1 Ω
If the result is not as specified, replace the No. 2 system main relay.

(c) Inspect the resistance.
(1) Measure the resistance between the connector terminals.
Standard resistance:
20 to 50 kΩ
If the result is not as specified, replace the No. 2 system main relay.



3. INSPECT NO. 3 SYSTEM MAIN RELAY

(a) Install the 2 installed nuts to the negative and positive terminals.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)

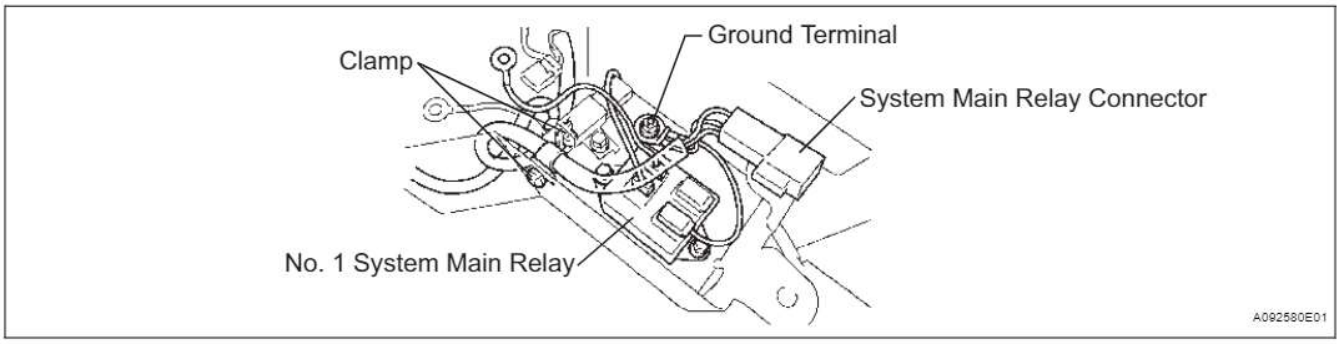
(b) Check the resistance.
(1) Measure the resistance between the positive and negative terminals.
Standard resistance:
10 kΩ or higher
If the result is not as specified, replace the No. 3 system main relay.

(2) Apply battery voltage between the connector terminals, then measure the resistance between the positive and negative terminals.
Standard resistance:
Below 1 Ω
If the result is not as specified, replace the No. 3 system main relay.

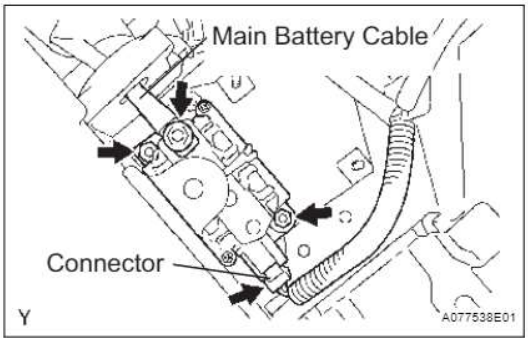
(c) Inspect the resistance.
(1) Measure the resistance between the connector terminals.
Standard resistance:
20 to 50 kΩ
If the result is not as specified, replace the No. 3 system main relay.

INSTALLATION

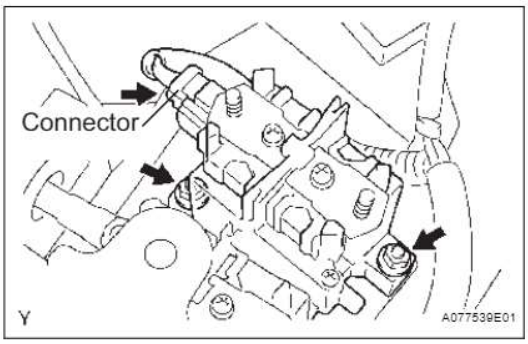
1. **INSTALL NO. 1 SYSTEM MAIN RELAY**
CAUTION:
Wear insulating gloves.
(a) Install the No. 1 system main relay with the 2 bolts.
Torque: 3.4 N*m (35 kgf*cm, 30 in.*lbf)
(b) Connect the system main relay connector.



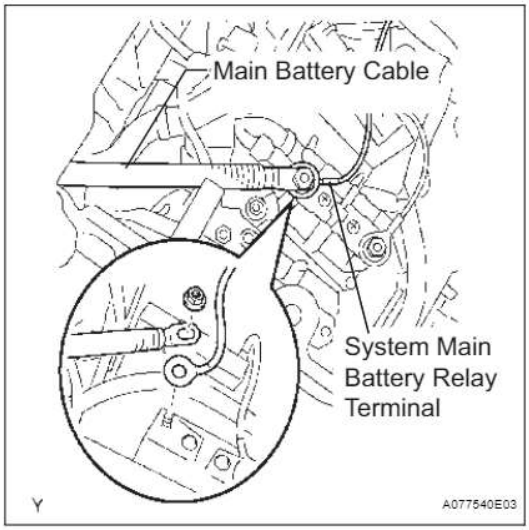
(c) Connect the 2 clamps, then install the system main relay sub wiring harness to the upper battery carrier.
(d) Install the ground terminal with the nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)
(e) Install the connector.



2. **INSTALL NO. 3 SYSTEM MAIN RELAY**
CAUTION:
Wear insulating gloves.
(a) Connect the connector, then temporarily install the No. 3 system main relay.
(b) Install the No. 3 system main relay with 2 new nuts.
Torque: 3.4 N*m (35 kgf*cm, 30 in.*lbf)
(c) Install the main battery cable with the nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)

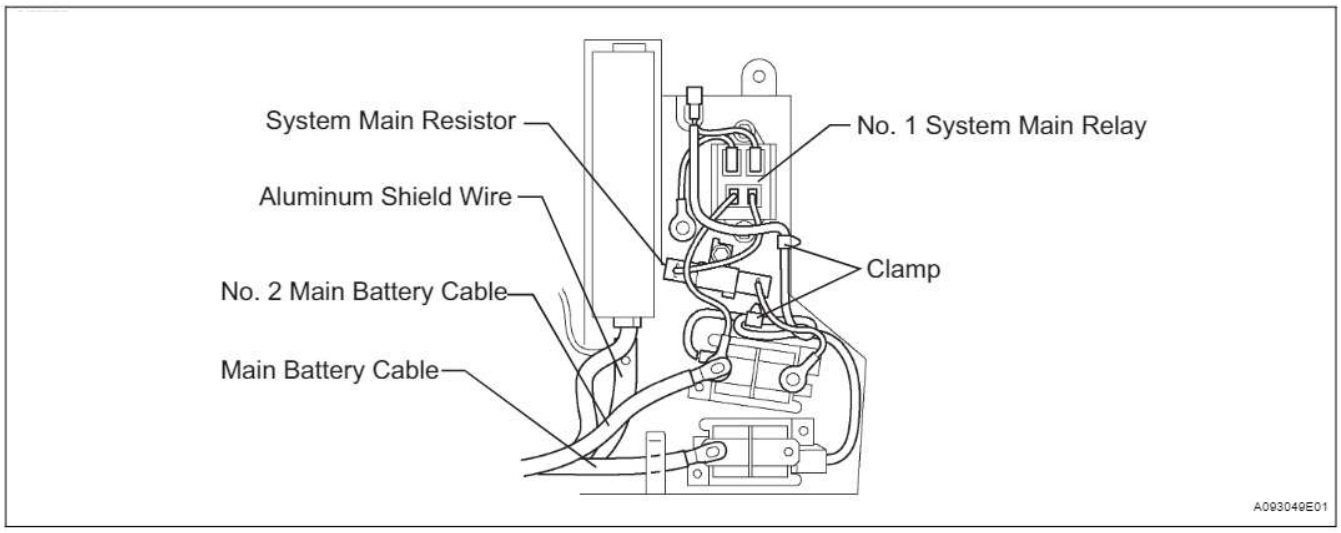


3. **INSTALL NO. 2 SYSTEM MAIN RELAY**
CAUTION:
Wear insulating gloves.
(a) Install the No. 2 system main relay with the 2 nuts.
Torque: 3.4 N*m (35 kgf*cm, 30 in.*lbf)
(b) Connect the connector.



(c) Temporarily install the system main relay terminal and No. 2 main battery cable terminal, in that order, and tighten a new nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)
(d) Install the 2 terminal covers.

4. **INSPECT CONTACT CONDITION**
CAUTION:
Wear insulating gloves.
(a) Check that all the wire harnesses are correctly and securely connected on the upper battery carrier.



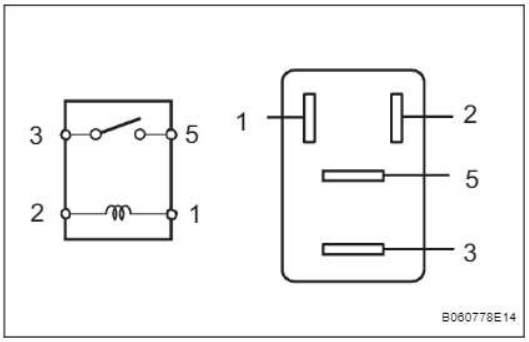
NOTICE:
Make sure that the connectors and clamps are connected exactly the same as the illustration above. If any of them is different, correct it immediately.

5. **INSTALL FRAME WIRE (See page HB-96)**
6. **INSTALL JUNCTION TERMINAL (See page HB-96)**
7. **INSTALL NO. 6 BATTERY CARRIER PANEL (See page HB-97)**
8. **INSTALL BATTERY CARRIER BRACKET (See page HB-97)**
9. **INSTALL DECK TRIM SIDE PANEL LH (See page HB-98)**
10. **INSTALL DECK FLOOR BOX LH (See page HB-98)**
11. **INSTALL REAR NO. 4 FLOOR BOARD (See page HB-98)**
12. **INSTALL REAR SIDE SEAT BACK FRAME LH (See page HB-99)**

HB

13. **INSTALL REAR NO. 1 FLOOR BOARD (See page HB-99)**
14. **INSTALL REAR SEAT CUSHION ASSEMBLY (See page HB-99)**
15. **INSTALL TONNEAU COVER (See page HB-99)**
16. **INSTALL REAR DECK TRIM COVER (See page HB-99)**
17. **INSTALL SERVICE PLUG GRIP (See page HB-154)**
18. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
19. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
20. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
21. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
22. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB



BATTERY BLOWER RELAY

ON-VEHICLE INSPECTION

1. INSPECT BATTERY BLOWER RELAY

(a) Measure the battery blower relay resistance.

Standard resistance

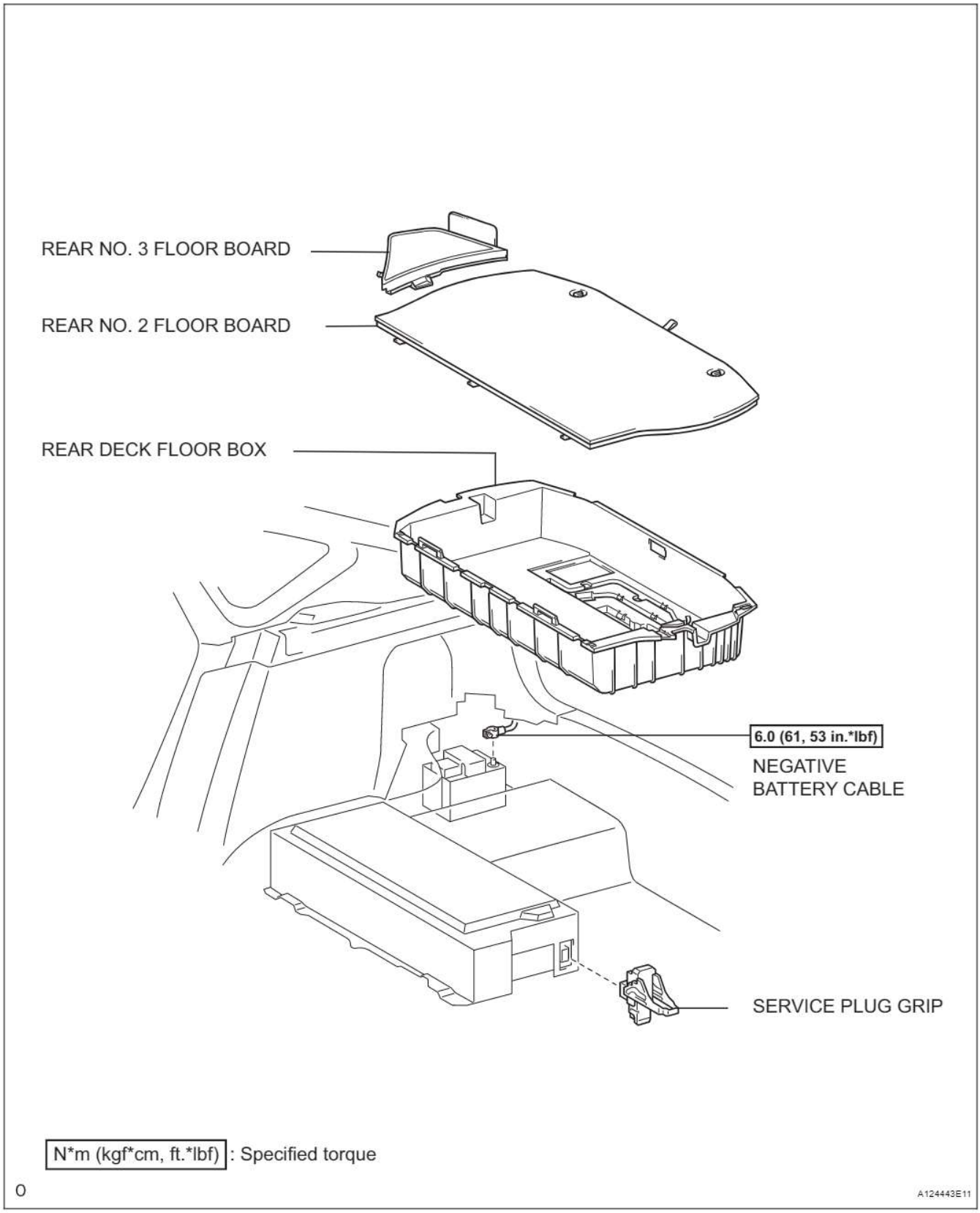
Tester Connection	Specified Condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

If the result is not as specified, replace the relay.

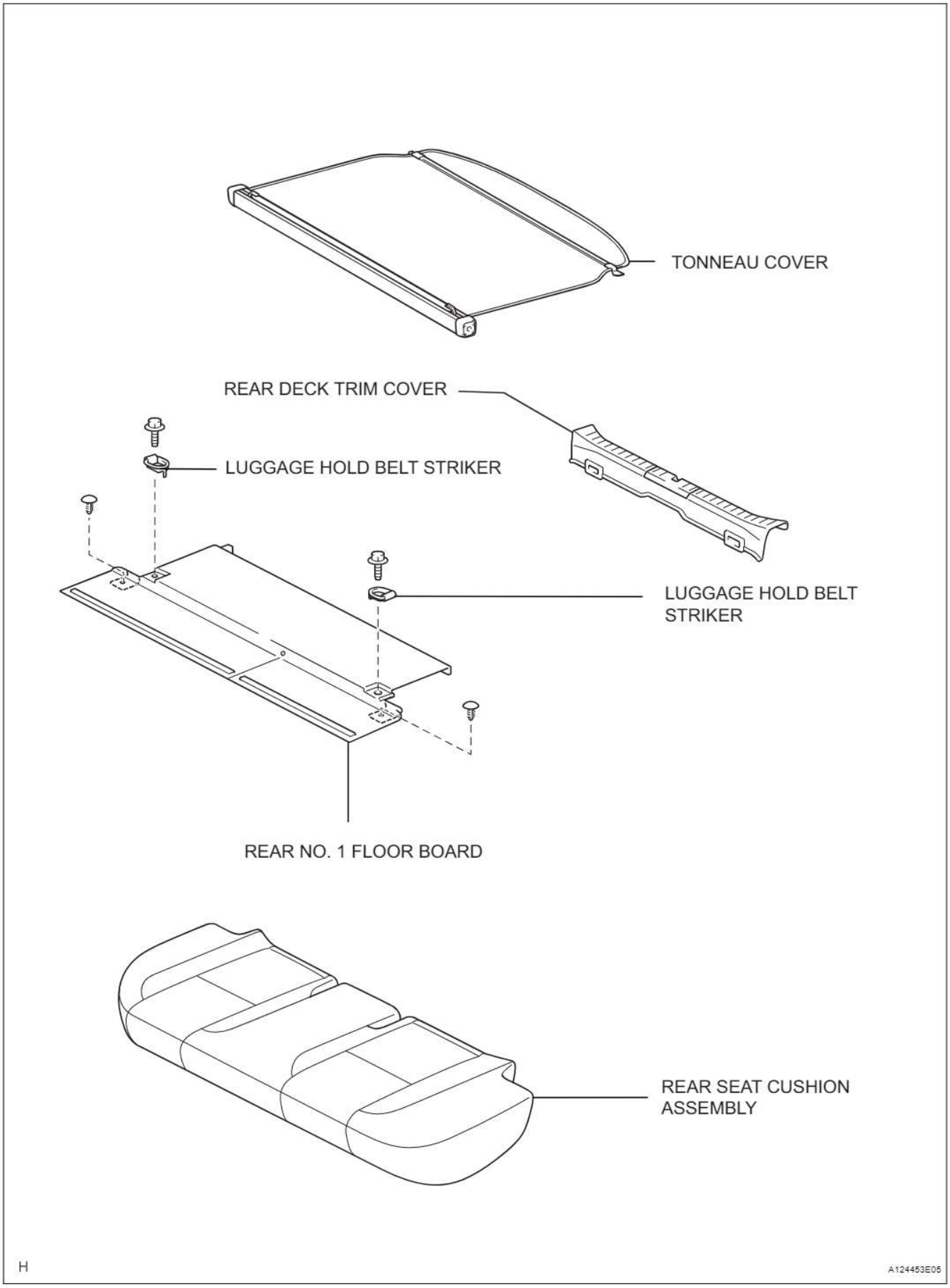
HB

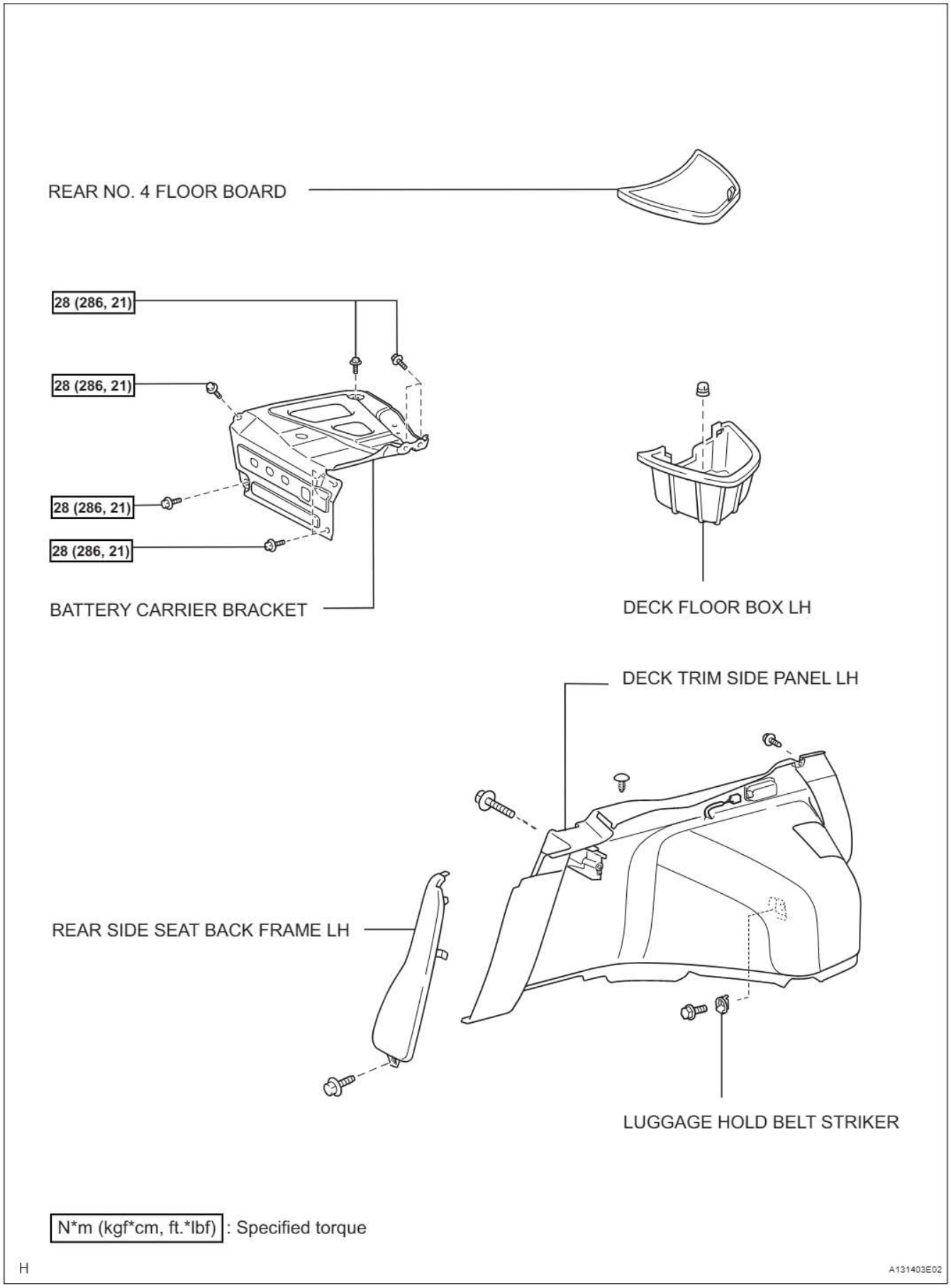
SYSTEM MAIN RESISTOR

COMPONENTS

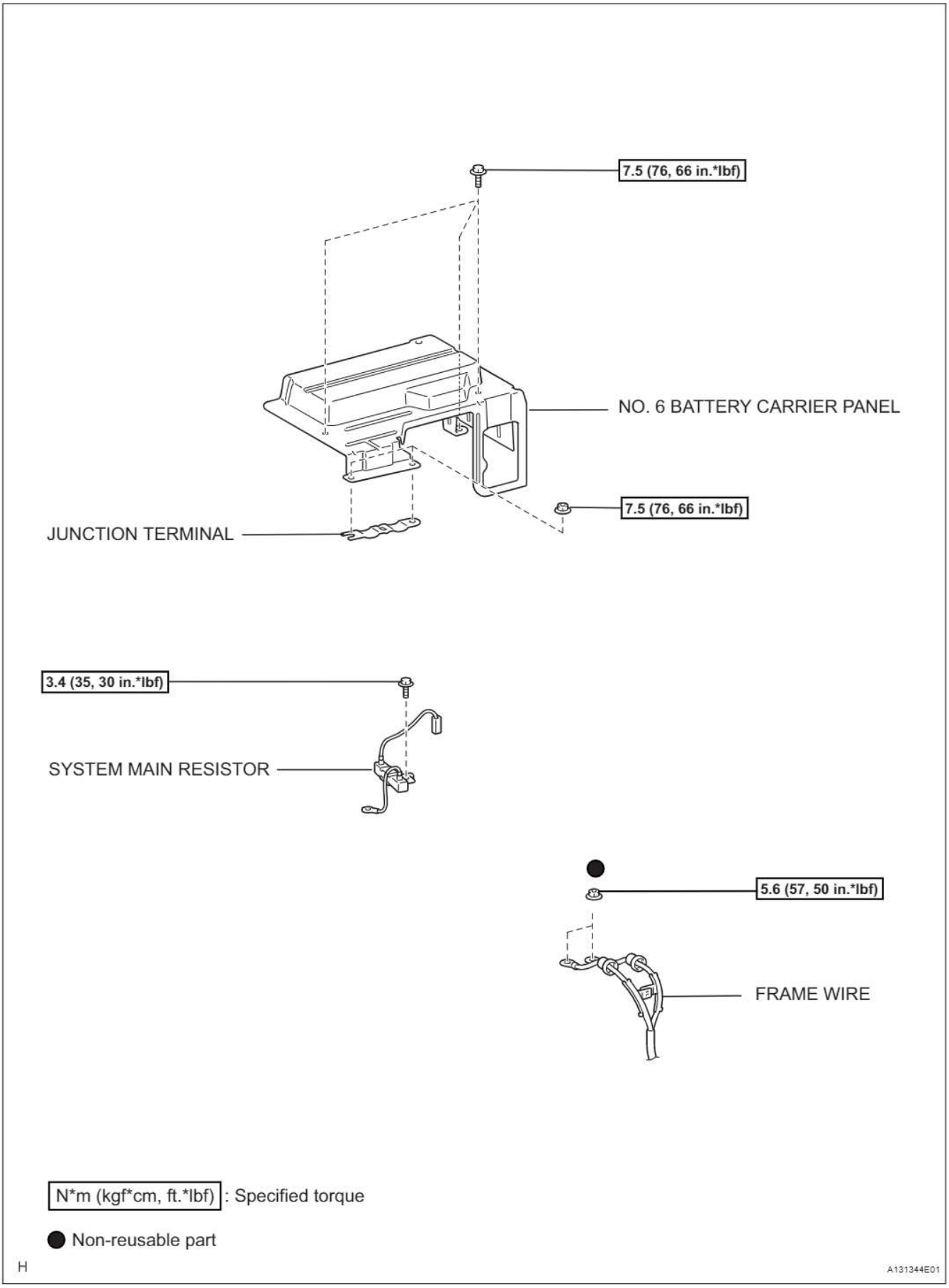


HB


TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E05


REAR NO. 4 FLOOR BOARD
28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
BATTERY CARRIER BRACKET
DECK FLOOR BOX LH
DECK TRIM SIDE PANEL LH
REAR SIDE SEAT BACK FRAME LH
LUGGAGE HOLD BELT STRIKER
N*m (kgf*cm, ft.*lbf) : Specified torque
H
A131403E02

HB


7.5 (76, 66 in.*lbf)
NO. 6 BATTERY CARRIER PANEL
7.5 (76, 66 in.*lbf)
JUNCTION TERMINAL
3.4 (35, 30 in.*lbf)
SYSTEM MAIN RESISTOR
5.6 (57, 50 in.*lbf)
FRAME WIRE
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A131344E01

REMOVAL

CAUTION:

- When working on the high voltage systems, always wear insulating gloves.
- Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.
- After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.

NOTICE:

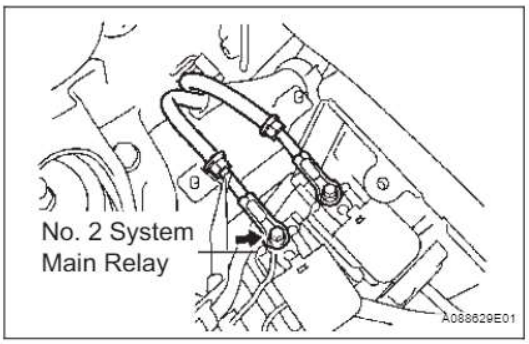
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. PRECAUTION
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
3. REMOVE REAR DECK FLOOR BOX (See page CH-4)
4. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. REMOVE SERVICE PLUG GRIP (See page HB-154)
7. REMOVE REAR DECK TRIM COVER (See page HB-88)
8. REMOVE TONNEAU COVER (See page HB-89)
9. REMOVE REAR SEAT CUSHION ASSEMBLY (See page HB-89)
10. REMOVE REAR NO. 1 FLOOR BOARD (See page HB-89)
11. REMOVE REAR SIDE SEAT BACK FRAME LH (See page HB-89)
12. REMOVE REAR NO. 4 FLOOR BOARD (See page HB-90)
13. REMOVE DECK FLOOR BOX LH (See page HB-90)
14. REMOVE DECK TRIM SIDE PANEL LH (See page HB-90)

HB

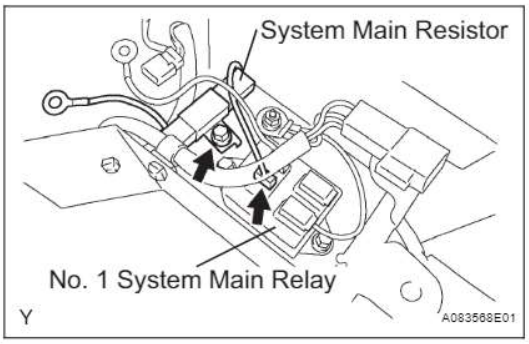
15. **REMOVE BATTERY CARRIER BRACKET (See page HB-91)**
16. **REMOVE NO. 6 BATTERY CARRIER PANEL (See page HB-91)**
17. **REMOVE JUNCTION TERMINAL (See page HB-92)**
18. **DISCONNECT FRAME WIRE**
    CAUTION:
    - **Wear insulating gloves.**
    - **Insulate the removed terminals with insulating tape.**

    (a) Remove the nut, then disconnect the frame wire from the No. 2 system main relay.



19. **REMOVE SYSTEM MAIN RESISTOR**
    CAUTION:
    Wear insulating gloves.

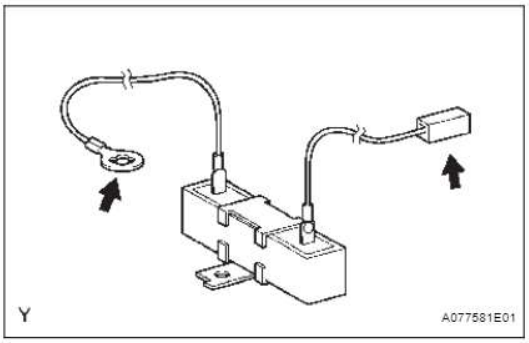
    (a) Disconnect the connector from the No. 1 system main relay.
    (b) Remove the bolt and system main resistor.



INSPECTION

1. **INSPECT SYSTEM MAIN RESISTOR**

   (a) Measure the resistance between the terminals.
   Standard resistance:
   18 to 22 Ω
   If the result is not as specified, replace the system main resistor.

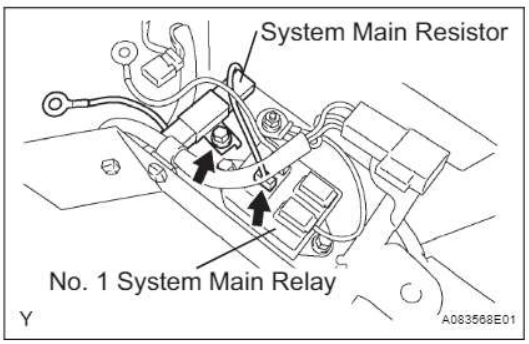


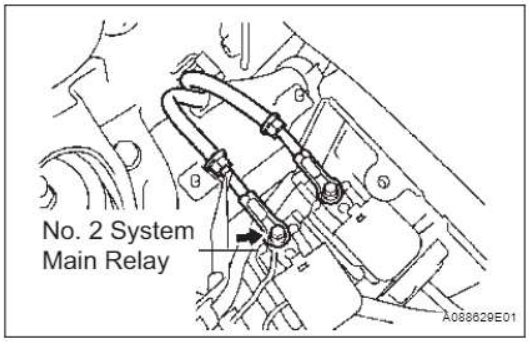
INSTALLATION

1. **INSTALL SYSTEM MAIN RESISTOR**
   CAUTION:
   Wear insulating gloves.

   (a) Install the system main resistor with the bolt.
   Torque: 3.4 N*m (35 kgf*cm, 30 in.*lbf)
   (b) Install the connector to the No. 1 system main relay.

2. **INSPECT CONTACT CONDITION (See page HB-128)**



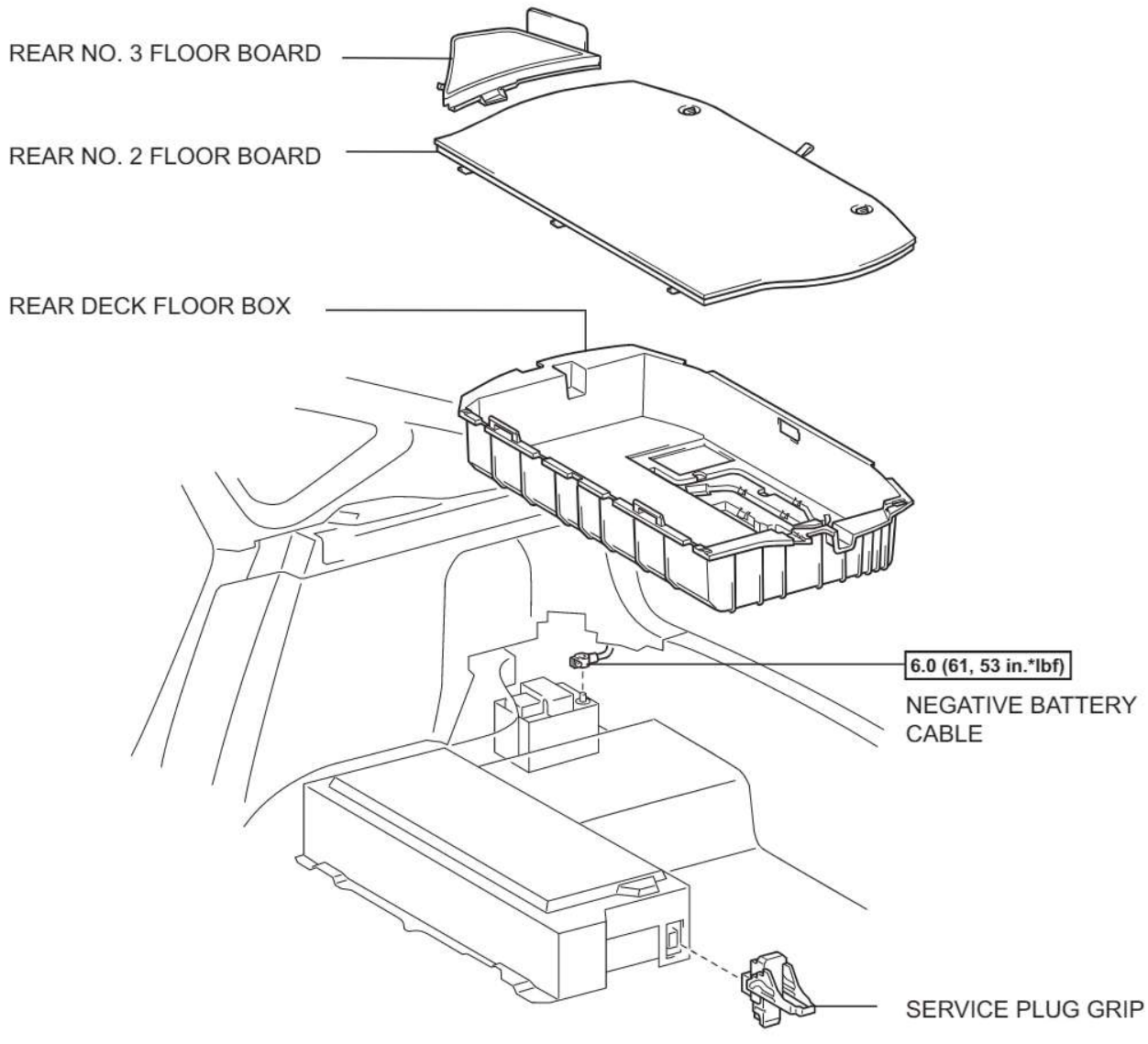


3. **INSTALL FRAME WIRE**
   CAUTION:
   Wear insulating gloves.
   (a) Temporarily install the system main resistor terminal and frame wire, in that order, and tighten a new nut.
   Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)
4. **INSTALL JUNCTION TERMINAL (See page HB-96)**
5. **INSTALL NO. 6 BATTERY CARRIER PANEL (See page HB-97)**
6. **INSTALL BATTERY CARRIER BRACKET (See page HB-97)**
7. **INSTALL DECK TRIM SIDE PANEL LH (See page HB-98)**
8. **INSTALL DECK FLOOR BOX LH (See page HB-98)**
9. **INSTALL REAR NO. 4 FLOOR BOARD (See page HB-98)**
10. **INSTALL REAR SIDE SEAT BACK FRAME LH (See page HB-99)**
11. **INSTALL REAR NO. 1 FLOOR BOARD (See page HB-99)**
12. **INSTALL REAR SEAT CUSHION ASSEMBLY (See page HB-99)**
13. **INSTALL TONNEAU COVER (See page HB-99)**
14. **INSTALL REAR DECK TRIM COVER (See page HB-100)**
15. **INSTALL SERVICE PLUG GRIP (See page HB-154)**
16. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
17. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
18. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
19. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
20. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB

BATTERY CURRENT SENSOR

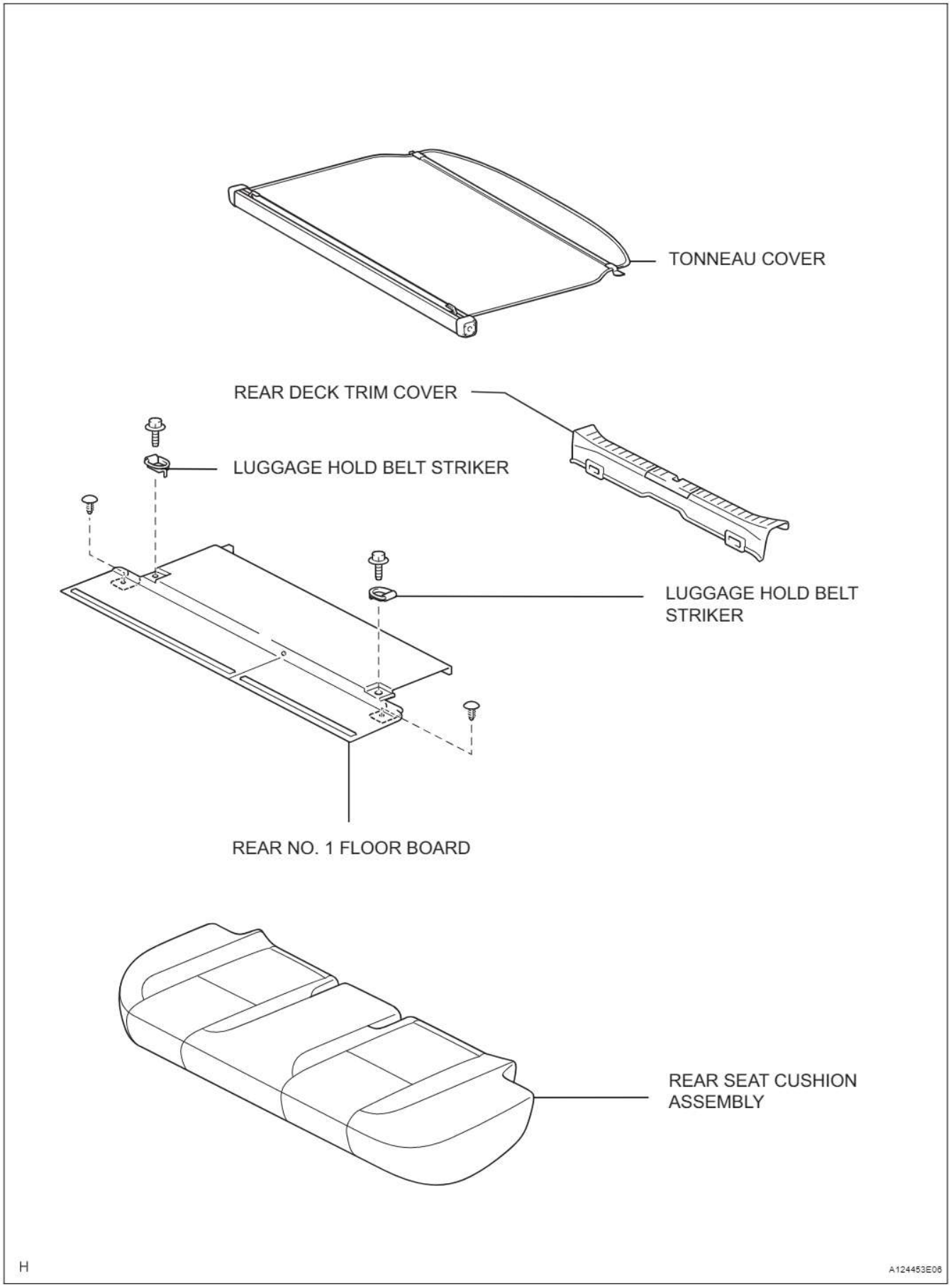
COMPONENTS

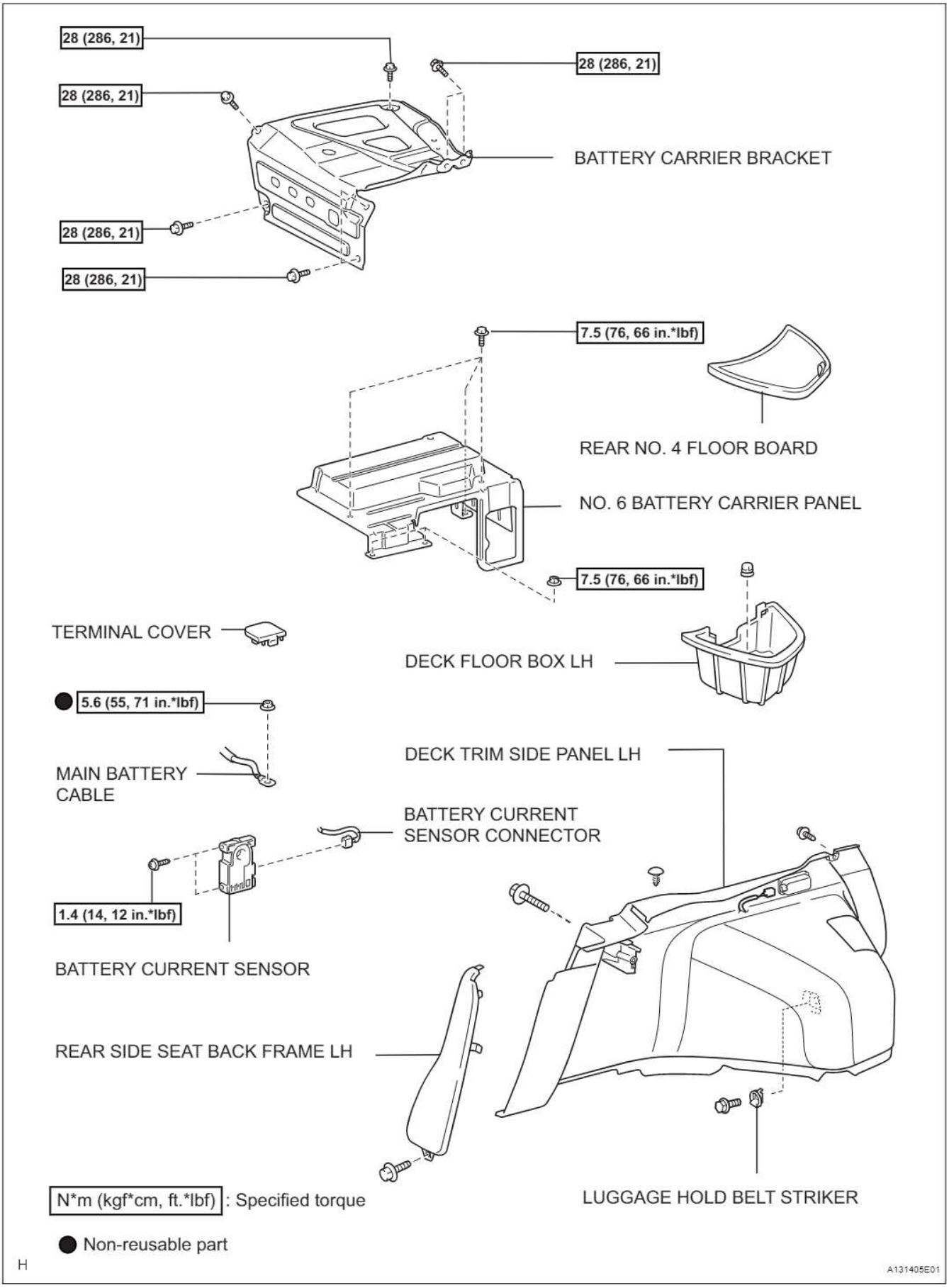


HB

N*m (kgf*cm, ft.*lbf) : Specified torque

O


TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E06


28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
BATTERY CARRIER BRACKET
7.5 (76, 66 in.*lbf)
REAR NO. 4 FLOOR BOARD
NO. 6 BATTERY CARRIER PANEL
7.5 (76, 66 in.*lbf)
TERMINAL COVER
DECK FLOOR BOX LH
5.6 (55, 71 in.*lbf)
MAIN BATTERY CABLE
DECK TRIM SIDE PANEL LH
BATTERY CURRENT SENSOR CONNECTOR
1.4 (14, 12 in.*lbf)
BATTERY CURRENT SENSOR
REAR SIDE SEAT BACK FRAME LH
LUGGAGE HOLD BELT STRIKER
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A131405E01

REMOVAL

CAUTION:

- When working on the high voltage systems, always wear insulating gloves.
- Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.
- After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.

NOTICE:

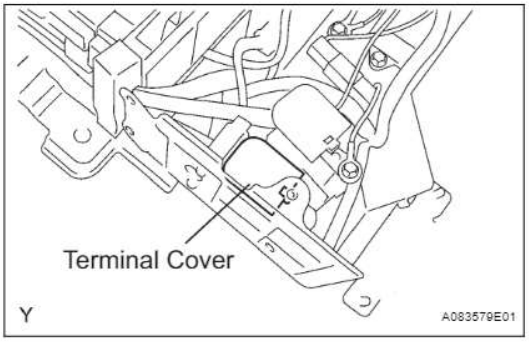
After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. PRECAUTION
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).
2. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
3. REMOVE REAR DECK FLOOR BOX (See page CH-4)
4. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. REMOVE SERVICE PLUG GRIP (See page HB-154)
7. REMOVE REAR DECK TRIM COVER (See page HB-88)
8. REMOVE TONNEAU COVER (See page HB-89)
9. REMOVE REAR SEAT CUSHION ASSEMBLY (See page HB-89)
10. REMOVE REAR NO. 1 FLOOR BOARD (See page HB-89)
11. REMOVE REAR SIDE SEAT BACK FRAME LH (See page HB-89)
12. REMOVE REAR NO. 4 FLOOR BOARD (See page HB-90)
13. REMOVE DECK FLOOR BOX LH (See page HB-90)
14. REMOVE DECK TRIM SIDE PANEL LH (See page HB-90)

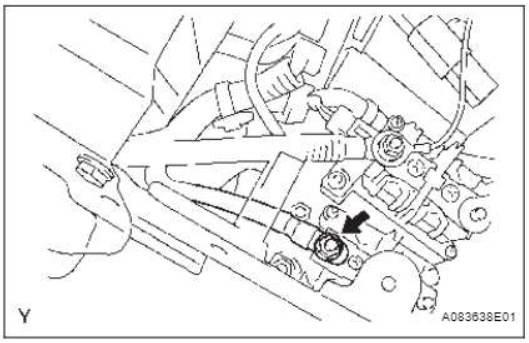
HB

15. **REMOVE BATTERY CARRIER BRACKET (See page HB-91)**

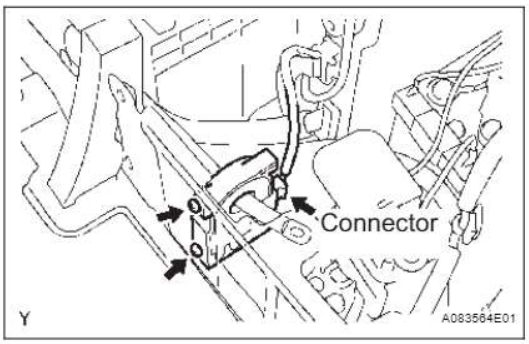
16. **REMOVE NO. 6 BATTERY CARRIER PANEL (See page HB-91)**



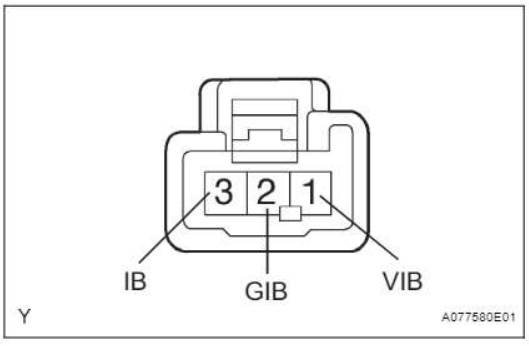
17. **REMOVE BATTERY CURRENT SENSOR**
CAUTION:
Wear insulating gloves.
(a) Remove the terminal cover.



(b) Remove the nut, then disconnect the main battery cable.



(c) Disconnect the connector.
(d) Remove the 2 screws and battery current sensor.



INSPECTION

1. **INSPECT BATTERY CURRENT SENSOR**
(a) Inspect the resistance.
(1) Measure the resistance between terminals 1 (VIB) and 2 (GIB).
Standard resistance

Tester Connection	Resistance
Positive probe to terminal 1 (VIB) Negative probe to terminal 2 (GIB)	3.5 to 4.5 kΩ
Positive probe to terminal 2 (GIB) Negative probe to terminal 1 (VIB)	5 to 7 kΩ

If the the results are not as specified, replace the battery current sensor.

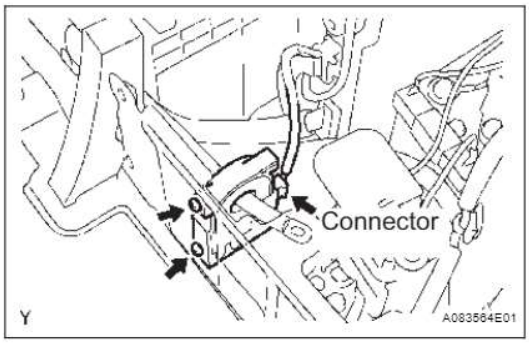
(2) Measure the resistance between terminals 1 (VIB) and 3 (IB).
Standard resistance

Tester Connection	Resistance
Positive probe to terminal 1 (VIB) Negative probe to terminal 3 (IB)	3.5 to 4.5 kΩ
Positive probe to terminal 1 (VIB) Negative probe to terminal 3 (IB)	5 to 7 kΩ

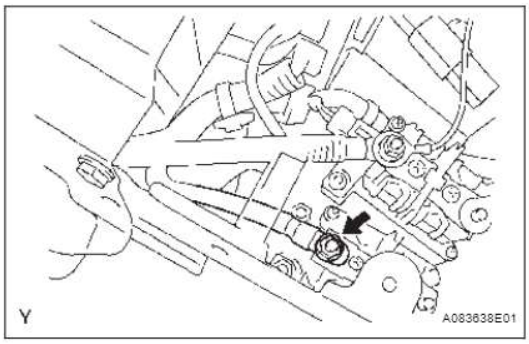
If the results are not as specified, replace the battery current sensor.

(3) Measure the resistance between terminals 2 (GIB) and 3 (IB).
Standard resistance:
0.2 kΩ or less
NOTICE:
Even if the probes are changed around, the resistance will not vary.
If the result is not as specified, replace the battery current sensor.

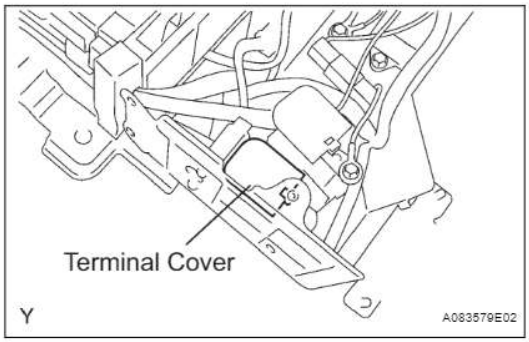
INSTALLATION



1. **INSTALL BATTERY CURRENT SENSOR**
CAUTION:
Wear insulating gloves.
(a) Install the battery current sensor with the 2 screws.
Torque: 1.4 N*m (14 kgf*cm, 12 in.*lbf)
(b) Connect the connector.



(c) Install the main battery cable with a new nut.
Torque: 5.6 N*m (57 kgf*cm, 50 in.*lbf)



(d) Install the terminal cover.

2. **INSTALL NO. 6 BATTERY CARRIER PANEL (See page HB-97)**
3. **INSTALL BATTERY CARRIER BRACKET (See page HB-97)**
4. **INSTALL DECK TRIM SIDE PANEL LH (See page HB-98)**
5. **INSTALL DECK FLOOR BOX LH (See page HB-98)**
6. **INSTALL REAR NO. 4 FLOOR BOARD (See page HB-98)**

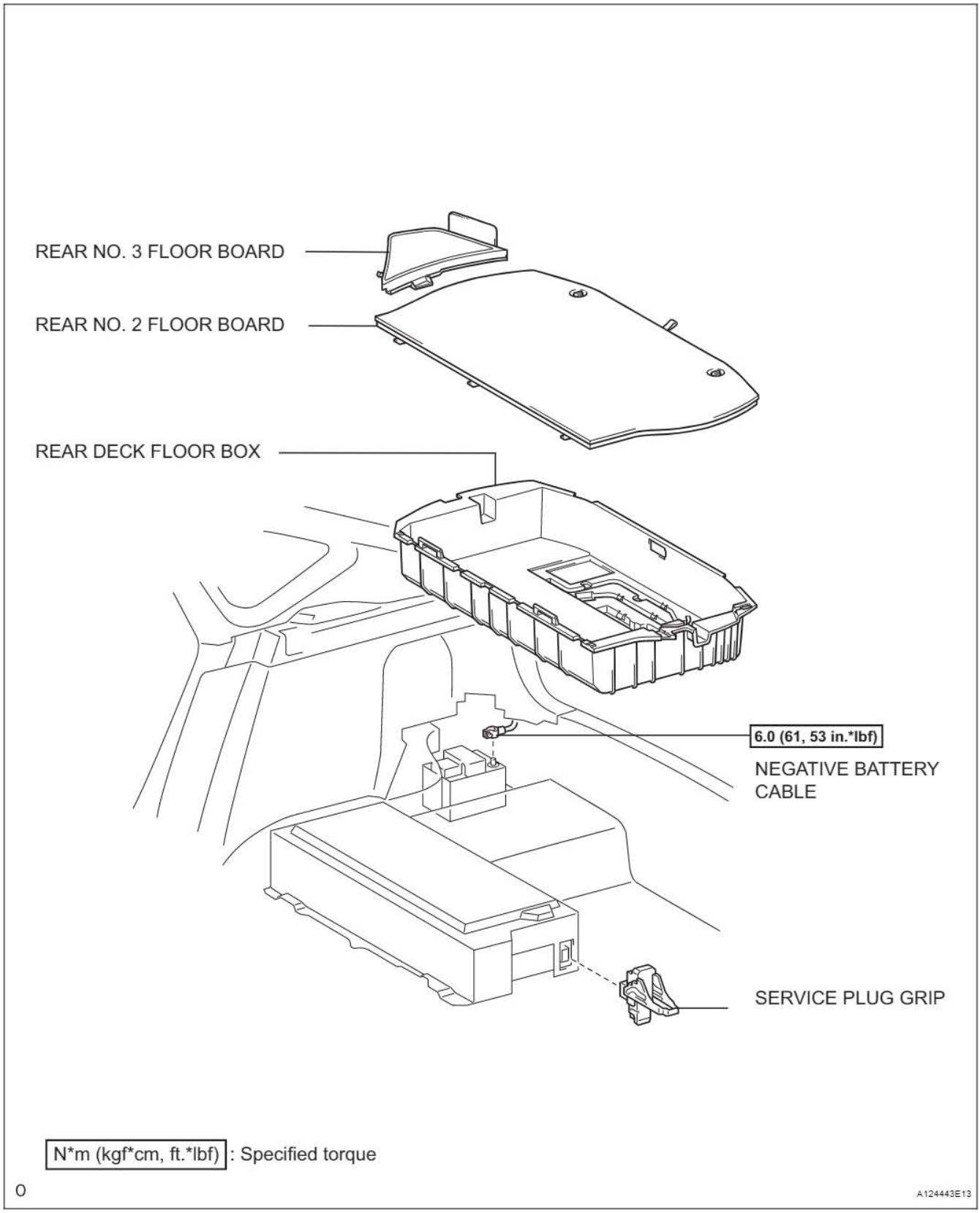
HB

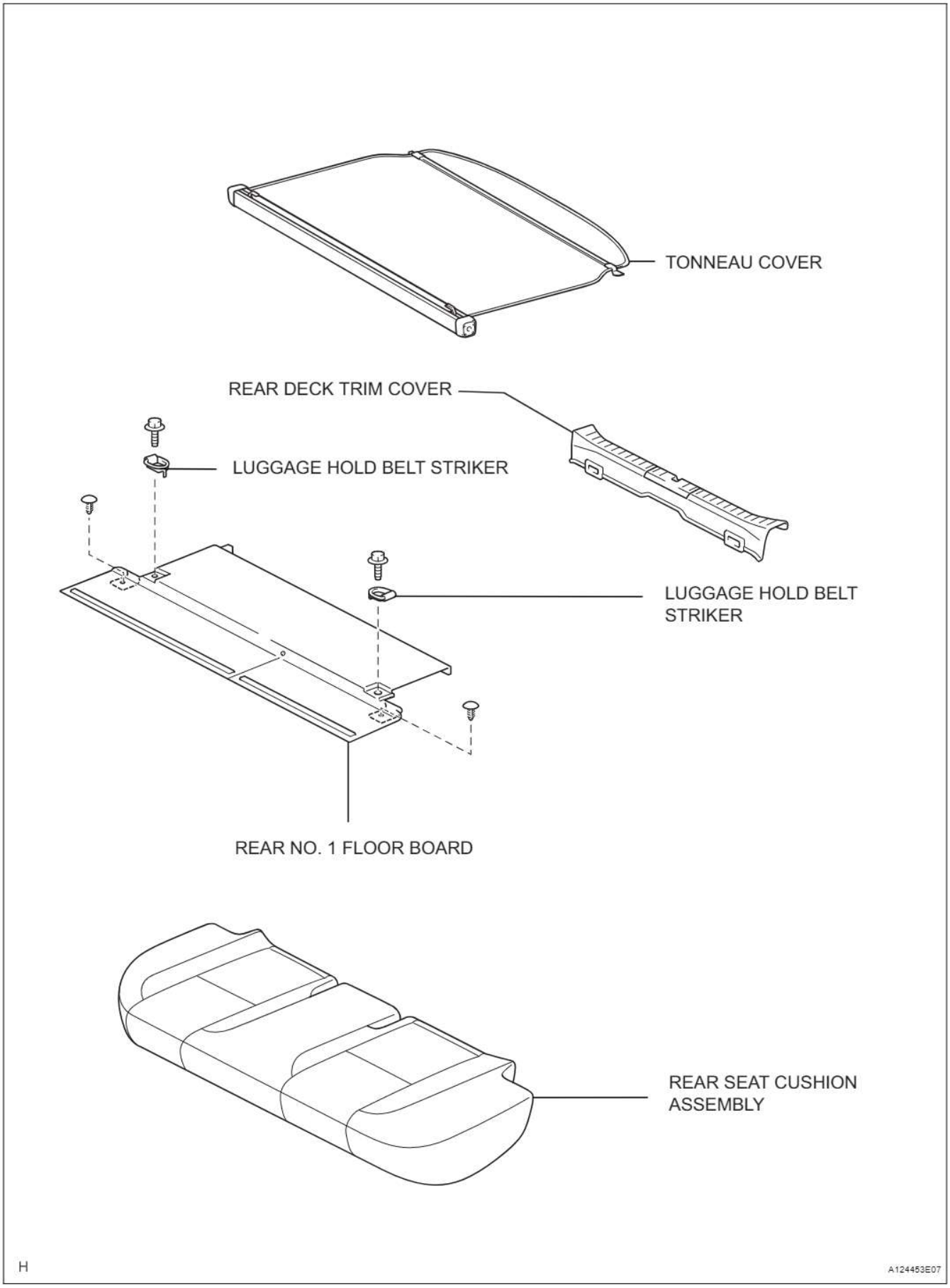
7. INSTALL REAR SIDE SEAT BACK FRAME LH (See page HB-99)
8. INSTALL REAR NO. 1 FLOOR BOARD (See page HB-99)
9. INSTALL REAR SEAT CUSHION ASSEMBLY (See page HB-99)
10. INSTALL TONNEAU COVER (See page HB-99)
11. INSTALL REAR DECK TRIM COVER (See page HB-100)
12. INSTALL SERVICE PLUG GRIP (See page HB-154)
13. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)
14. INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)
15. INSTALL REAR DECK FLOOR BOX (See page CH-8)
16. INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)
17. PERFORM INITIALIZATION
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

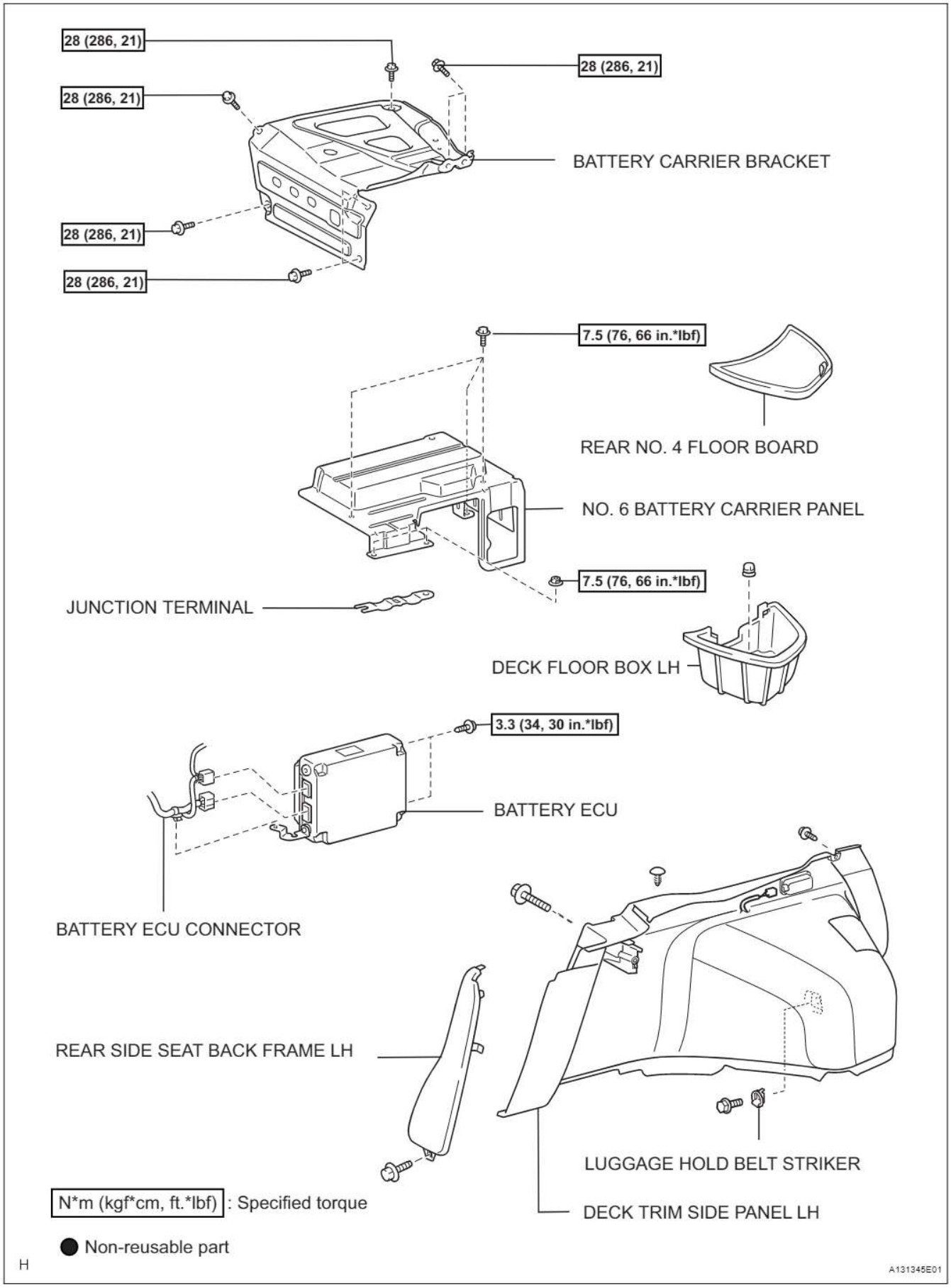
HB

BATTERY ECU

COMPONENTS




TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E07


28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
28 (286, 21)
BATTERY CARRIER BRACKET
7.5 (76, 66 in.*lbf)
REAR NO. 4 FLOOR BOARD
NO. 6 BATTERY CARRIER PANEL
7.5 (76, 66 in.*lbf)
JUNCTION TERMINAL
DECK FLOOR BOX LH
3.3 (34, 30 in.*lbf)
BATTERY ECU
BATTERY ECU CONNECTOR
REAR SIDE SEAT BACK FRAME LH
LUGGAGE HOLD BELT STRIKER
DECK TRIM SIDE PANEL LH
N*m (kgf*cm, ft.*lbf) : Specified torque
Non-reusable part
H
A131345E01

HB

REMOVAL

CAUTION:

- When working on the high voltage systems, always wear insulating gloves.
- Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.
- After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.

NOTICE:

After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. PRECAUTION
   CAUTION:
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (e.g. installing or removing the parts, inspection, replacing the parts), be sure to follow the procedures (see page HB-77).
2. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
3. REMOVE REAR DECK FLOOR BOX (See page CH-4)
4. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
6. REMOVE SERVICE PLUG GRIP (See page HB-154)
7. REMOVE REAR DECK TRIM COVER (See page HB-88)
8. REMOVE TONNEAU COVER (See page HB-89)
9. REMOVE REAR SEAT CUSHION ASSEMBLY (See page HB-89)
10. REMOVE REAR NO. 1 FLOOR BOARD (See page HB-89)
11. REMOVE REAR SIDE SEAT BACK FRAME LH (See page HB-89)
12. REMOVE REAR NO. 4 FLOOR BOARD (See page HB-90)
13. REMOVE DECK FLOOR BOX LH (See page HB-90)
14. REMOVE DECK TRIM SIDE PANEL LH (See page HB-90)

HB

15. **REMOVE BATTERY CARRIER BRACKET (See page HB-91)**
16. **REMOVE NO. 6 BATTERY CARRIER PANEL (See page HB-91)**
17. **REMOVE JUNCTION TERMINAL (See page HB-92)**
18. **REMOVE BATTERY ECU**

CAUTION:
Wear insulating gloves.

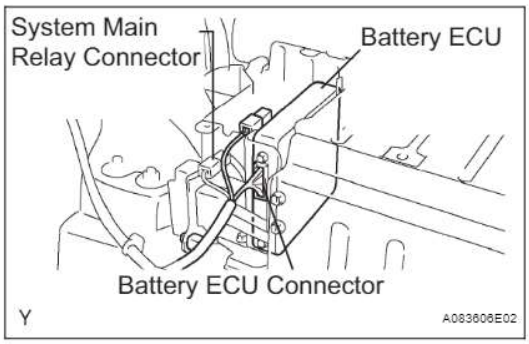
(a) Disconnect the system main relay connector.
CAUTION:
Insulate the disconnected connectors with insulating tape.

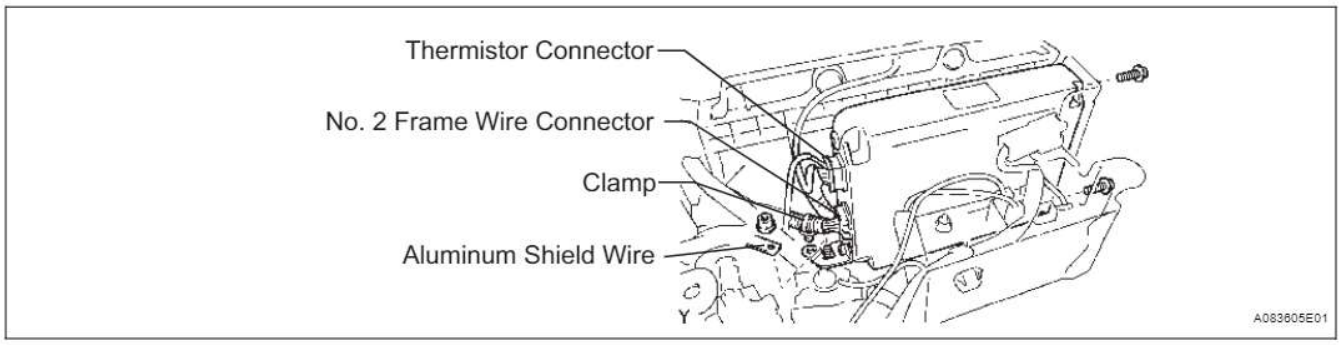
(b) Disconnect the battery ECU connector.
CAUTION:
Insulate the disconnected connectors with insulating tape.

(c) Disconnect the thermistor connector.
CAUTION:
Insulate the disconnected connectors with insulating tape.

(d) Remove the clamp, then disconnect the No. 2 frame wire connector.
CAUTION:
Insulate the disconnected connectors with insulating tape.

(e) Remove the nut, then disconnect the aluminum shield wire of the main battery cable.



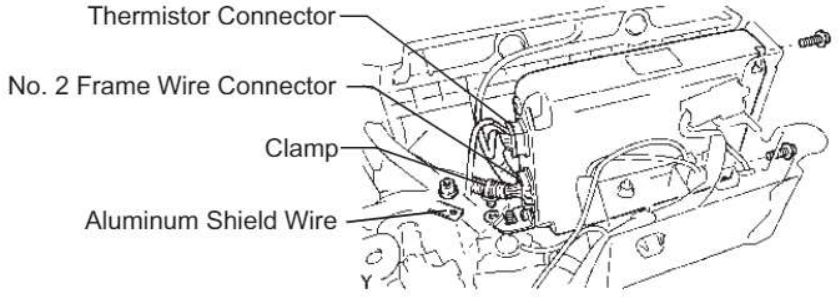


(f) Remove the 2 screws and battery ECU.

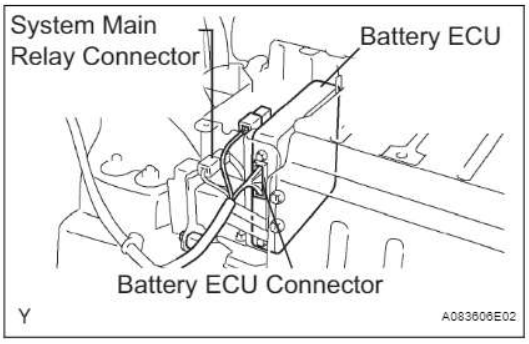
HB

INSTALLATION

1. **INSTALL BATTERY ECU**
   CAUTION:
   Wear insulating gloves.
   (a) Install the battery ECU with the 2 screws.
   Torque: 3.3 N*m (34 kgf*cm, 29 in.*lbf)



   (b) Install the aluminum shield wire of the main battery cable together with the battery ECU with a new nut.
   Torque: 3.3 N*m (34 kgf*cm, 29 in.*lbf)
   (c) Connect the clamp and No. 2 frame wire connector.
   (d) Connect the thermistor connector.
   (e) Connect the system main relay connector.



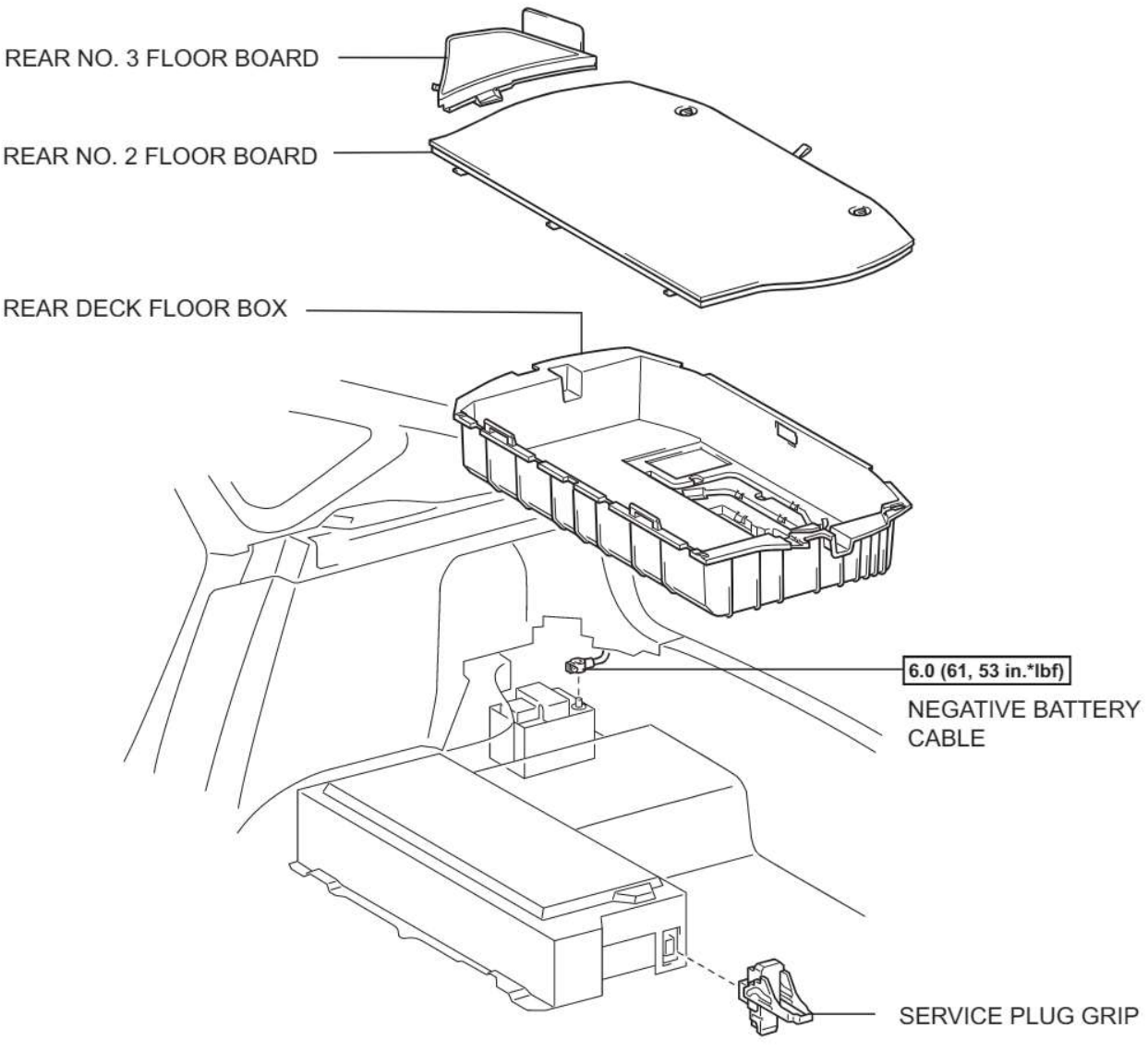
2. **INSTALL JUNCTION TERMINAL (See page HB-96)**
3. **INSTALL NO. 6 BATTERY CARRIER PANEL (See page HB-97)**
4. **INSTALL BATTERY CARRIER BRACKET (See page HB-97)**
5. **INSTALL DECK TRIM SIDE PANEL LH (See page HB-98)**
6. **INSTALL DECK FLOOR BOX LH (See page HB-98)**
7. **INSTALL REAR NO. 4 FLOOR BOARD (See page HB-98)**
8. **INSTALL REAR SIDE SEAT BACK FRAME LH (See page HB-99)**
9. **INSTALL REAR NO. 1 FLOOR BOARD (See page HB-99)**
10. **INSTALL REAR SEAT CUSHION ASSEMBLY (See page HB-99)**
11. **INSTALL TONNEAU COVER (See page HB-99)**
12. **INSTALL REAR DECK TRIM COVER (See page HB-100)**
13. **INSTALL SERVICE PLUG GRIP (See page HB-154)**
14. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
15. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**

HB

16. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
17. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
18. **PERFORM INITIALIZATION**
    (a) Perform initialization (see page IN-32).
    NOTICE:
    Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

SERVICE PLUG GRIP

COMPONENTS



REMOVAL

CAUTION:

- **When working on the high voltage systems, always wear insulating gloves.**
- **Keep the removed service plug in your pocket to prevent other technicians from reconnecting it while you are servicing the vehicle.**
- **After removing the service plug grip, do not touch the high voltage connectors and terminals for 5 minutes.**

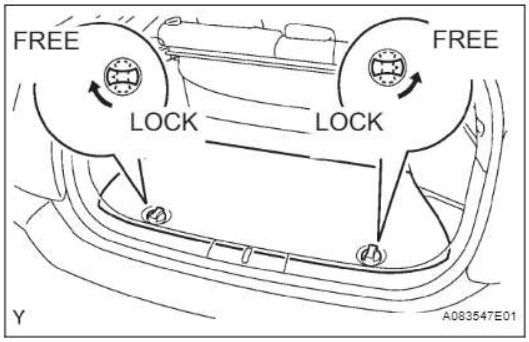
NOTICE:

After removing the service plug grip, do not operate the power switch as it may damage the hybrid vehicle control ECU.

1. **PRECAUTION**

   CAUTION:

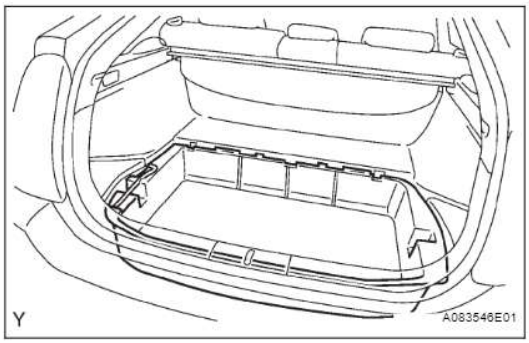
   The hybrid system uses high voltage circuits, so improper handling could cause an electric shock or leakage. During service (including installation/ removal, inspection and replacement of parts), be sure to follow the procedures (see page HB-77).



2. **REMOVE REAR NO. 2 FLOOR BOARD**

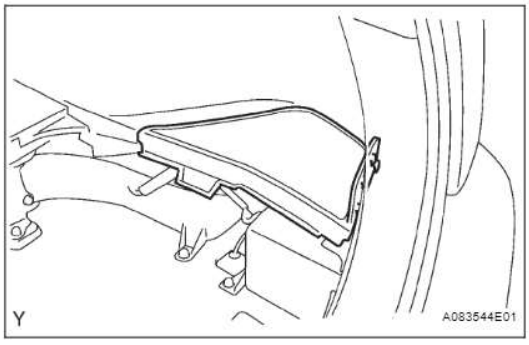
   (a) As shown in the illustration, turn the knob to release the lock.

   (b) Remove the rear floor board No. 2.



3. **REMOVE REAR DECK FLOOR BOX**

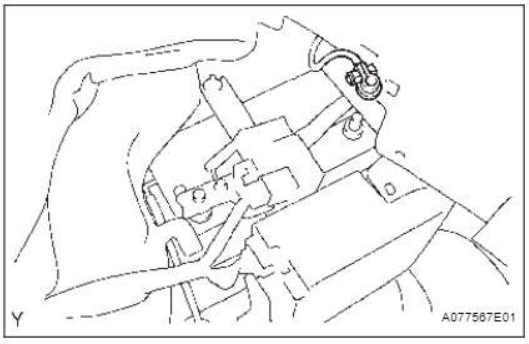
   (a) Remove the deck floor box rear shown in the illustration.



4. **REMOVE REAR NO. 3 FLOOR BOARD**

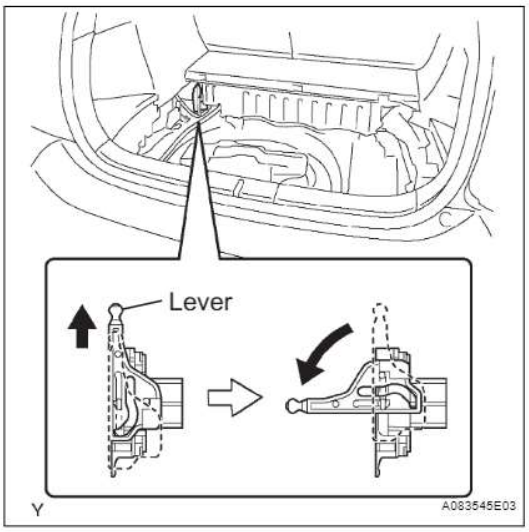
   (a) Remove the rear floor board shown in the illustration.

HB



5. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

(a) Disconnect the cable from the negative terminal of the 12 V auxiliary battery.



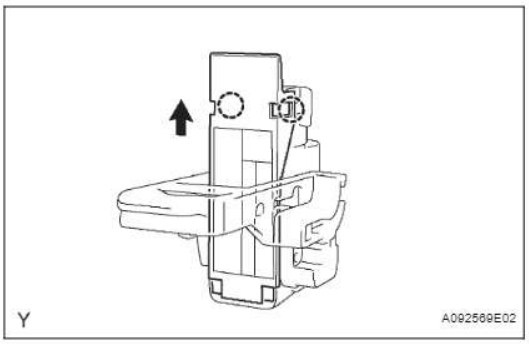
6. REMOVE SERVICE PLUG GRIP

CAUTION:

Wear insulating gloves.

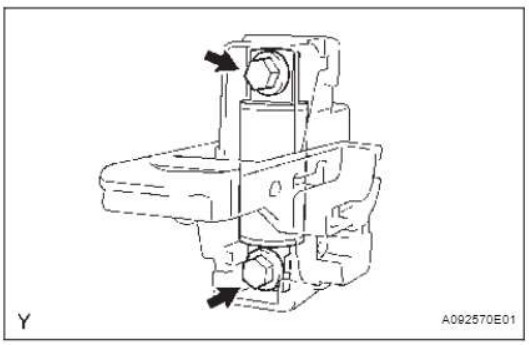
(a) Slide up the lever of the service plug grip. Remove the service plug grip while turning the lever to the left.

(b) Insulate the service plug with insulating tape.



7. REMOVE BATTERY POSITIVE TERMINAL

(a) Remove the 2 joints shown in the illustration, then remove the service plug grip cover.

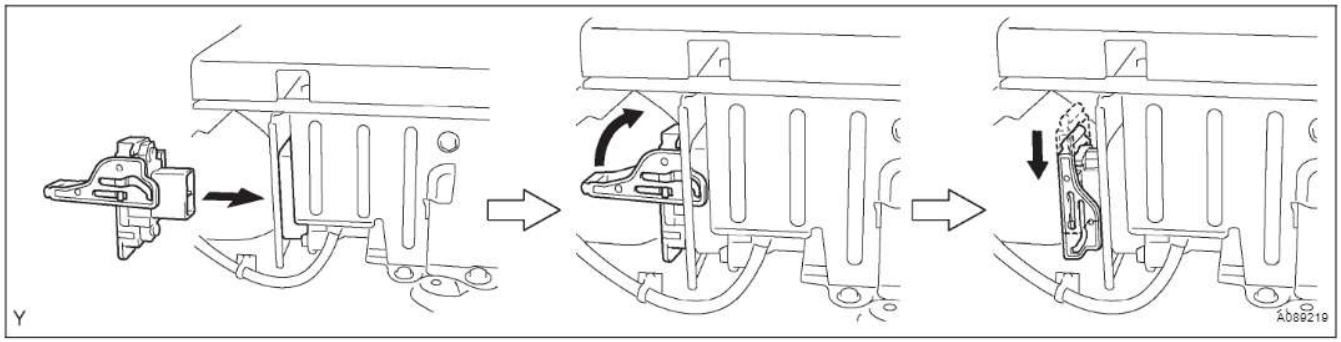


(b) Remove the 2 bolts and electric vehicle fuse.

INSTALLATION

1. **INSTALL BATTERY POSITIVE TERMINAL**
   (a) Install the electric vehicle fuse with the 2 bolts.
   Torque: 5.4 N*m (55 kgf*cm, 48 in.*lbf)
   (b) Fit the 2 joints, then install the service plug grip cover.

2. **INSTALL SERVICE PLUG GRIP**
   CAUTION:
   Wear insulating gloves.
   (a) Joint the service plug grip with the HV battery.
   (b) While pushing the service plug grip to the right, rotate the lever to the right.
   (c) Slide the lever down to lock the service plug grip in place.
   NOTICE:
   - **The service plug grip must be locked. If not, it may cause DTCs to output.**
   - **Do not operate the power switch when the service plug grip is not properly locked. It may damage the hybrid vehicle control ECU in rare cases.**

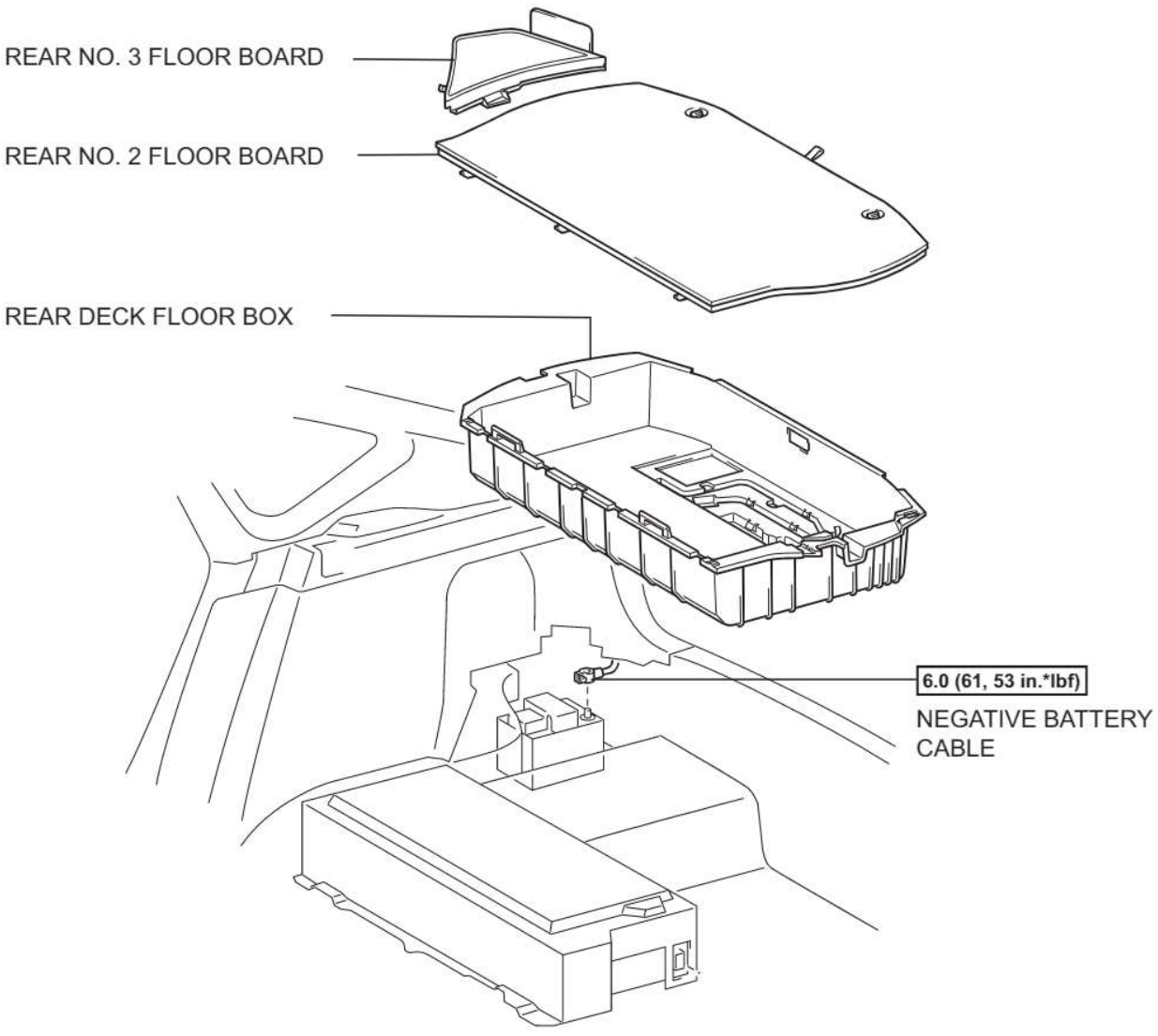


3. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**
4. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**
5. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**
6. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**
7. **PERFORM INITIALIZATION**
   (a) Perform initialization (see page IN-32).
   NOTICE:
   Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB

BATTERY BLOWER

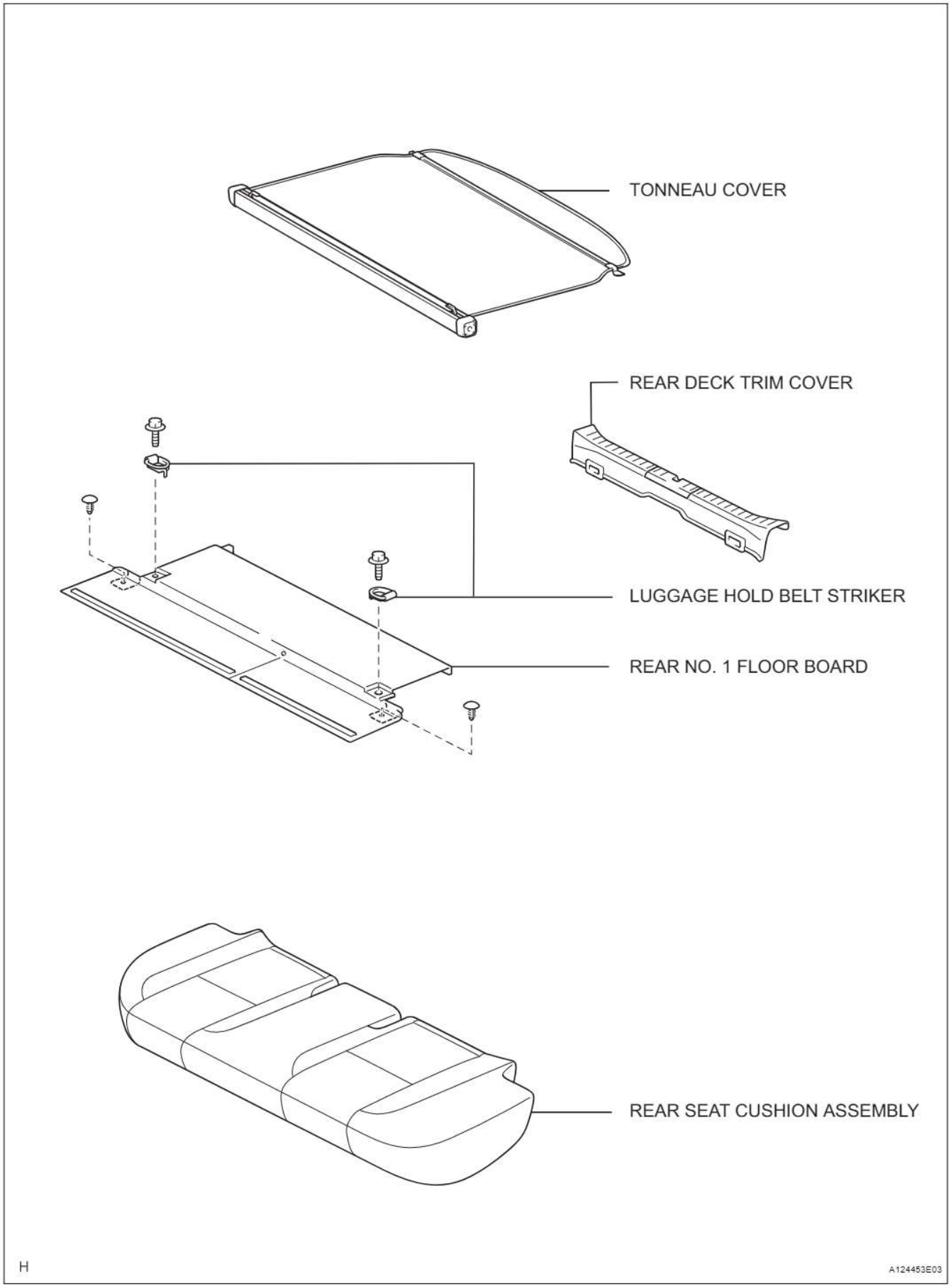
COMPONENTS



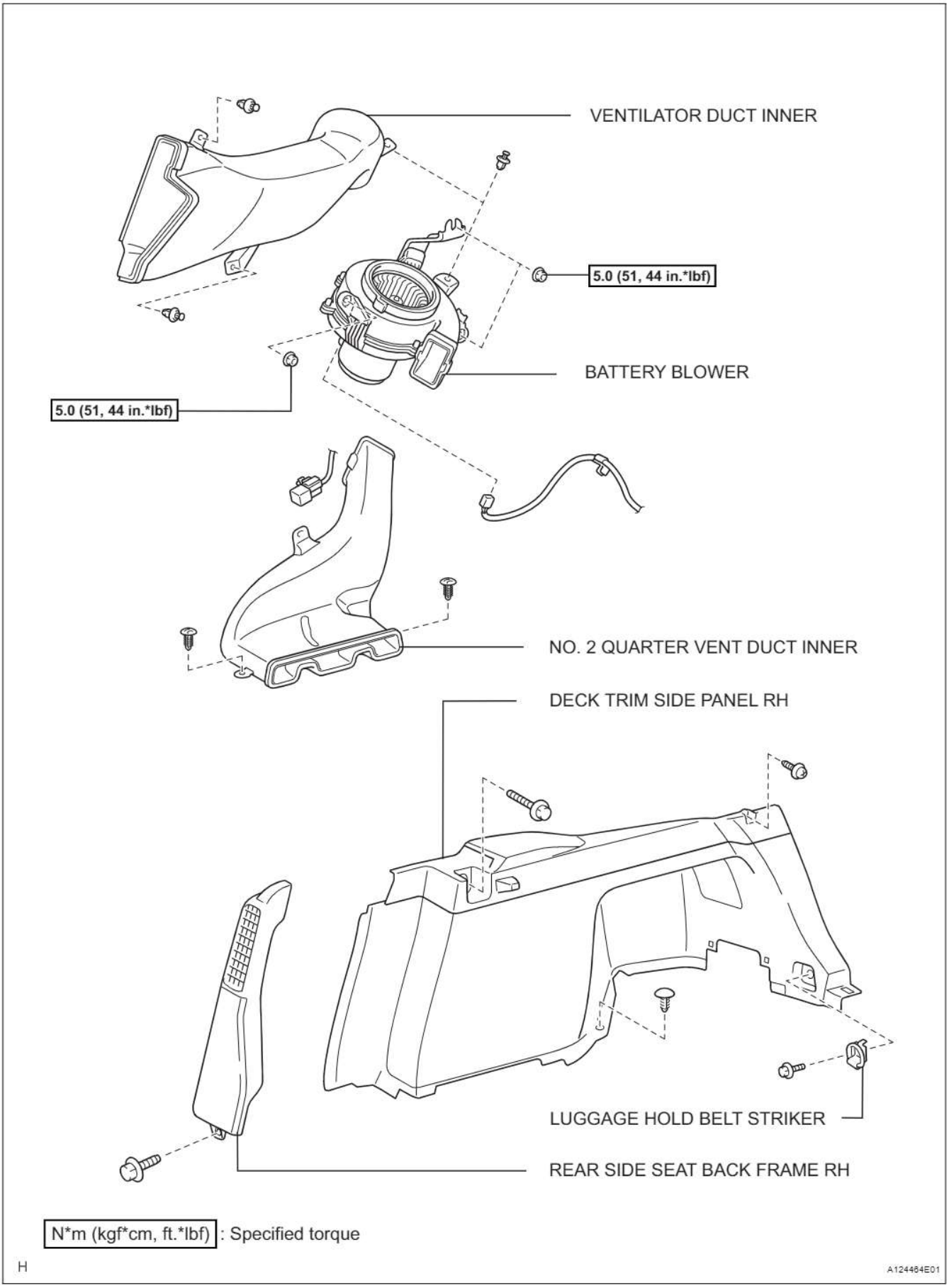
N*m (kgf*cm, ft.*lbf) : Specified torque

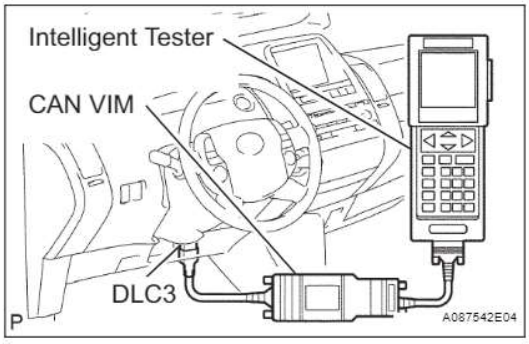
O

A124443E09


TONNEAU COVER
REAR DECK TRIM COVER
LUGGAGE HOLD BELT STRIKER
REAR NO. 1 FLOOR BOARD
REAR SEAT CUSHION ASSEMBLY
H
A124453E03

HB


VENTILATOR DUCT INNER
5.0 (51, 44 in.*lbf)
BATTERY BLOWER
5.0 (51, 44 in.*lbf)
NO. 2 QUARTER VENT DUCT INNER
DECK TRIM SIDE PANEL RH
LUGGAGE HOLD BELT STRIKER
REAR SIDE SEAT BACK FRAME RH
N*m (kgf*cm, ft.*lbf) : Specified torque
H
A124464E01



ON-VEHICLE INSPECTION

1. INSPECT BATTERY BLOWER

(a) Check the operation.

(1) Connect the intelligent tester to the DLC3.

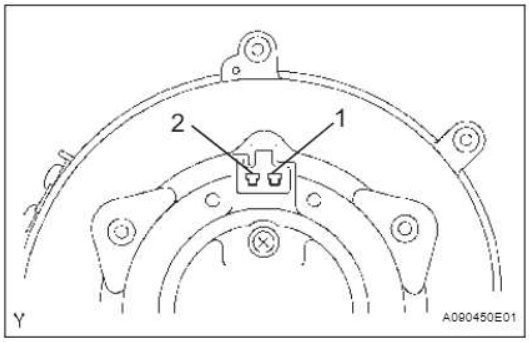
(2) Turn the power switch ON (IG).

(3) Select the item:
DIAGNOSIS / OBD/MOBD / HV BATTERY / ACTIVE TEST / COOLING FAN SPD / 1 to 6.
NOTICE:
If the check results are normal, do not perform the following check.

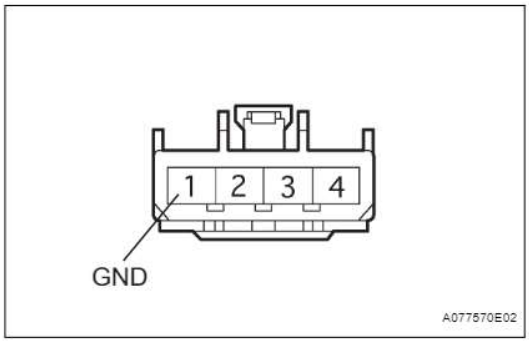
(b) Inspect the resistance.

(1) Remove the service plug grip (see page HB-153).

(2) Disconnect the connector of the battery blower motor.



(3) Measure the resistance between terminals 1 and 2 of the connector.
Standard resistance:
9 Ω or less
If the result is not as specified, replace the battery blower assembly.

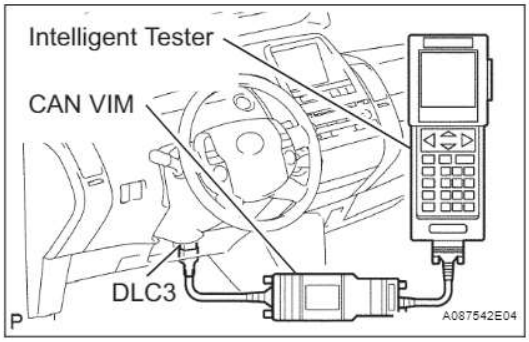


(c) Inspect the voltage.

(1) Connect the connector of the blower motor.

(2) Measure the resistance between terminal 1 (GND) of the blower motor control connector and body ground.
Standard resistance:
1 Ω or less

(3) Connect the negative terminal of the auxiliary battery.
Torque: 6.0 N*m (61 kgf*cm, 53 in.*lbf)

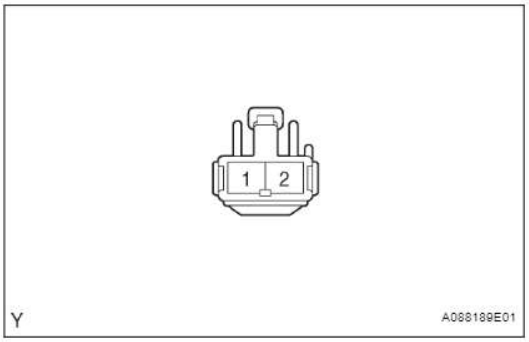


(4) Connect the intelligent tester to the DLC3.

(5) Turn the power switch ON (IG).

(6) Select the item:
DIAGNOSIS / OBD/MOBD / HV BATTERY / ACTIVE TEST / COOLING FAN SPD / 1.

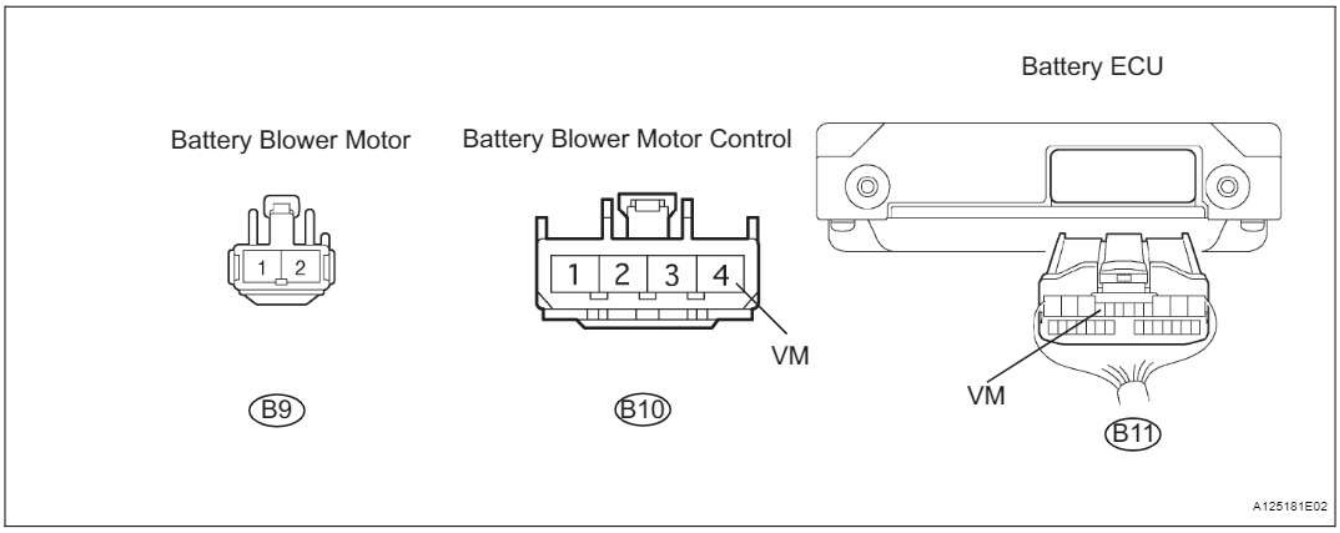
HB



(7) Measure the voltage between terminals 1 (GND) of the blower motor connector and the body ground.
Standard voltage:
9 to 14 V
NOTICE:
If there is no voltage, there may be a defect in the power supply system relays or in the wire harness.

(8) Turn the power switch OFF, then disconnect the cable from the negative terminal of the auxiliary battery.

(9) Disconnect the battery blower motor, battery blower motor control, and connector of the battery ECU.



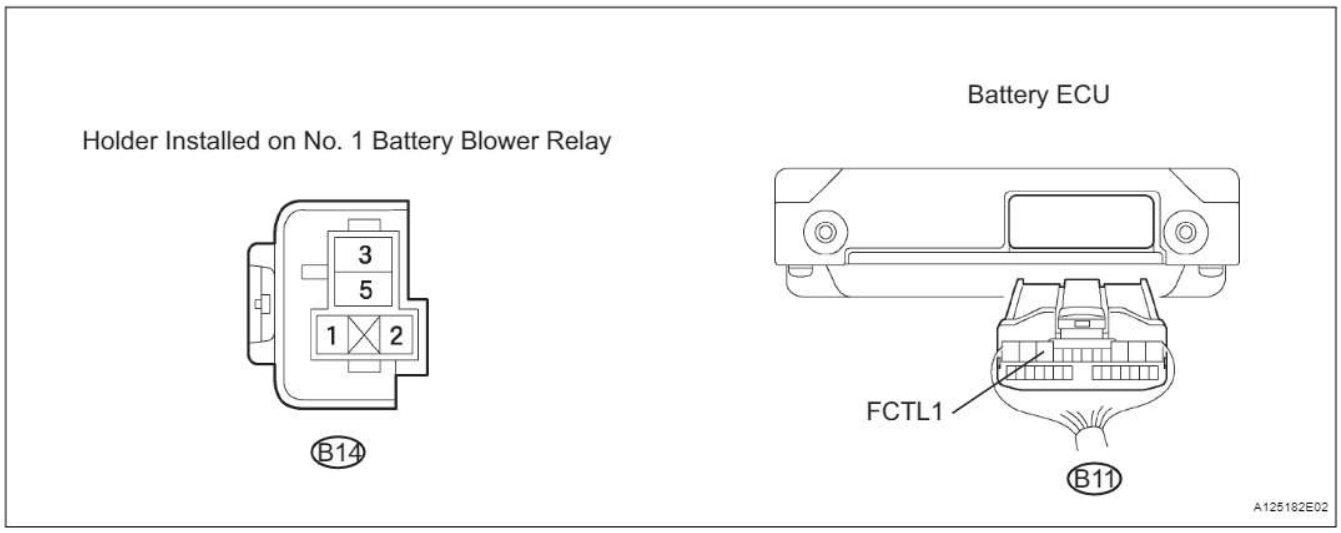
HB

(10) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
B9-1 - B10-4 (VM)	Below 1 Ω
B9-1 - B11-9 (VM)	Below 1 Ω
B9-1 - Body ground	10 kΩ or higher

NOTICE:
If the result is not as specified, repair or replace the wire harness and recheck the blower motor operation by the intelligent tester.

(11) Measure the resistance of the wire harness side connectors.

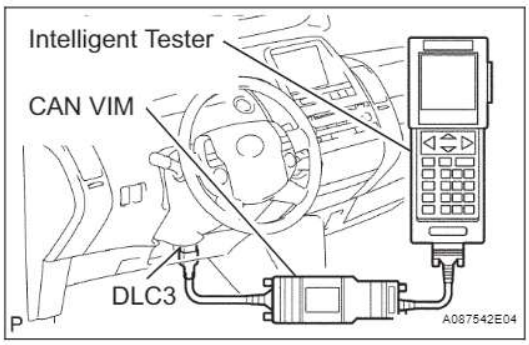


Standard resistance

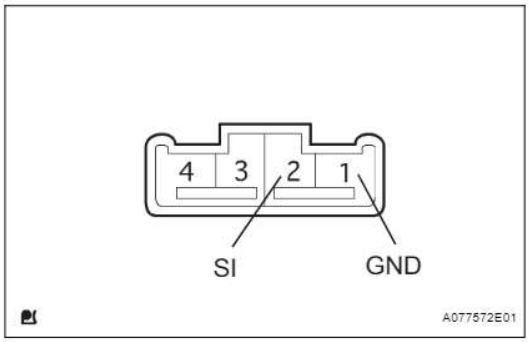
Tester Connection	Specified Condition
B14-2 - B11-10 (FCTL1)	Below 1 Ω
B14-2 - Body ground	10 kΩ or higher

NOTICE:
If the result is not as specified, repair or replace the wire harness and recheck the blower motor operation by the intelligent tester.

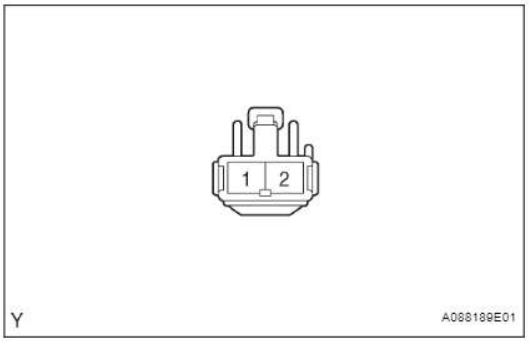
(12) Reconnect all the disconnected connectors.
NOTICE:
Do not connect the service plug grip.



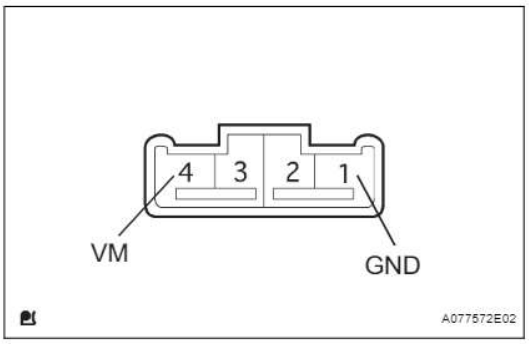
(13) Connect the intelligent tester to the DLC3.
(14) Turn the power switch ON (IG).
(15) Select the item:
DIAGNOSIS / OBD/MOBD / HV BATTERY / ACTIVE TEST / COOLING FAN SPD / 1.



(16) Measure the voltage between terminals 1 (GND) and 2 (SI) of the battery blower motor control.
Standard voltage:
1 V or more
NOTICE:
If the result is not as specified, repair or replace the wire harness and recheck the blower motor operation by the intelligent tester.



(17) Measure the voltage between the terminals on the blower motor connector.
Standard voltage:
2 to 4 V
NOTICE:
If the result is not as specified, repair or replace the wire harness and recheck the blower motor operation by the intelligent tester.



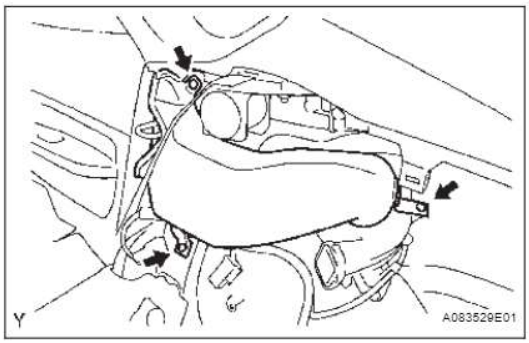
(18) Measure the voltage between terminals 1 (GND) and 4 (VM) of the blower motor control.
HINT:
A = (Measured voltage between terminals 1 (GND) of the blower motor connector and the body ground.)
Standard condition:
A - 4 V to A - 2 V
NOTICE:
If the result is not as specified, repair or replace the wire harness and recheck the blower motor operation by the intelligent tester.

(19) Recheck the blower motor operation by the intelligent tester, and perform the inspection again.

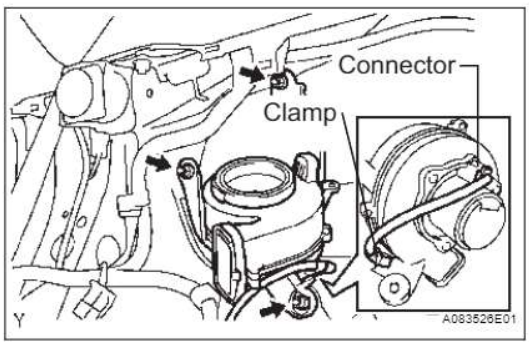
HB

REMOVAL

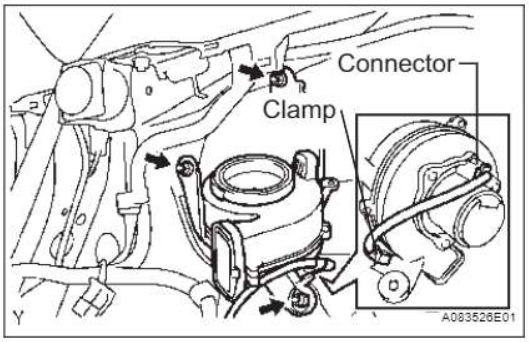
1. REMOVE REAR NO. 2 FLOOR BOARD (See page CH-4)
2. REMOVE REAR DECK FLOOR BOX (See page CH-4)
3. REMOVE REAR NO. 3 FLOOR BOARD (See page CH-4)
4. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
   CAUTION:
   Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.
5. REMOVE REAR DECK TRIM COVER (See page HB-88)
6. REMOVE TONNEAU COVER (See page HB-89)
7. REMOVE REAR SEAT CUSHION ASSEMBLY (See page HB-89)
8. REMOVE REAR NO. 1 FLOOR BOARD (See page HB-89)
9. REMOVE REAR SIDE SEAT BACK FRAME RH (See page HB-89)
10. REMOVE DECK TRIM SIDE PANEL RH (See page HB-90)
11. REMOVE NO. 2 QUARTER VENT DUCT INNER (See page HB-91)
12. REMOVE VENTILATOR DUCT INNER
    (a) Remove the 3 clips and ventilator duct inner.

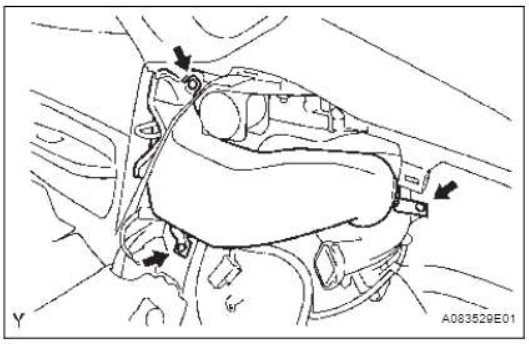


13. REMOVE BATTERY BLOWER
    (a) Remove the 3 nuts, then disconnect the battery blower assembly from the vehicle.
    (b) Remove the connector, clamp and battery blower.



HB





INSTALLATION

1. **INSTALL BATTERY BLOWER**
   (a) Connect the connector to the battery blower.
   (b) Install the clamp on the battery blower.
   (c) Install the battery blower with the 3 nuts.
   Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)

2. **INSTALL VENTILATOR DUCT INNER**
   (a) Install the ventilator duct inner with the 3 clips.

3. **INSTALL NO. 2 QUARTER VENT DUCT INNER (See page HB-97)**

4. **INSTALL DECK TRIM SIDE PANEL RH (See page HB-98)**

5. **INSTALL REAR SIDE SEAT BACK FRAME RH (See page HB-99)**

6. **INSTALL REAR NO. 1 FLOOR BOARD (See page HB-99)**

7. **INSTALL REAR SEAT CUSHION ASSEMBLY (See page HB-99)**

8. **INSTALL TONNEAU COVER (See page HB-99)**

9. **INSTALL REAR DECK TRIM COVER (See page HB-100)**

10. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL (See page CH-7)**

11. **INSTALL REAR NO. 3 FLOOR BOARD (See page CH-8)**

12. **INSTALL REAR DECK FLOOR BOX (See page CH-8)**

13. **INSTALL REAR NO. 2 FLOOR BOARD (See page CH-8)**

14. **PERFORM INITIALIZATION**
   (a) Perform initialization (see page IN-32).
   NOTICE:
   Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.

HB