English

For Dismantlers

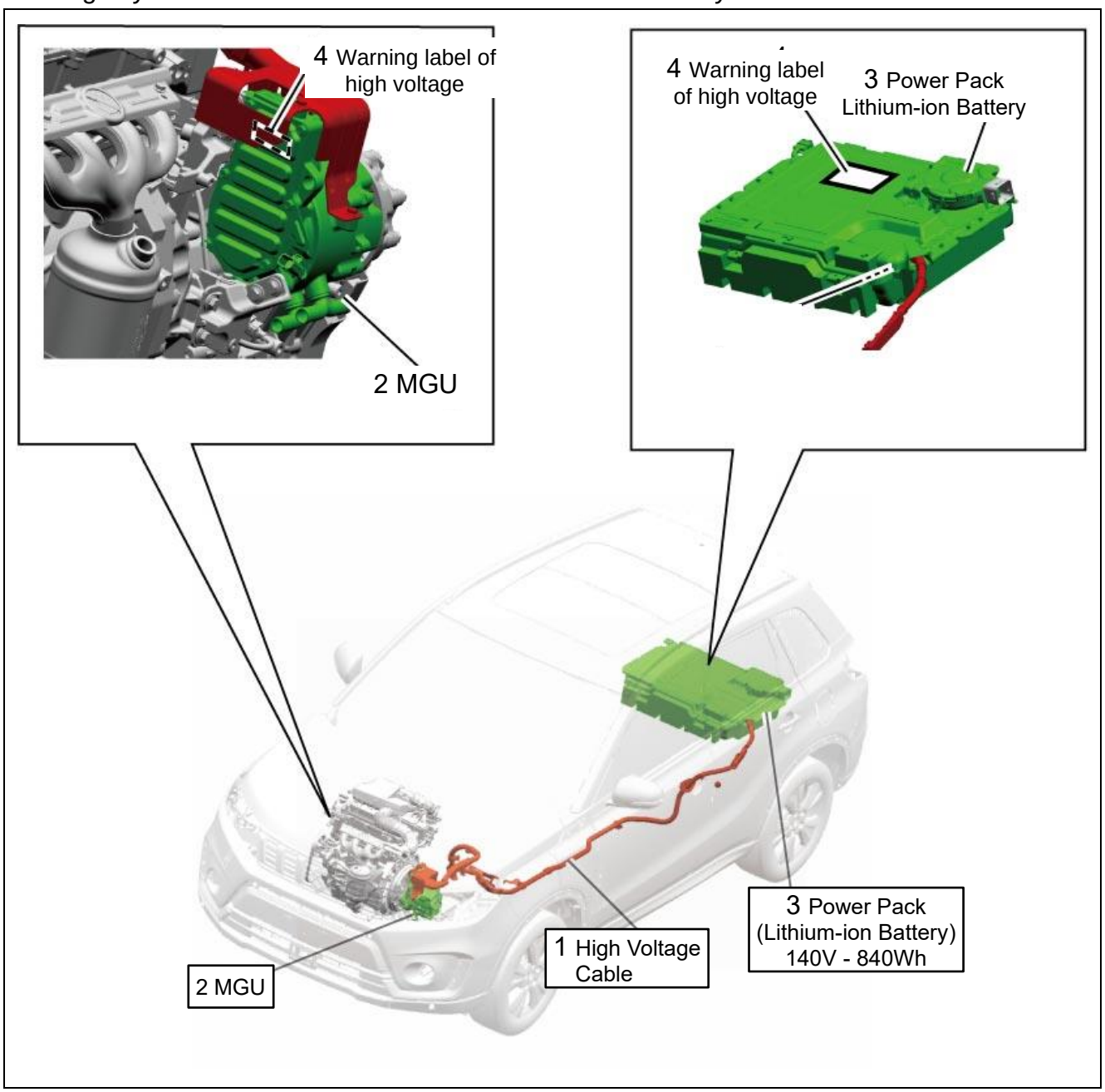
VITARA
S-CROSS

Strong Hybrid System
Lithium-ion Battery (140V – 840Wh)
Removal Manual

Precautions for High Voltage Systems ⚠

The hybrid system has a high voltage circuit. Improper handling may cause electric shock, electric leakage, etc. Therefore, perform proper work in accordance with this manual.

- Since components with strong magnetic force are used, people with electronic medical equipment such as pacemakers should not handle high voltage systems.
- High voltage wiring (high voltage cable) (1) which is a wire harness of a high voltage circuit and its connector are unified in orange. A Warning label (4) of high voltage is affixed on the MGU (2) and the power pack (3). Handle the wiring and components of these high voltage systems with care and do not touch them carelessly.



• When removing the High Voltage Power Pack Assembly (Lithium-Ion Battery), pay attention to the following points and take measures to prevent electric shock.

- Call attention to other service staff during the work, such as marking the vehicle as “Do not touch during high voltage work” (see last page on this manual).
- Do not carry metal products (such as pens) with a short-circuit risk or magnetic recording media (such as cash cards) with a risk of data corruption.
- Inspect insulating gloves for damage such as cracks, tears and moisture before using, and do not use insulating gloves with these abnormalities. Also, be careful of damage such as tears while using it.

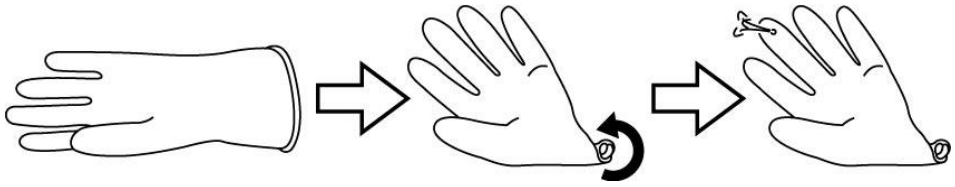
NOTE:

For damage such as cracks and tears, check as follows.

1. Place the thumb side down to maintain the shape of the insulated glove.

2. Up roll the insulated gloves to wrist with keeping the air inside the gloves from leakage.

3. Check for air leaks from the inflated insulated gloves.



- Wear insulated gloves and remove the service plug. Also, the removed service plug is carried in a pocket so as not to be erroneously connected by other service staff during the work.
- Allow at least 10 minutes before touching high-voltage connectors or terminals after removing the service plug.

NOTE:

Since the high voltage capacitor in the INV(Invertor) is charged, a discharge time of 10 minutes or more is secured.

- Use insulated gloves and insulated tools for removing the power pack including terminal cover No. 1 even after the service plug is removed.
- Wear insulated gloves before touching high-voltage terminals without insulating coating and check that the voltage is 0V with the tester.
- Immediately insulate high-voltage connectors and terminals with insulating tape after removal.

This vehicle is equipped with two lithium-ion batteries: an auxiliary power module and a power pack. When dispose of the vehicle, remove both the auxiliary power battery and the power pack.

1. Auxiliary Power Module (12V – 36Wh) Removal: see page 4 – 6
2. Power Pack (140V – 840Wh) Removal: see page 7 - 15

The used lithium-ion batteries removed from the vehicle require special treatment for recycling purpose. After removing these batteries, take appropriate action on the batteries according to “Handling Manual for used Li-Ion Battery” of concerned vehicle on the following website.

https://www.globalsuzuki.com/xev_battery/

1. Auxiliary Power Module (Lithium-Ion Battery 12V-36Wh) Removal

NOTICE:

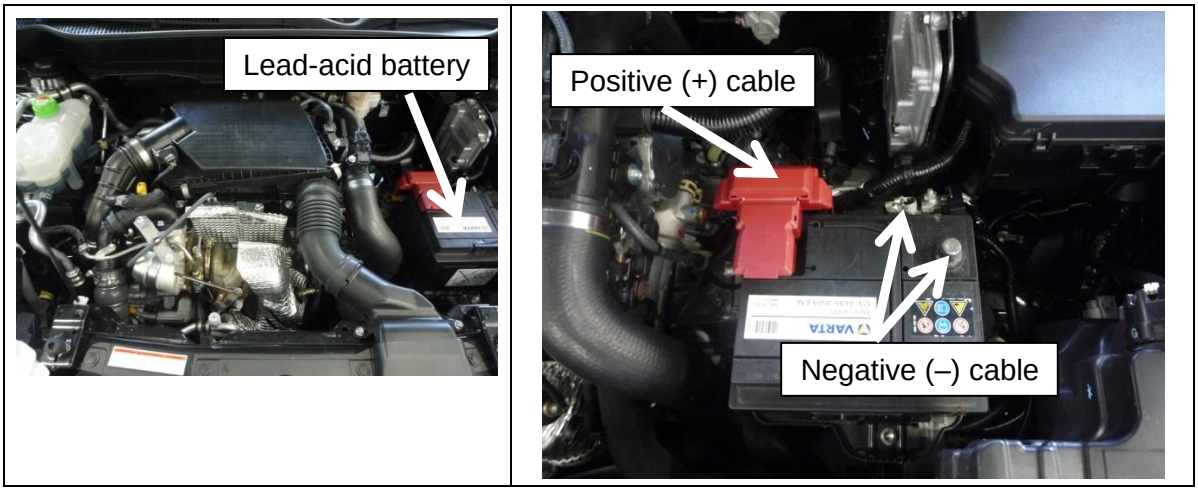
Auxiliary power module (lithium-ion battery) consists of high precision parts and can be easily damaged by large shock.

Handle the auxiliary power module (lithium-ion battery) carefully and do not expose it to large shock.

1) Set front wheels in straight ahead position.
2) Set ignition “OFF”.
3) Disconnect the negative (–) cable first from the lead-acid battery.
4) Disconnect the positive (+) cable from the lead-acid battery.

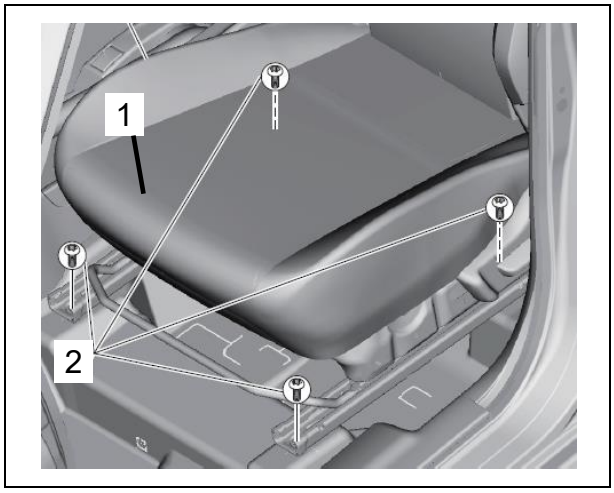
By disconnecting the cables at lead-acid battery, as a safety mechanism, the lithium-ion battery will shut off its power circuit.

The figure below is for reference.

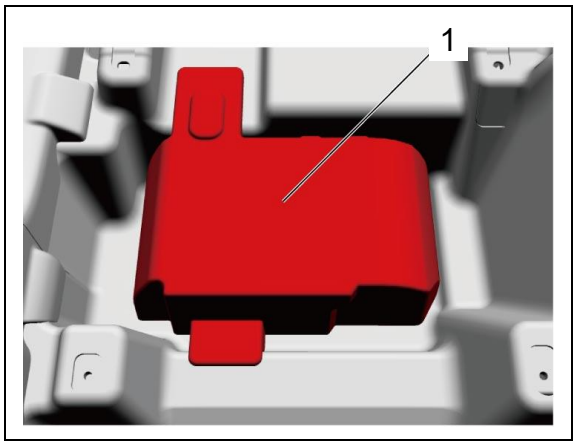


5) Wait for at least 90 seconds after performing Step 4).

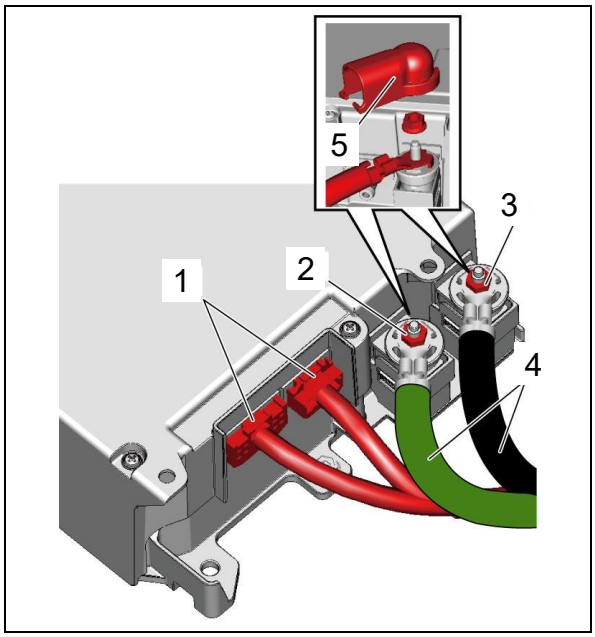
6) For LHD, remove the driver seat. For RHD, remove the front passenger seat.
Disconnect all the connectors from the seat.
Remove the 4 mounting bolts (2) and remove the seat (1).



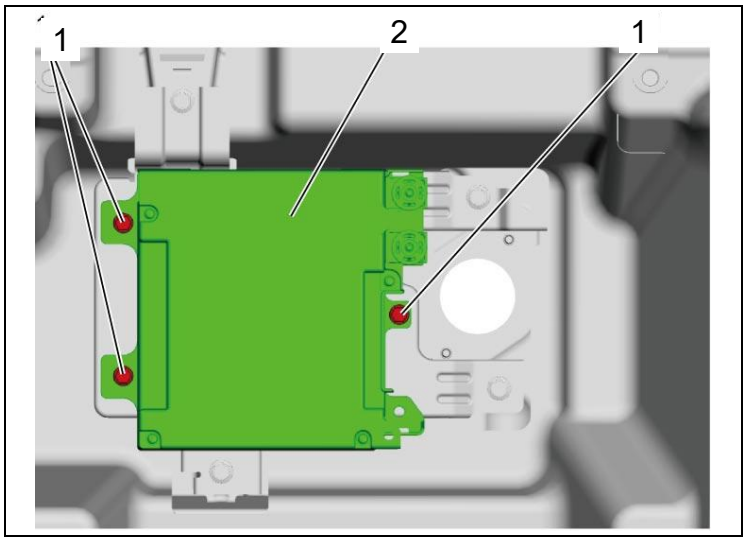
7) Remove the cover (1).



8) Disconnect the two connectors (1).
9) Remove the “Pb+” terminal nut (2) and the “Li+” terminal nut (3), and then remove the cables (4).

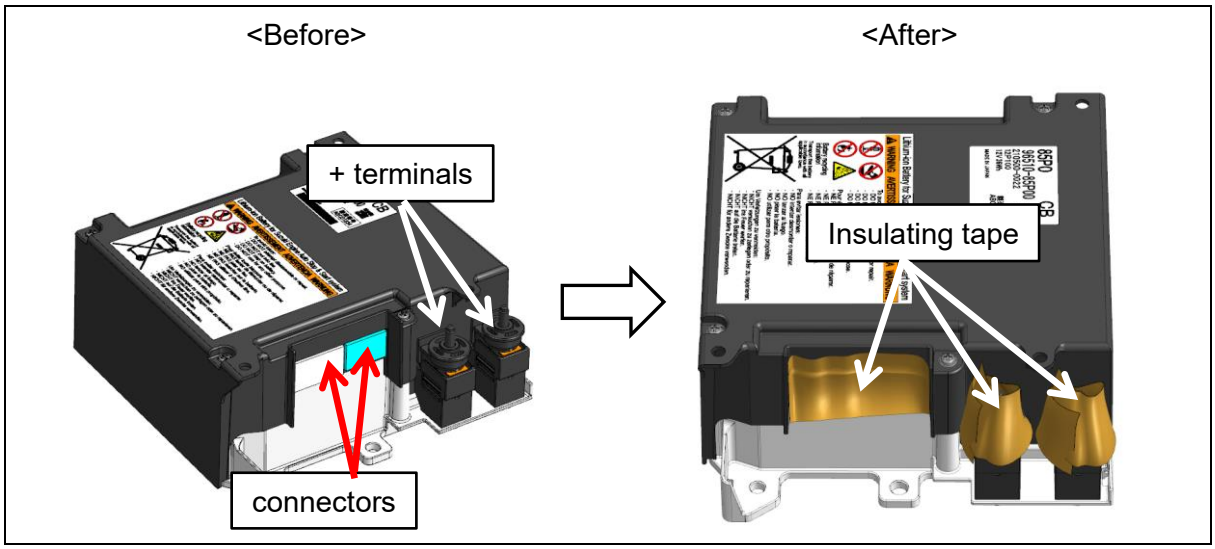


10) Remove the auxiliary power module bolts (1), and then remove the auxiliary power module (lithium-ion battery) (2).



11) Prevention of a short circuit:

In order to prevent a short circuit, cover the + terminals and the connectors of the removed lithium-ion battery with insulating tape securely as shown below.

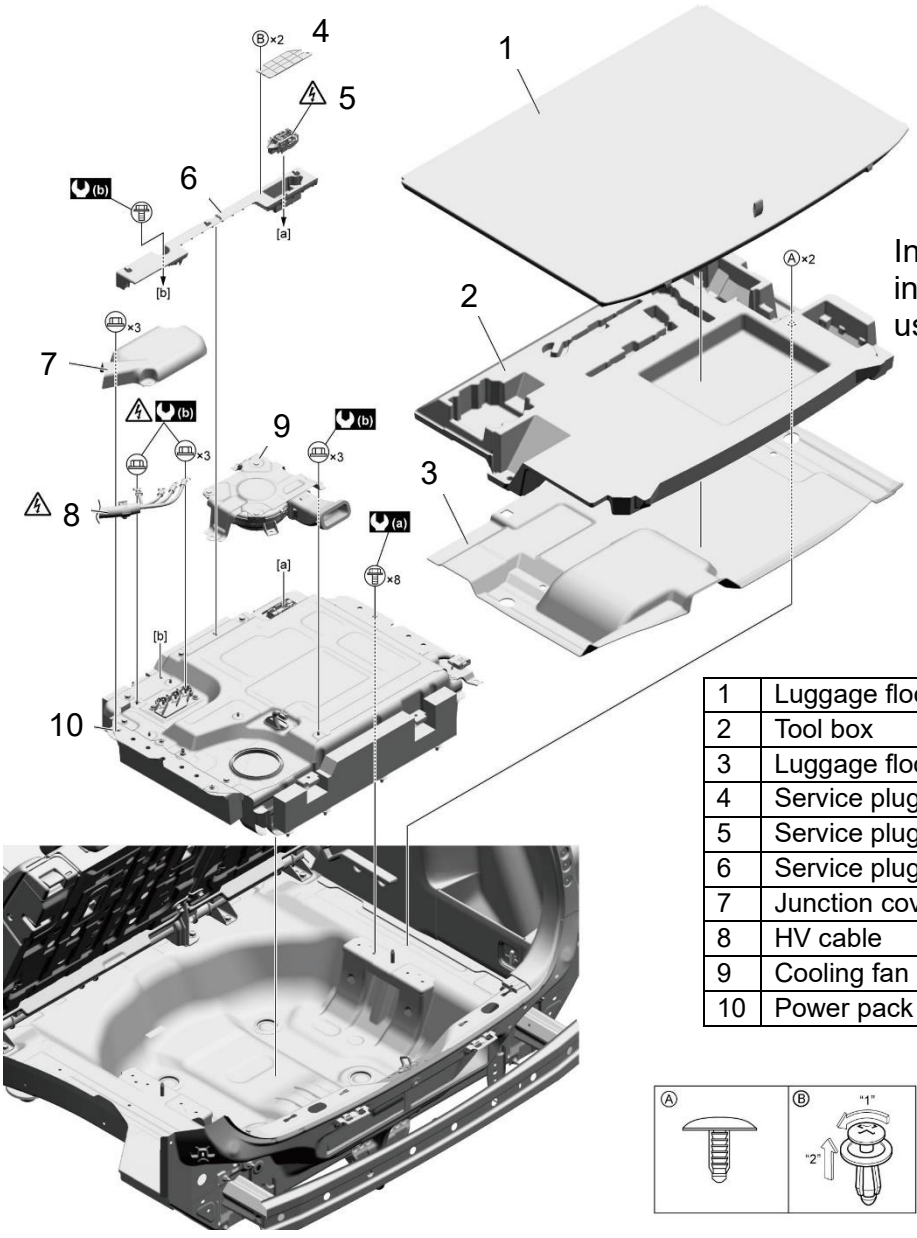


2. Power Pack Assembly (Lithium-Ion Battery 140V - 840Wh) Removal

WARNING:

- **Failure to take proper precautions when removing the power pack assembly can cause service personal electric shock or injury.**
  - **Be sure to wear insulation gloves and use insulation tools when "Insulation gloves" is described in this manual.**
- **If power pack assembly voltage is 1V or more, failure to take proper precautions when removing power pack assembly can cause personal electric shock or injury.**
  - **Be sure to wear insulation gloves.**
  - **Be sure to use insulation tools.**
  - **Do not attempt to disassemble power pack assembly.**

Power Pack Assembly Components Overview



Insulation gloves and insulation tools should be used for removal

1	Luggage floor board
2	Tool box
3	Luggage floor carpet
4	Service plug lid
5	Service plug
6	Service plug cover
7	Junction cover
8	HV cable
9	Cooling fan assembly
10	Power pack assembly

1) Set front wheels in straight ahead position.

2) Set Ignition “OFF”.

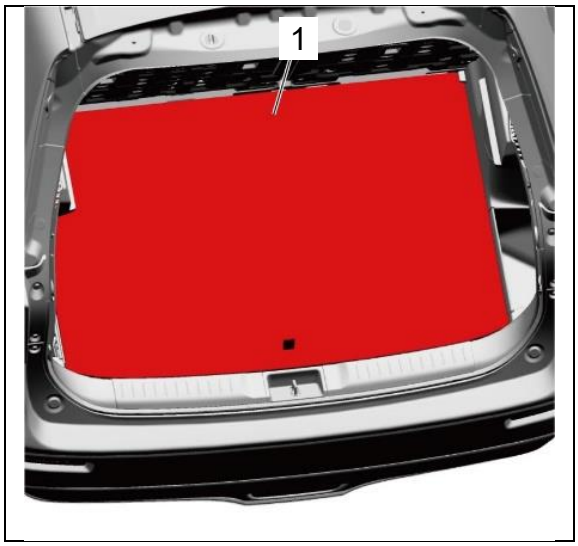
3) Disconnect the negative (–) cable first from the lead-acid battery.

4) Disconnect the positive (+) cable from the lead-acid battery.

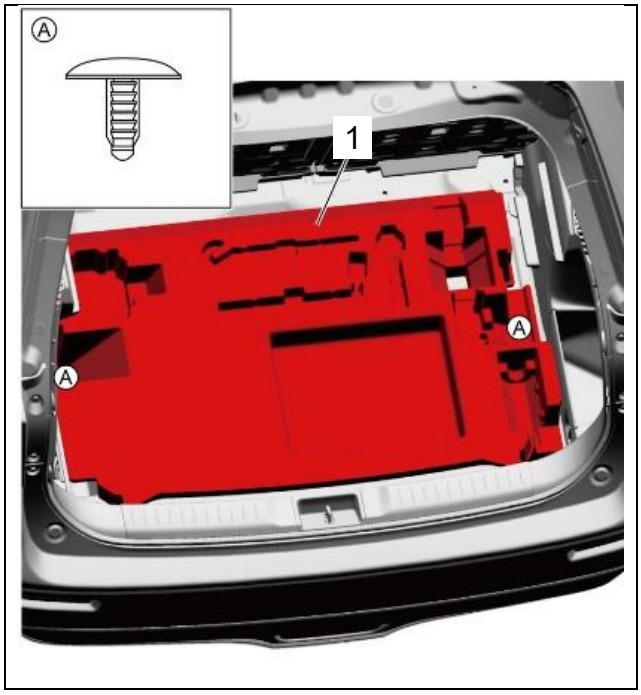
5) Use “WARNING: HIGH VOLTAGE DO NOT TOUCH” sign (see last page) to notify other service personals.

6) Remove the service plug

6)-1 Remove the luggage floorboard (1).

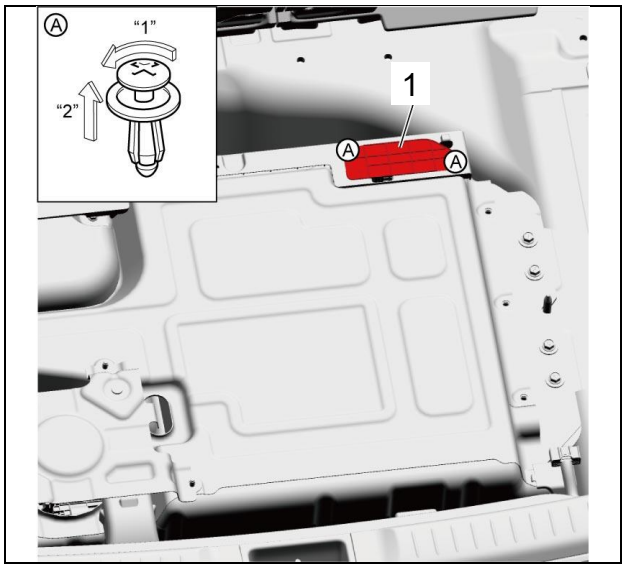


6)-2 Remove the clips (A) and remove the tool box (1).



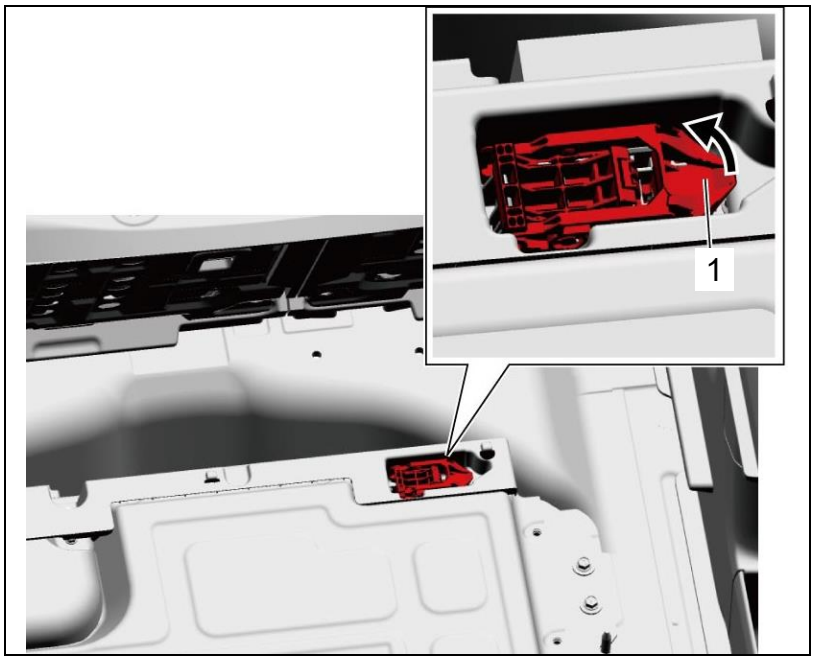
6)-3 Remove the luggage floor carpet (1).

6)-4 Remove the clips (A) and remove the service plug lid (1).

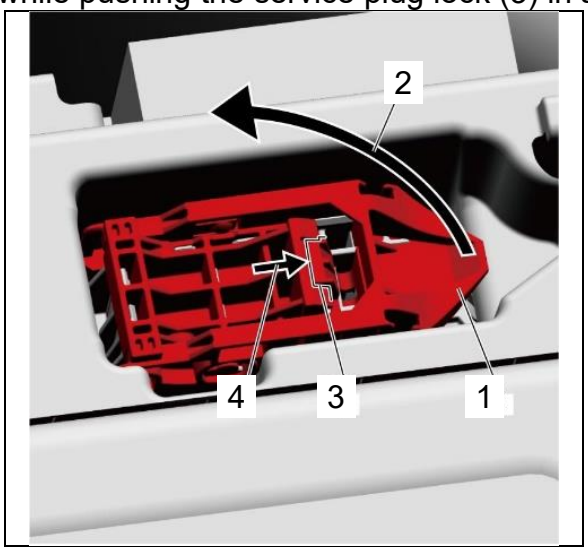


6)-5 Wear “Insulation gloves” and remove the service plug as follows.

a) Turn the service plug lever (1) in arrow direction until it stops.

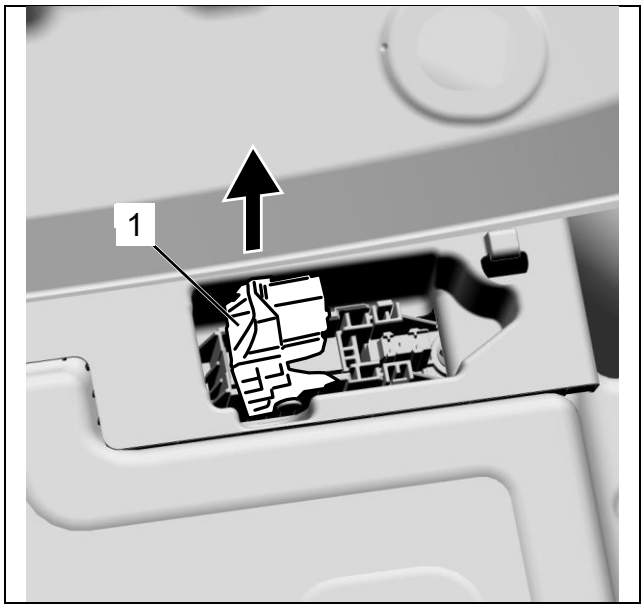


b) Turn the service plug lever (1) in arrow direction (2) until it the clicking sound is heard while pushing the service plug lock (3) in arrow direction (4).



c) Remove the service plug (1) from the power pack assembly.

d) Protect the service plug terminal on the power pack assembly side with an insulating tape to avoid electric shock.



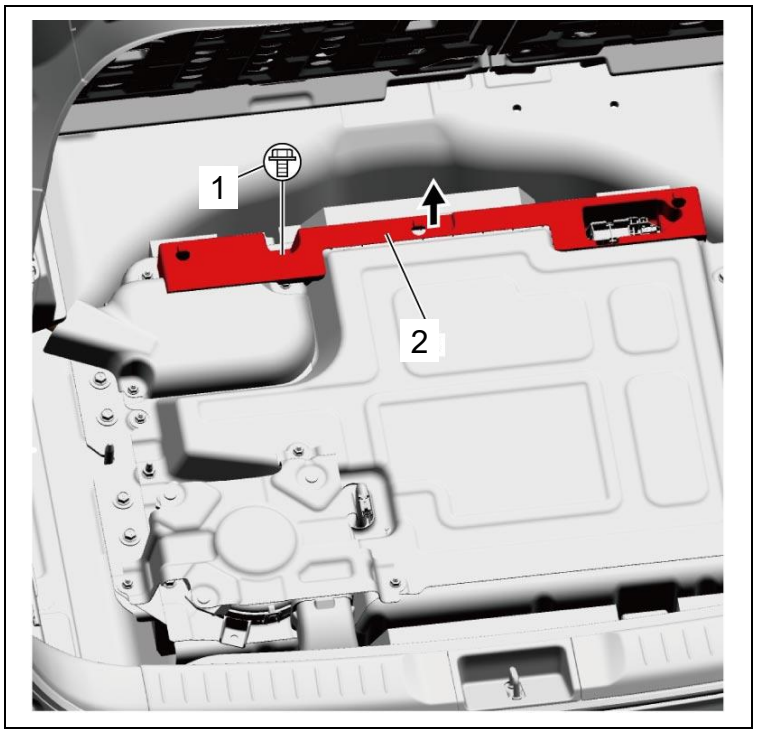
6)-6 Wait for at least 10 minutes from the completion of step 6-5).

NOTE:

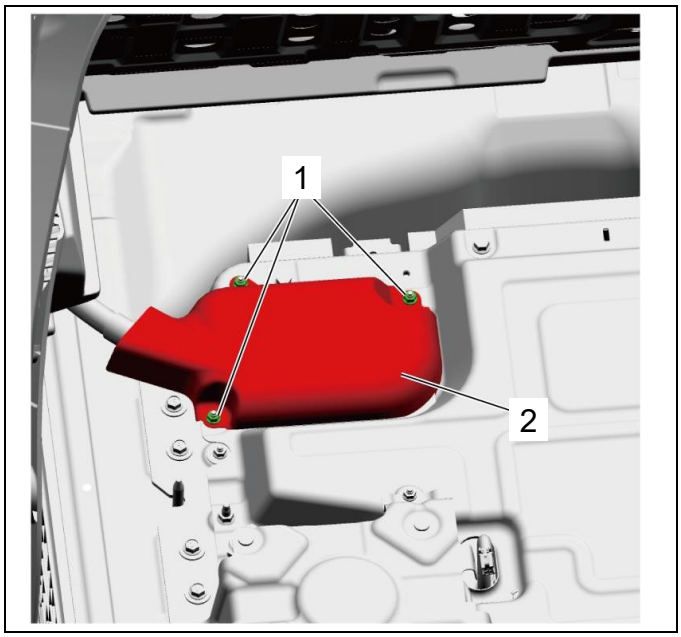
It is necessary to wait at least 10 minutes until the capacitor in INV(Invertor) is completely discharged.

7) Perform voltage inspection of power pack assembly.

7)-1 Remove the service plug cover bolt (1), and then remove the service plug cover (2) pulling it in arrow direction.



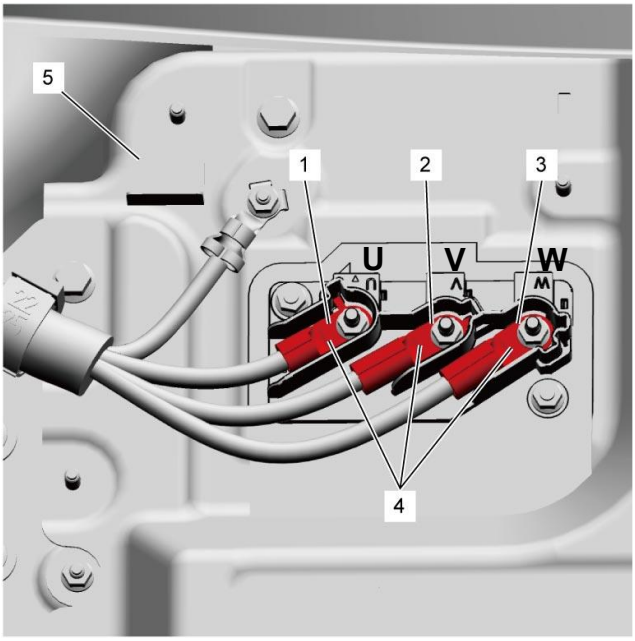
7)-2 Remove the terminal cover nuts (1) and remove the terminal cover (2).



7)-3 Wear “Insulation gloves”, measure the voltage between the following terminals and check that they are less than 1V.

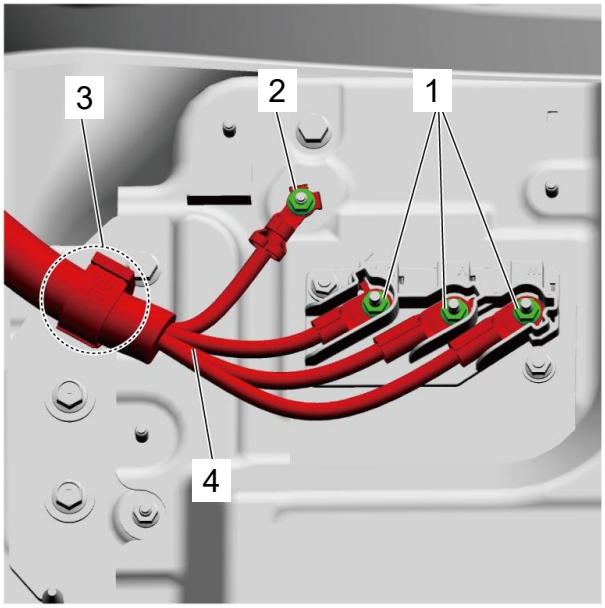
NOTE:
The voltages at “U” terminal (1), “V” terminal (2) and “W” terminal (3) should be measured at the terminals (4), avoiding measurement with bolts and nuts.

- “U” terminal and “V” terminal
- “U” terminal and “W” terminal
- “U” terminal and power pack upper cover (5)
- “V” terminal and “W” terminal
- “V” terminal and power pack upper cover
- ”W” terminal and power pack upper cover



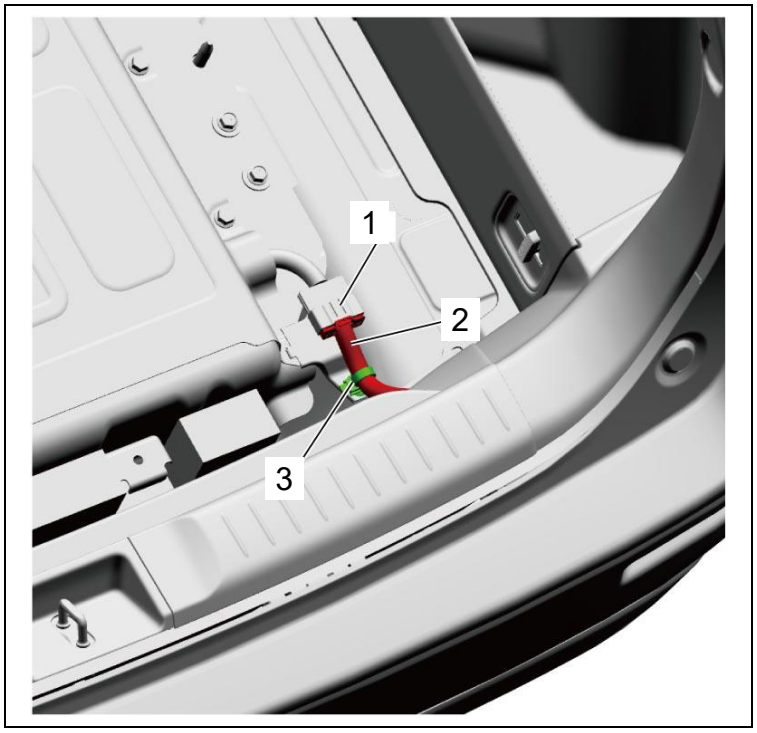
7)-4 Wear “Insulation gloves”, measure again with the polarity of the voltmeter reversed for each terminal voltage measured in step 7)-3, and check that each voltage is less than 1V.

8) Wear “Insulation gloves”, remove the HV cable terminal nuts (1), the HV cable ground nut (2) and the cable clamp (3), and then remove the HV cable (4).



9) Wear “Insulation gloves”, insulate the HV cable terminals and the HV cable terminals on the power pack assembly side with an insulating tape to avoid electric shock.

10) Disconnect the floor harness connector (1) and remove the floor harness (2) together with the harness clamp (3).



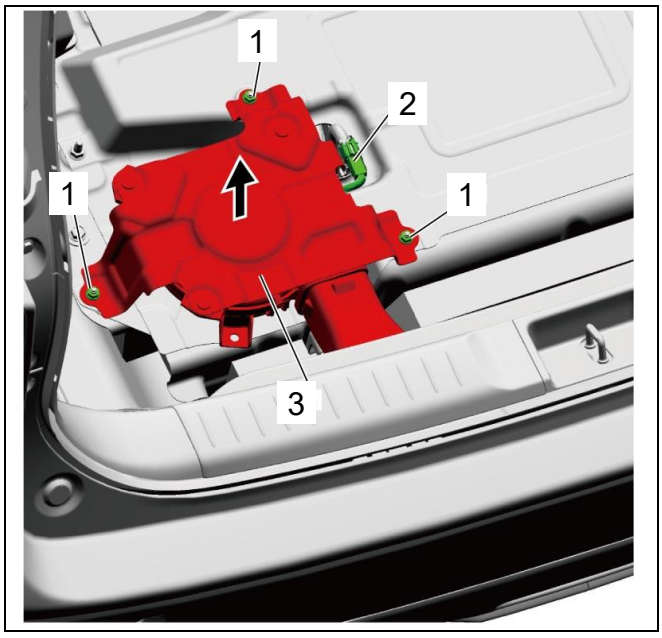
11) Remove the cooling fan assembly.

11)-1 Remove cooling fan assembly as follows.

a) Remove the cooling fan bracket nuts (1).

b) Disconnect the cooling fan connector (2).

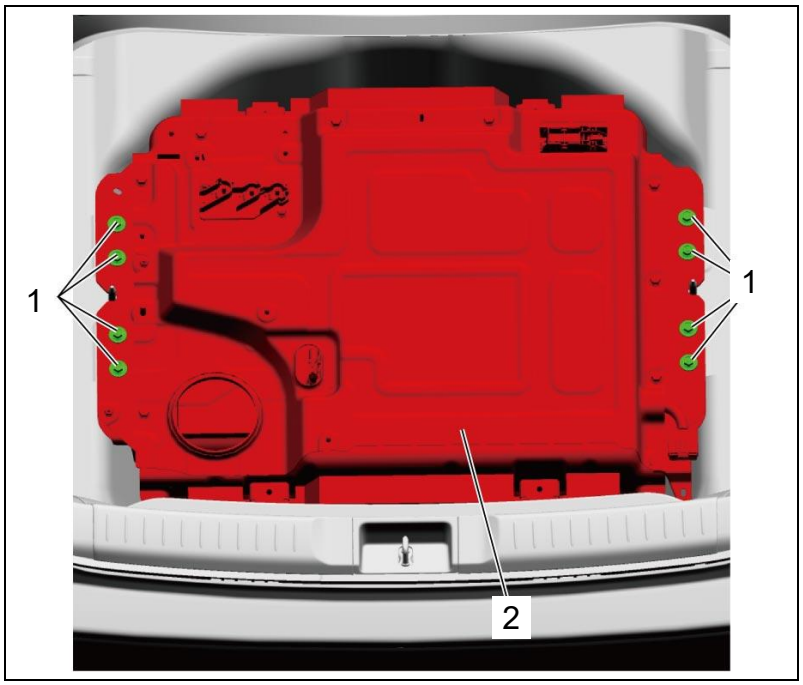
c) Remove the cooling fan assembly (3) pulling it in arrow direction.



11)-2 Protect the cooling fan duct opening in power pack assembly with a protective tape.

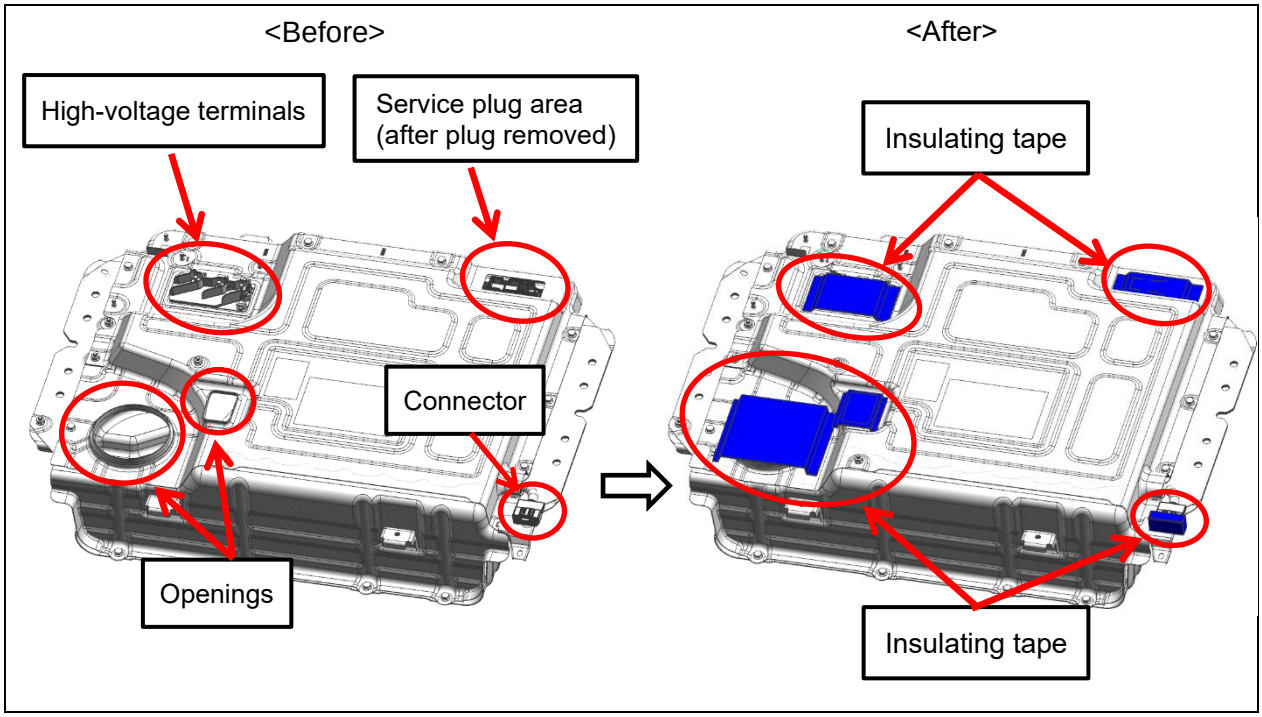
12) Remove the power pack assembly bolts (1) and remove power pack assembly (2) holding its flange with hands.

NOTE:
Power pack assembly is very heavy and requires two or more people to remove it from the vehicle.



13) Prevention of a short circuit:

In order to prevent a short circuit, cover the high-voltage terminals, the service plug, the connector and the openings of the removed battery pack with insulating tape securely as shown below.



Person in charge

Do not touch
during high voltage work!

Do not touch
during high voltage work!

Person in charge

Copy, fold and display on the roof of the vehicle while working