



For Dismantler

High Voltage Battery Disposal Manual

Target Model

MAZDA MX-30

Mazda Motor Corporation
Customer Service Div, Recycle Promotion Gr.

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Information in this manual is subject to change without notice.

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1. Introduction

Some vehicles manufactured by Mazda Motor Corporation is mounted the high voltage battery. This manual describes how to remove the battery from the End-of Life Vehicle(ELV). Read this manual carefully and observe the precautions before handling the battery.

<Warning>

Pressing and shredding the vehicle with high voltage battery attached will generate such as heat, fire, smoke, and rupture from the high voltage battery.

2. Overview of the high voltage battery

Purpose/Structure

The high voltage battery system supplies power to drive the electric motor.

Additionally, it stores the power generated by the electric motor using regenerative braking and the power charged externally. The high voltage battery system has the following functions.

- Supplies drive power to electric motor
- Stores power generated by electric motor using regenerative braking and power charged externally
- Cuts off and connects high voltage circuit
- Monitors high voltage battery status
- Supplies electrical power to electric compressor
- Supplies electrical power to battery heater, electric compressor, PTC heater, DC-DC converter
- Drives battery heater contactor
- Diagnoses electrical leakage in high voltage circuit
- System protection in case of malfunction and warning indication to driver, and malfunction diagnosis function

Specification

Item	Specification
Pack composition	Direct series, 192cells
Nominal capacity	100 [Ah]
Nominal voltage	355 [V]
Mass	310[kg]
External dimensions	W 1,804×D 1,202×H 334 [mm]
Electrolyte volume	19.2 [L] or less

Appearance



3. Precautions in Handling the high voltage battery

Introduction

- The high voltage battery is enclosed in a sealed metal case and is designed to withstand the temperature and pressure of normal handling. Therefore, there is no physical danger of ignition, rupture, etc., or scientific danger of leakage of battery contents during normal handling. However, there is a risk of leakage of contents or irritating or toxic gases from the battery case when exposed to fire, strong shock, or electrical stress due to misuse. The nominal voltage of this high voltage battery is 355V. In case of electrical shock, it could result in serious injury or in the worst case death.

Handling of the high voltage battery

- When handling the high voltage battery, be careful of the following
 - Do not put it in and not get it wet with water or seawater.
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 - Do not expose to strong oxidizing agents.
 - Do not subject to strong shock or drop.
 - Do not disassemble, modify, or deform.
 - Do not short circuit the positive and negative terminals.
 - Do not charge the battery using an unspecified charging method.
 - Do not connect the connector or install the service plug until it is on-vehicle.
 - To prevent electric shock, be sure to insulate the battery terminals and wear insulating gloves.

Measures to be taken in case of electric shock

- In case of electric shock, take the following measures.
 - To prevent secondary electric shock, do not touch the person receiving the electric shock with bare hands.
 - To prevent secondary electric shock, separate the battery from the person receiving the electric shock by using a non conductive object.
 - Check for pulse, respiration, or response to stimuli, and call an emergency hospital for medical attention. If breathing has stopped, perform cardiopulmonary resuscitation if necessary.

Measures to be taken in case of a fire

In case of the high voltage battery ignites, take the following measures.

Appropriate fire extinguishers : A large amount of water from a fire hydrant (avoid small amounts of water as it may increase the intensity of the fire), carbon dioxide extinguisher or, powder extinguisher

Specific extinguishing methods : If other combustible materials are burning at the same time, extinguish according to the extinguishing method of the corresponding combustible material.
Whenever possible, extinguish from upwind.

Specific hazardous hazards : Corrosive gas may be generated during extinguishing.
Also, if the battery becomes hot, its components may fly off.

4. The high voltage battery removal cautions

Warning

- The inspection and removal of the high voltage parts of this vehicle must be performed by persons who have acquired qualifications specified by the laws and regulations.
- The protective equipment indicated in the workshop manual is recommended by Mazda. Use equipment specified by the laws and regulations of each country.
- Wear insulating gloves when inspecting or removing the high voltage parts. Touching the high voltage parts without wearing insulating gloves could cause electrical shock and result in serious injury or, in the worst case, death.
- Before removing the high voltage parts, remove the service plug and wait until 10 min have elapsed. Servicing without removing the service plug or before 10 min have elapsed after removing the service plug could cause electrical shock and result in serious injury or, in the worst case, death.
- Do not spin the tires while removing the high voltage parts. If the tires spin, power generation occurs even if the service plug is removed. If power generation occurs, it could cause electrical shock and result in serious injury or, in the worst case, death.
- Verify that the charge connector is not connected to the vehicle when inspecting or removing the high voltage parts. If the charge connector is connected to the vehicle, high voltage may be supplied to the vehicle. If this occurs, it could cause electrical shock and result in serious injury or, in the worst case, death.
- Always observe the following thoroughly to ensure safety when removing the high voltage parts. Otherwise, the high voltage circuit may operate on the vehicle regardless of whether or not the main power is switched OFF or ON (READY off or on). If this occurs, it could cause electrical shock and result in serious injury or, in the worst case, death.
 - Do not perform normal charge or quick charge
 - Switch to connected vehicle maintenance mode (MyMazda App connected vehicle)
 - Cancel climate control timer
- When removing the high voltage parts, place a high voltage work sign on the vehicle to alert other workers.

Caution

- Do not switch the main power ON (READY on) after removing the service plug.
If the main power is switched ON (READY on) after removing the service plug, a malfunction may occur with the vehicle.
- The high voltage parts can be identified as follows.
 - Parts that are connected using orange wiring harnesses
 - Parts with a high voltage warning label attached

Identification of high voltage wiring harnesses and equipment

The following measures are applied to the high voltage equipment and wiring harnesses so that they can be distinguished from other non-high voltage areas. Never touch the high voltage wiring harnesses, high voltage connectors, and equipment with a high voltage warning label attached without wearing insulating gloves before cutting off the high voltage.

- The high voltage cable and connectors are covered by orange insulation as a standard.
- A warning label is attached to the high voltage equipment (high voltage battery and inverter) indicating the presence of high voltage inside the equipment.



Handling of high voltage connectors and terminals

- When touching a high voltage terminal not covered by insulation, wear insulating gloves and verify that the voltage is 0 V using a tester in advance.
- Protect a disconnected high voltage connector using insulation tape immediately after being disconnected so that the terminal is not exposed. Handle one terminal at a time to avoid both terminals being exposed at once.
- Before connecting a terminal, thoroughly remove any adhesive on the terminal using a clean cloth.
- Securely tighten the screw terminals of the high voltage parts to the specified torque. Insufficient or excessive tightening torque could cause a malfunction of the vehicle.

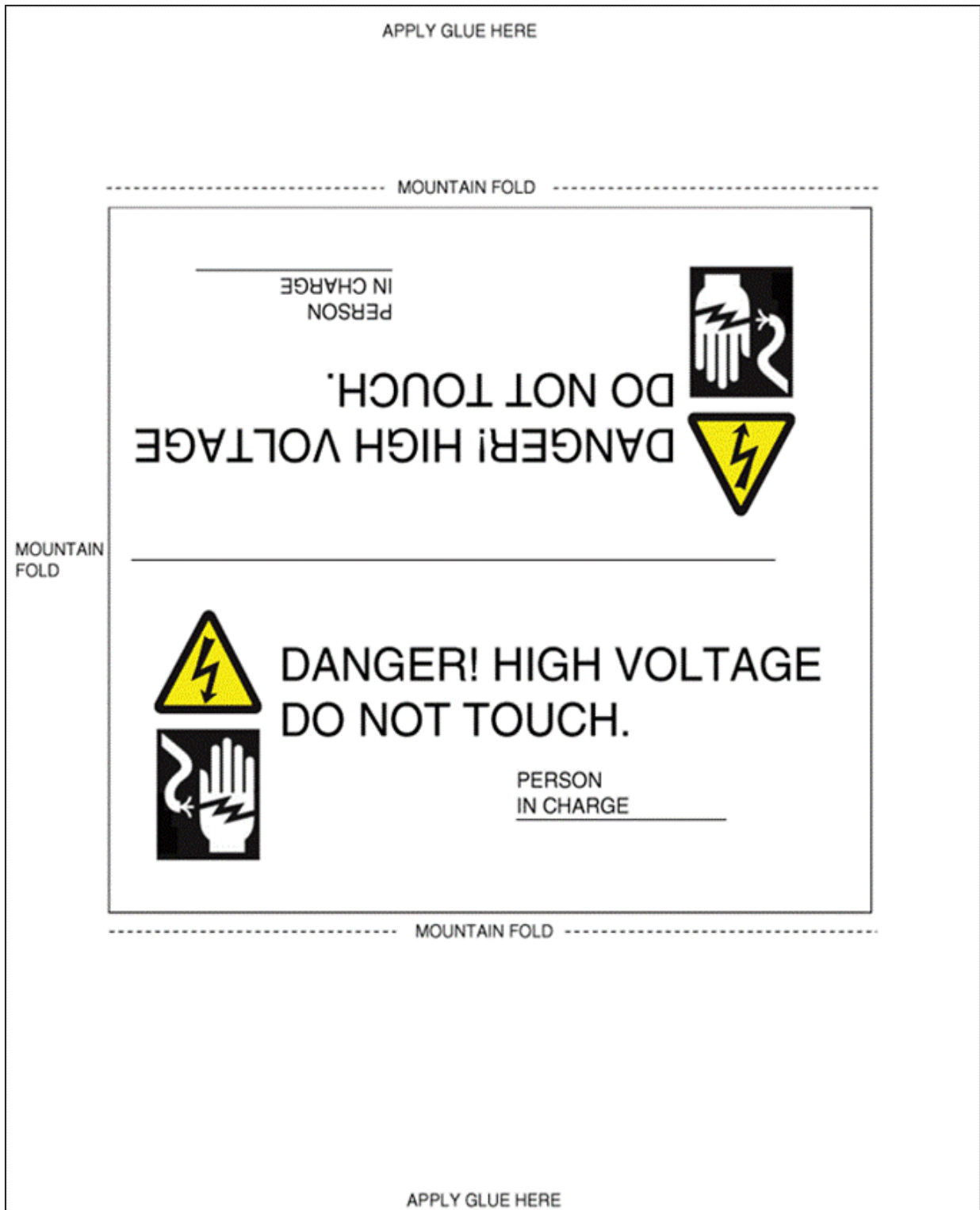
Items prohibited from being held or worn

- Before servicing, remove metal objects. An electric vehicle has high voltage areas, and if metal scales, mechanical pencils, or accessories such as necklaces fall onto a high voltage area while servicing, it may cause short circuit leading to an arc flash and part damage.
- Do not carry magnetic recording media. An electric vehicle has parts which have strong magnetic force, and if magnetic recording media (such as cash cards and prepaid cards) are being carried while performing an inspection or servicing, the recorded data could be destroyed.

High voltage work indication

- When removing the high voltage parts, place a high voltage work sign on the vehicle to alert other workers.

High voltage work sign



5. Recommendation for safe collection of the high voltage battery

In an accident car, submersible car, etc., there is a possibility that the battery pack for may be deformed, cracked, short circuit, leaked, etc, and a short circuit may cause accidents such as smoking, ignition, or electric shock.

Always disconnect the lead battery before removing high voltage battery.

- If you work without disconnecting the lead battery, short circuit may cause smoke, fire, electric shock, etc.

Do not leave/discard/divert/modify/disassemble/resell/transfer the high voltage battery.

- Touching of the high voltage battery that has been improperly left or discarded, or diverting, remodeling, or disassembling it for purposes other than its intended use may cause accidents such as electric shock, emitting smoke, firing, heat generation, explosion, or electrolyte leakage.

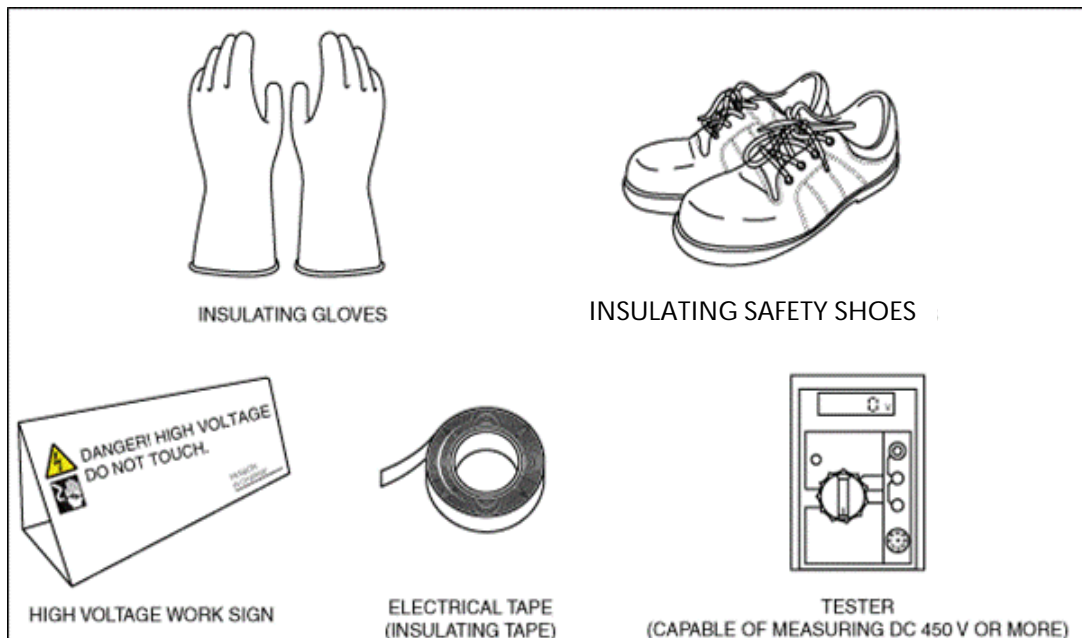
Mazda cannot be held liable for any accidents / damages caused by diversion / modification / disassembly of the high voltage battery, or any accidents / damages caused after neglect / discard / resale / transfer. The responsibilities of the business operator who performed these actions may be held.

6. Removing the high voltage battery

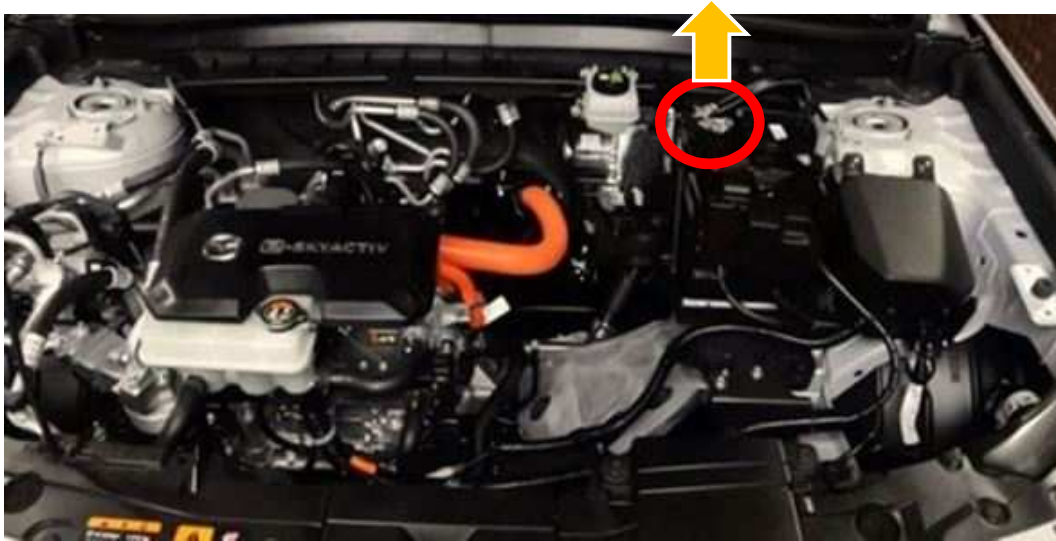
Warning

- If the necessary measures are not taken before servicing an electric vehicle, it could cause electrical shock and result in serious injury or, in the worst case, death. Before servicing the electric vehicle, please to implement the necessary measures.
- Wear insulating gloves when removing the high voltage parts.
- Before removing the high voltage parts, remove the service plug and wait until 10 min have elapsed.
- Do not switch the main power ON (READY on) after removing the service plug.
The high voltage parts can be identified as follows.
 - Parts that are connected using orange wiring harnesses
 - Parts with a high voltage warning label attached

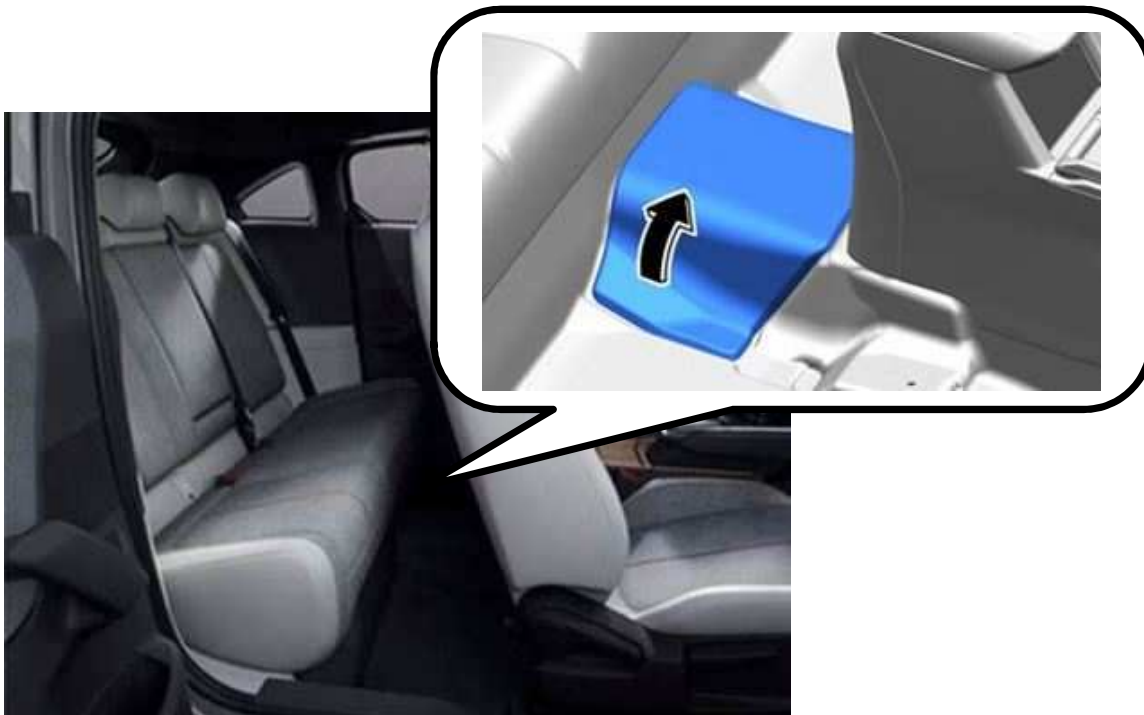
Items to be prepared



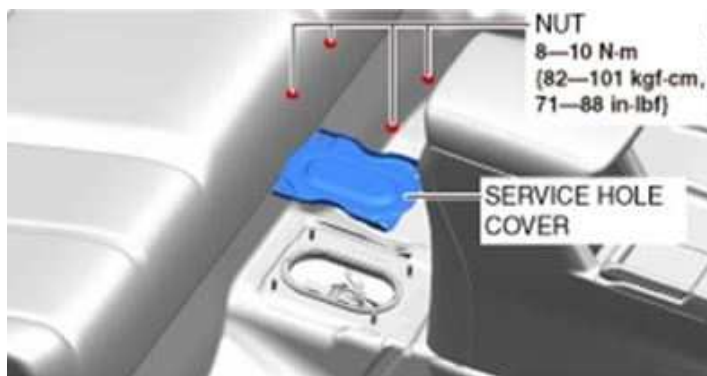
- 1) Verify that the READY indicator on the instrument cluster is not illuminated.
 - If the READY indicator is turned on, switch the main power OFF.
- 2) Disconnect the negative lead-acid battery terminal.



- 3) Partially peel back the cover.



4) Remove the service hole cover.



5) Wear insulating gloves and remove the service plug using the following procedure.

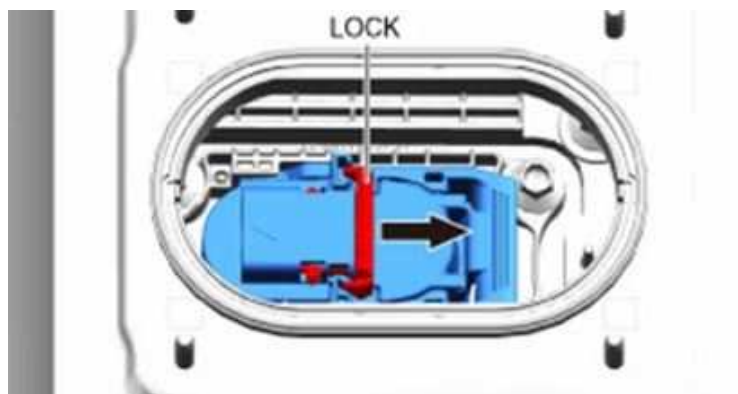
Warning

- Touching the terminal on the vehicle side can result in serious injury or death from removing the service plug, cover the vehicle-side terminals with insulating tape so that they cannot be touched.
- Do not touch high voltage parts for 10 min after removing service plug. Electric charges may be stored on the condenser for 10 min after the service plug is removed, and touching high voltage parts during that time can result in serious injury or death from electric shock.
- Service plugs must be removed by workers removing high voltage parts. Keep the removed service plug on your person until removal of the high voltage parts is completed to prevent other workers from accidentally installing the service plug.

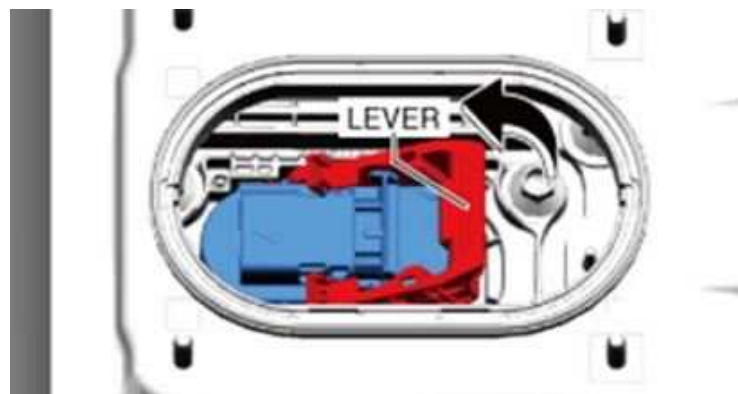
Caution

- After removing the service plug, cover the vehicle side terminals with insulating tape to prevent foreign matter from adhering to them.
- When you are keeping the service plug on your person, cover the service plug terminals with insulating tape to prevent damage to them.
- Do not switch the main power ON (READY on) after removing the service plug. If the main power is switched ON (READY on) after removing the service plug, the vehicle may malfunction.

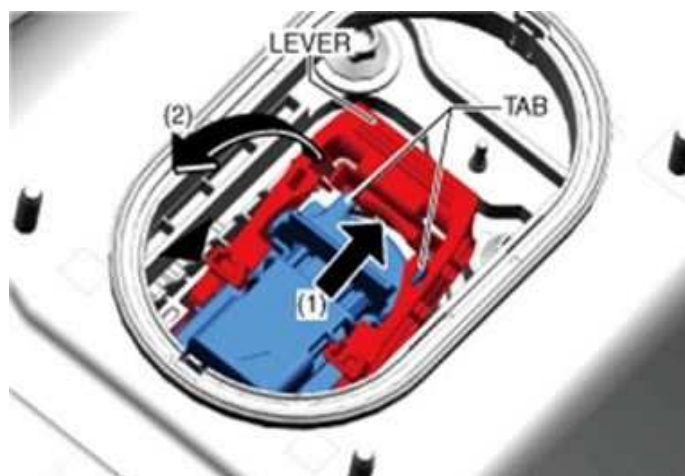
(1) Slide the lock in the direction of the arrow shown in the figure. (Do not Pull out completely)



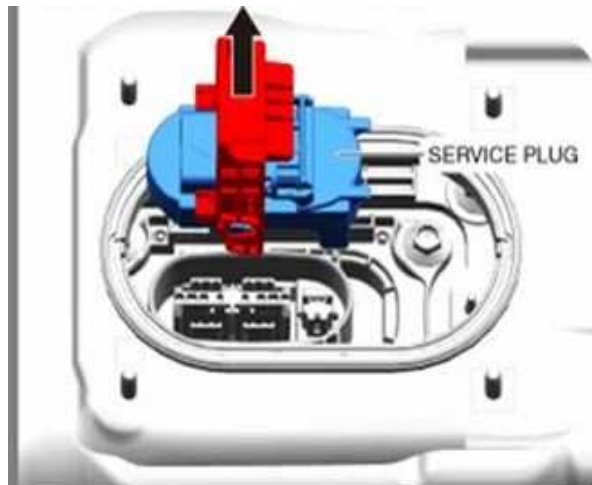
(2) Raise the lever.



(3) Press the area indicated by arrow (1) shown in the figure, release the tabs, and then raise the lever until it is perpendicular.



(4) Hold the lever and pull the serviceplug straight up.



6) After removing the service plug, leave it for 10 min.

7) Wear insulating gloves and measure the voltage at the high voltage cable connection (junction box side) using the following procedure.

(1) Remove the seal cover.

Caution

- Be careful not to allow foreign matter or water dropets to enter the junction box
Since the junction box has a high voltage circuit, there is a risk of malfunction if foreign matter or water drops enter it.



(2) Remove the terminal cover.

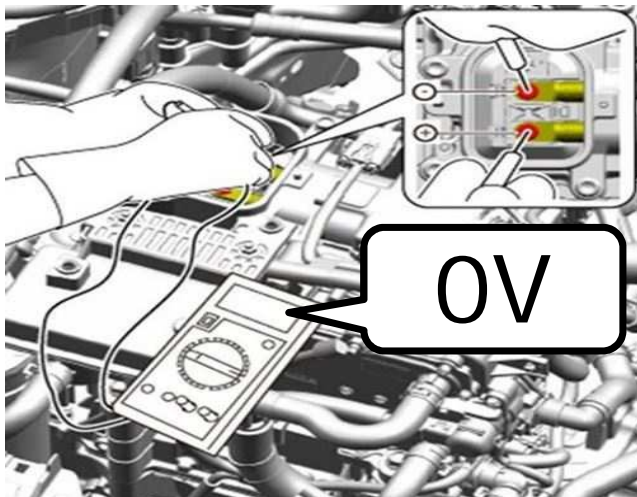
- Remove the terminal cover by pulling it straight up. The terminal cover is fitted with an interlock switch. This interlock switch may be damaged if the terminal cover is removed while being tilted.



(3) Measure the voltage at the high voltage cable connection.

Note

- Use a taster with a measurement range of 450V DC or more.



- Verify that the tester indicates 0V and go to the next step.
- Verify that the waterproof rubber on the terminal cover is securely installed.
- Be careful not to damage the interlock, and install it securely.

(4) Install the terminal cover.

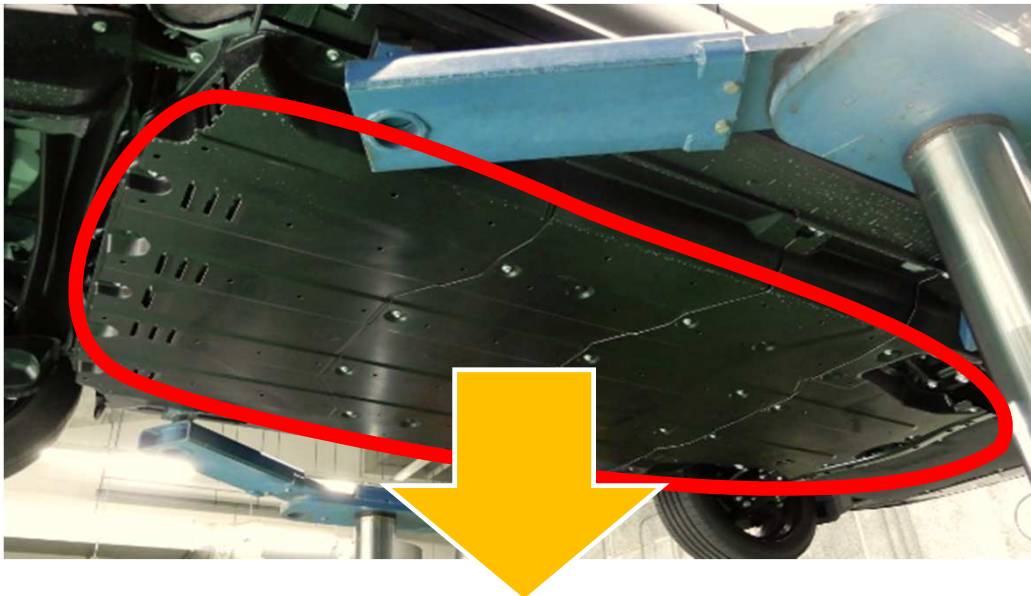


8) Drain the refrigerant.

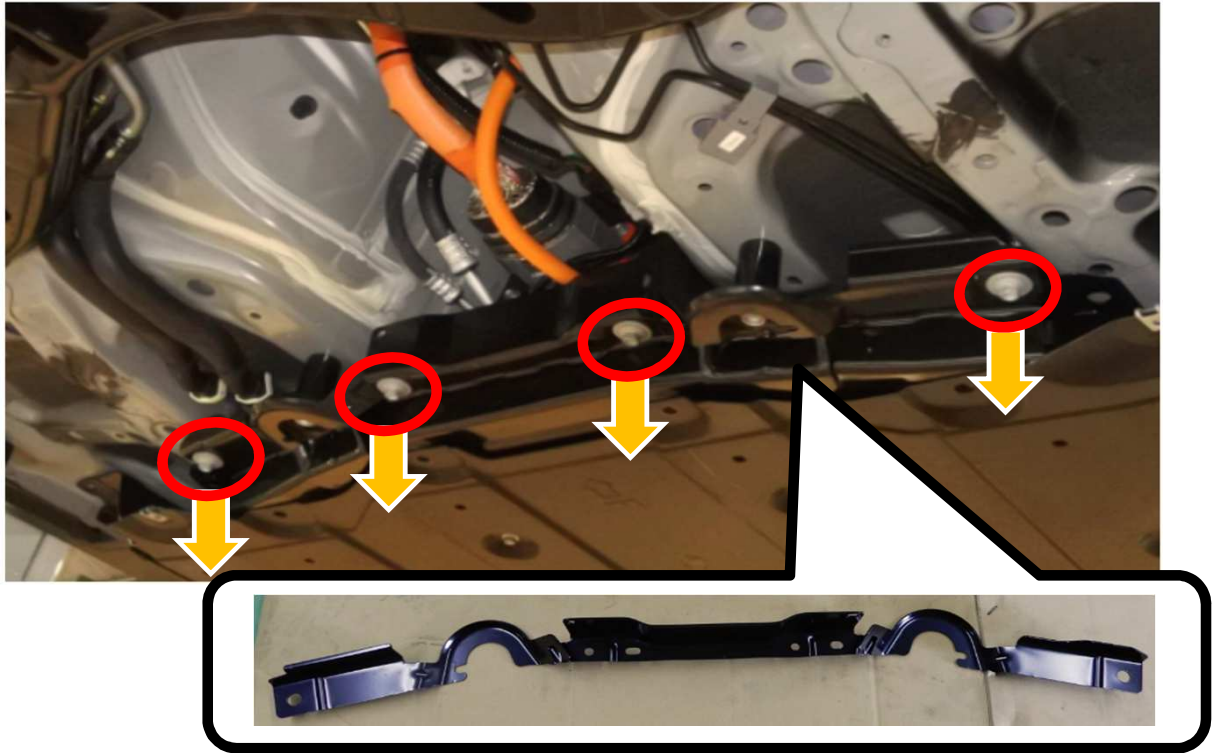
9) Remove the gusset.



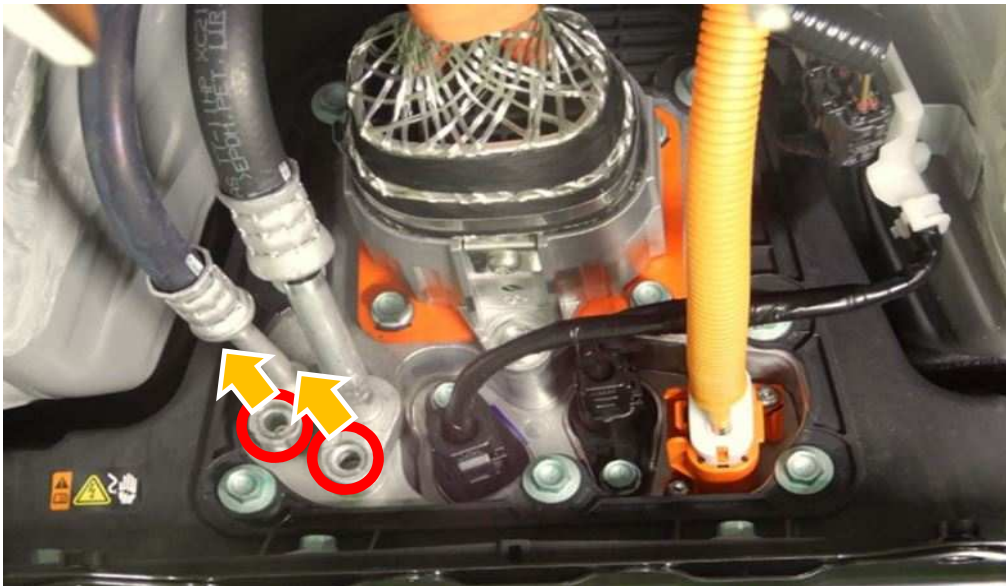
10) Remove the floor under cover.



11) Remove the shield.



12) Wear insulating gloves and disconnect the cooler pipe (high voltage battery side).



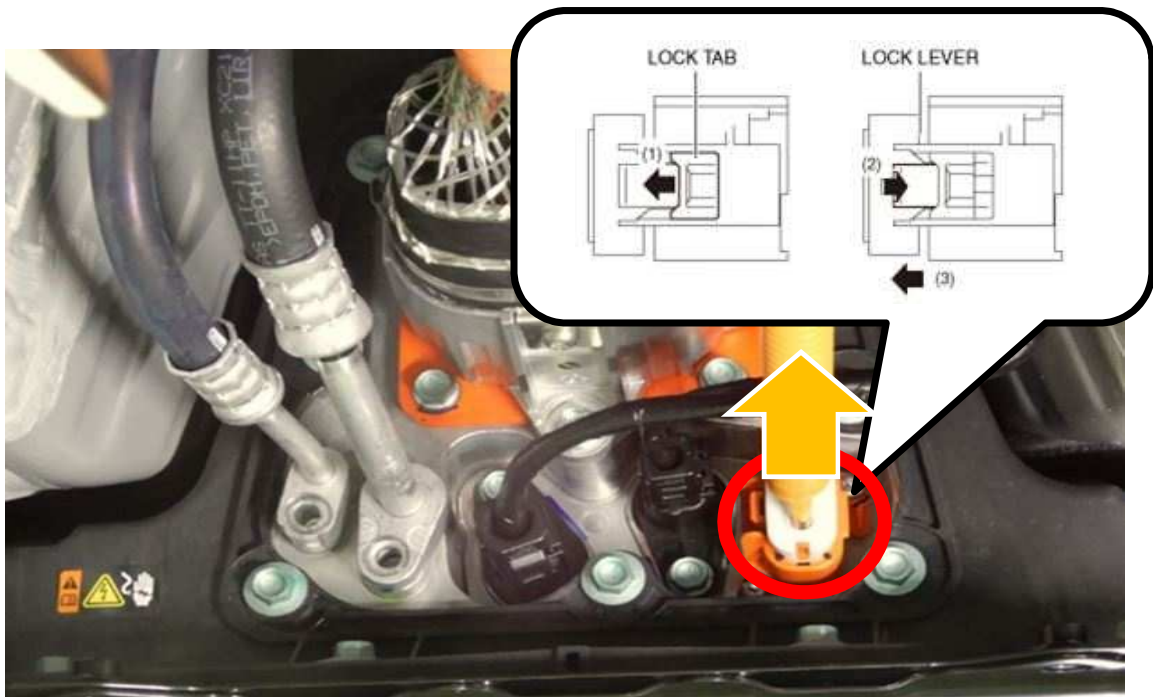
13) Disconnect the connectors shown in the figure.



14) Wear insulating gloves and disconnect the high voltage cable connector using the following procedure.

- After disconnecting the high voltage cable connectors, wear insulating gloves and wrap the terminals with electrical tape to insulate them.

- (1) Pull out the lock tab.
- (2) Pull out the connector while pressing the lock lever.



15) Disconnect the high voltage cable (high voltage battery side).

- After disconnecting the high voltage cable, wear insulating gloves, wrap the terminals with electrical tape, and then insulate.



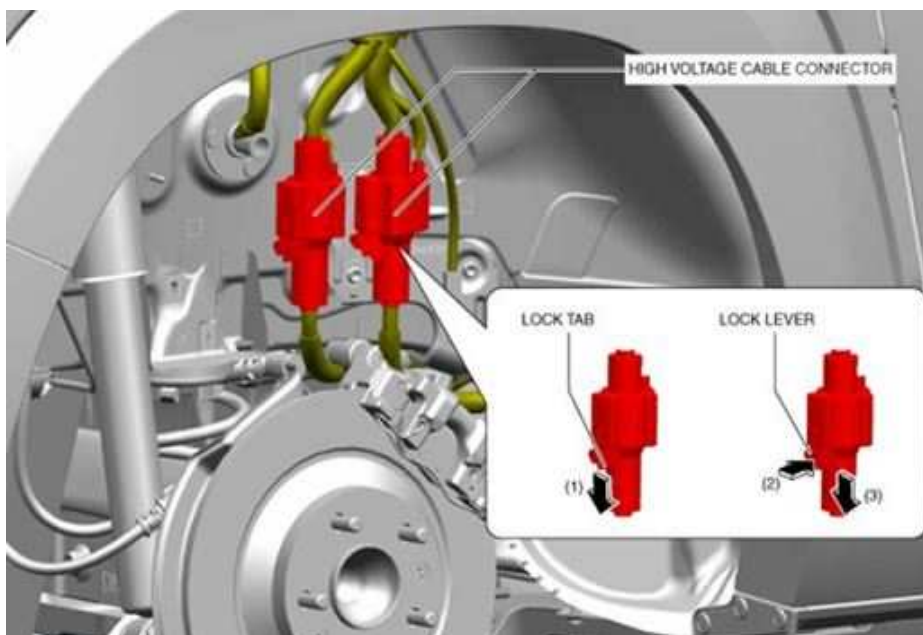
16) Remove the rear wheel and tire (RH).

17) Remove the rear mudguard (RH).

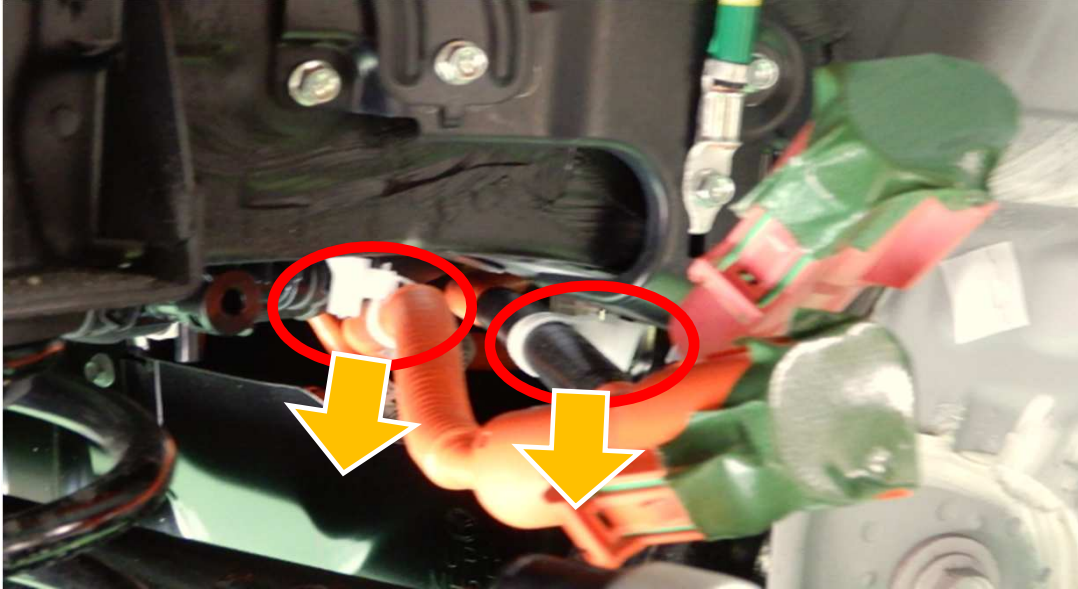
18) Wear insulating gloves and disconnect the high voltage cable connectors using the following procedure.

- After disconnecting the high voltage cable connectors, wear insulating gloves and wrap the terminals with electrical tape to insulate them.

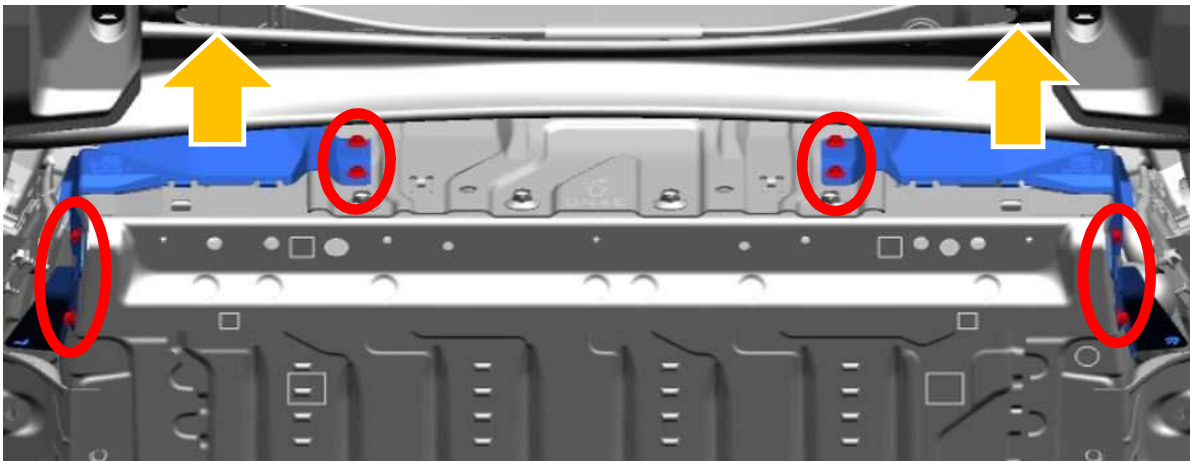
- (1) Pull out the lock tab.
- (2) Pull out the connector while pressing the lock lever.



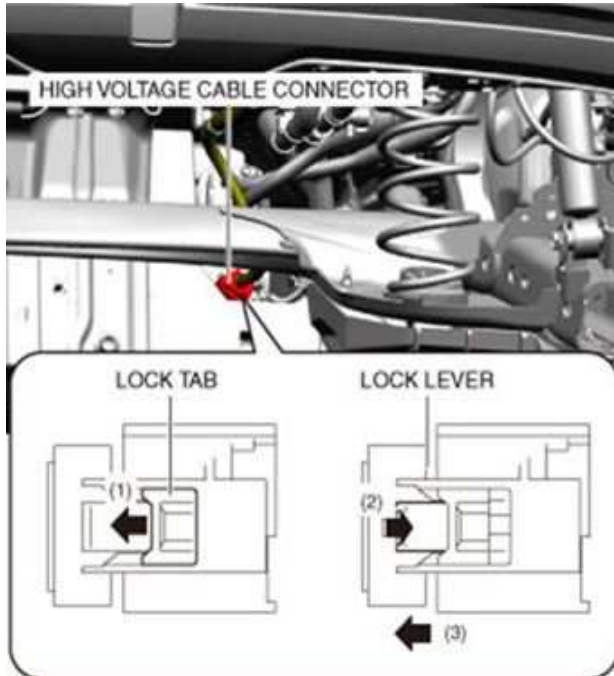
19) Detach the wiring harness clips shown in the figure.



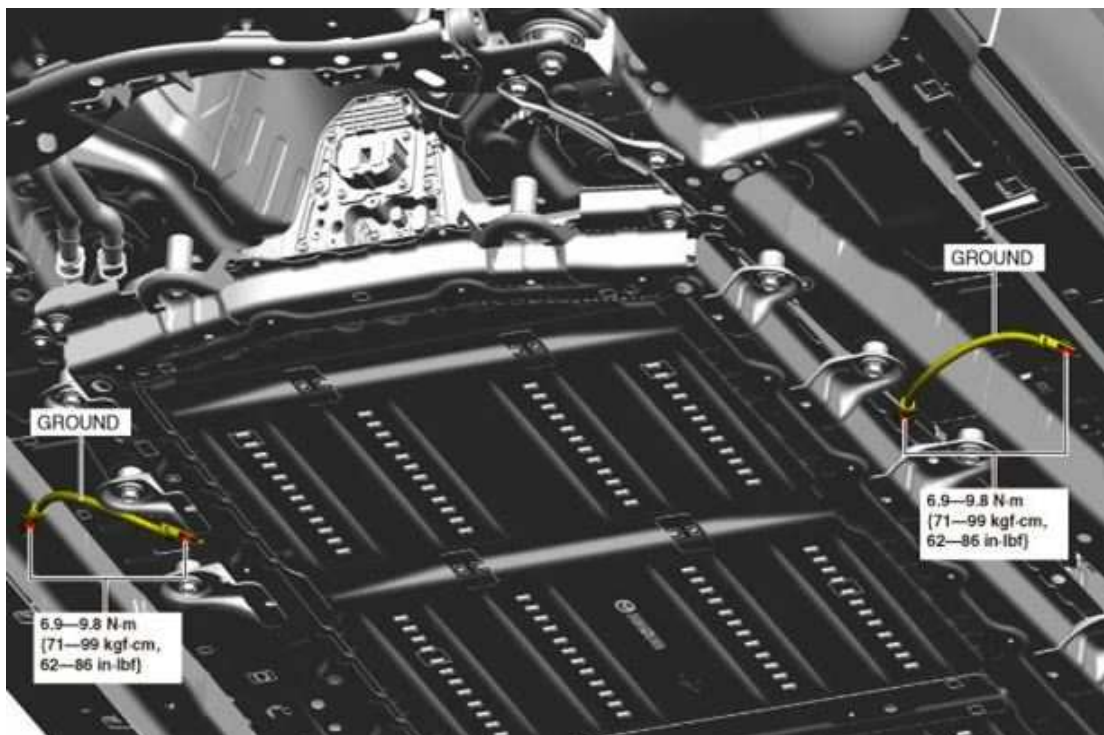
20) Remove the side shields.



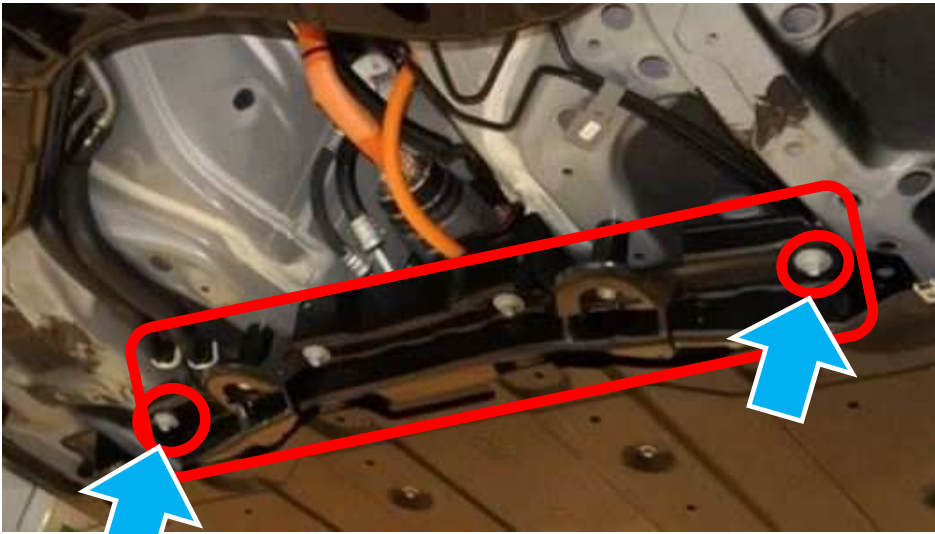
- 21) Wear insulating gloves and disconnect the high voltage cable connector shown in the figure.
- After disconnecting the high voltage cable connectors, wear insulating gloves and wrap the terminals with electrical tape to insulate them.
- (1) Pull out the lock tab.
 - (2) Pull out the connector while pressing the lock lever.



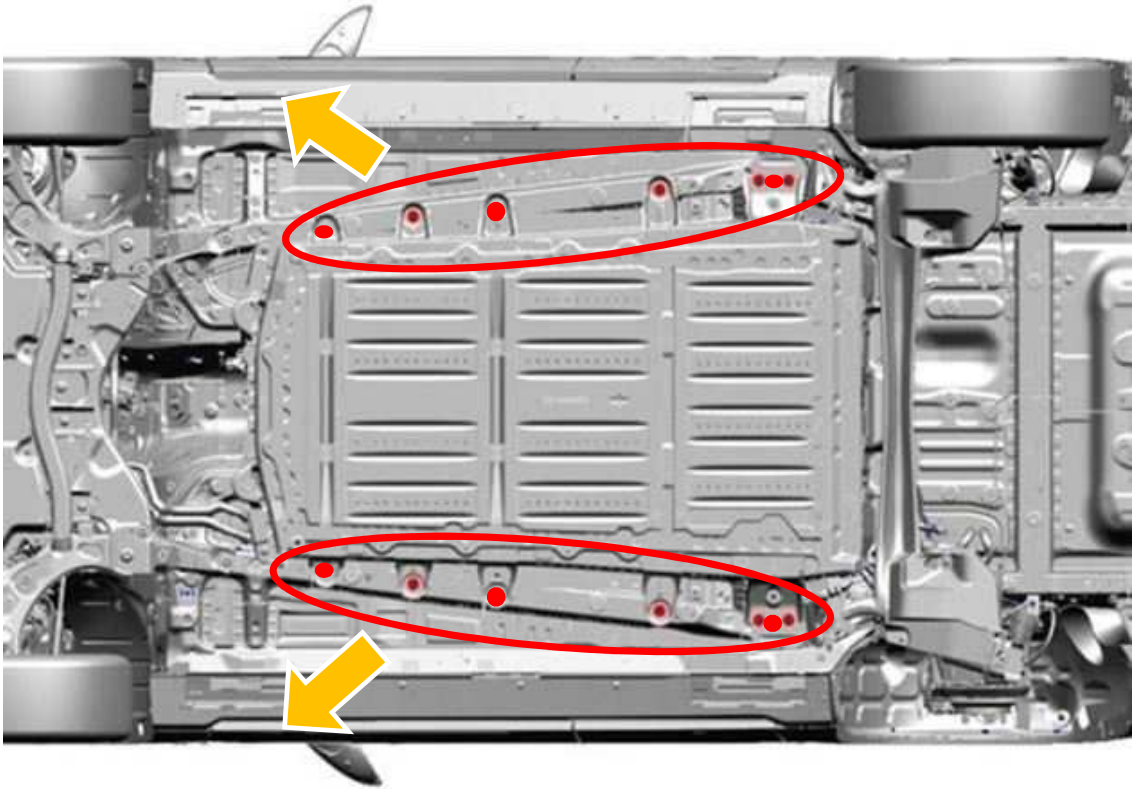
- 22) Remove the bolts and ground cables shown in the figure.



23) Install the shield.



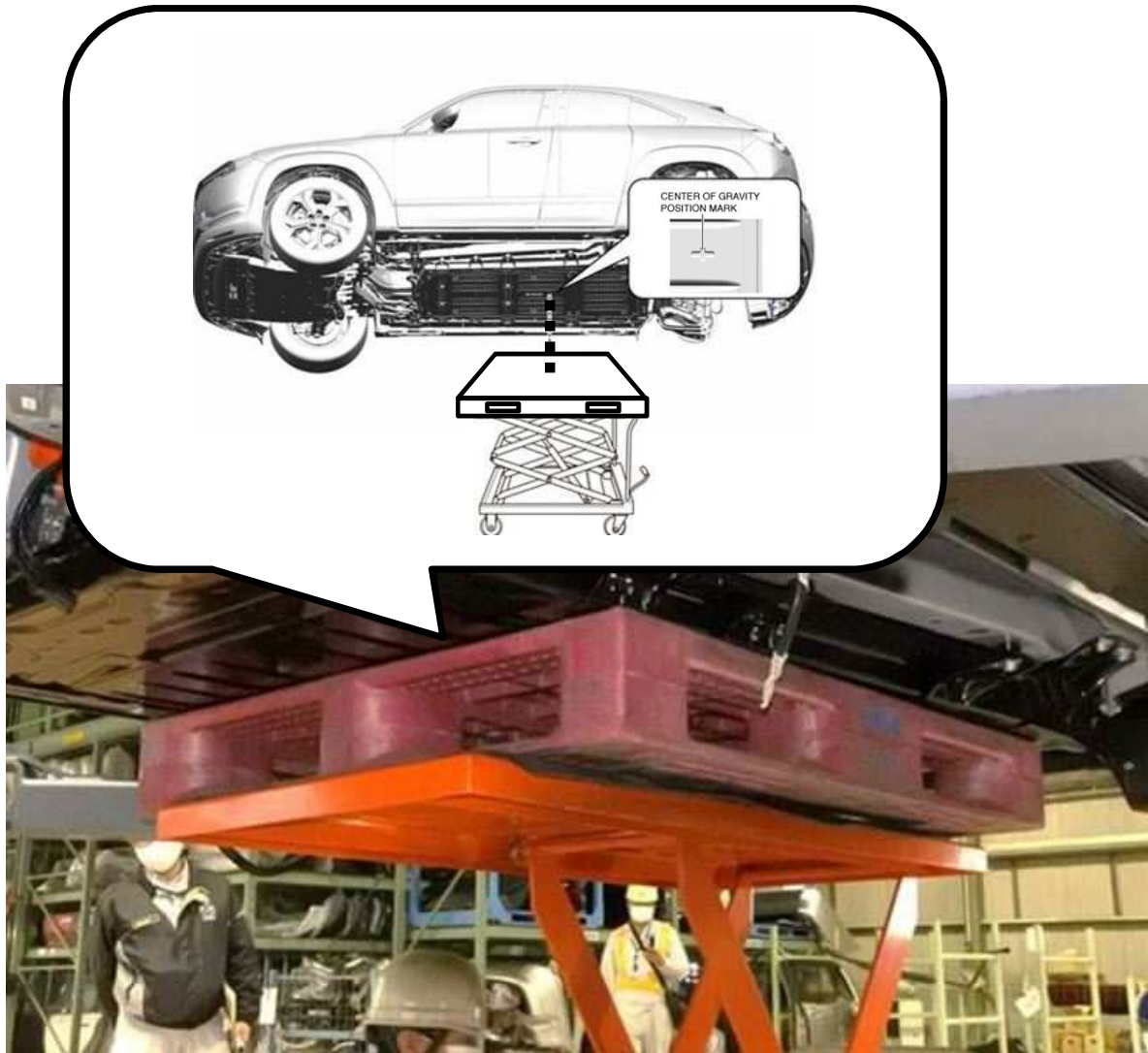
24) Wear insulating gloves and remove the bolts shown in the figure.



25) wear insulating gloves and align the center of the table with the center of gravity of high voltage battery to support the high voltage battery.

Warning

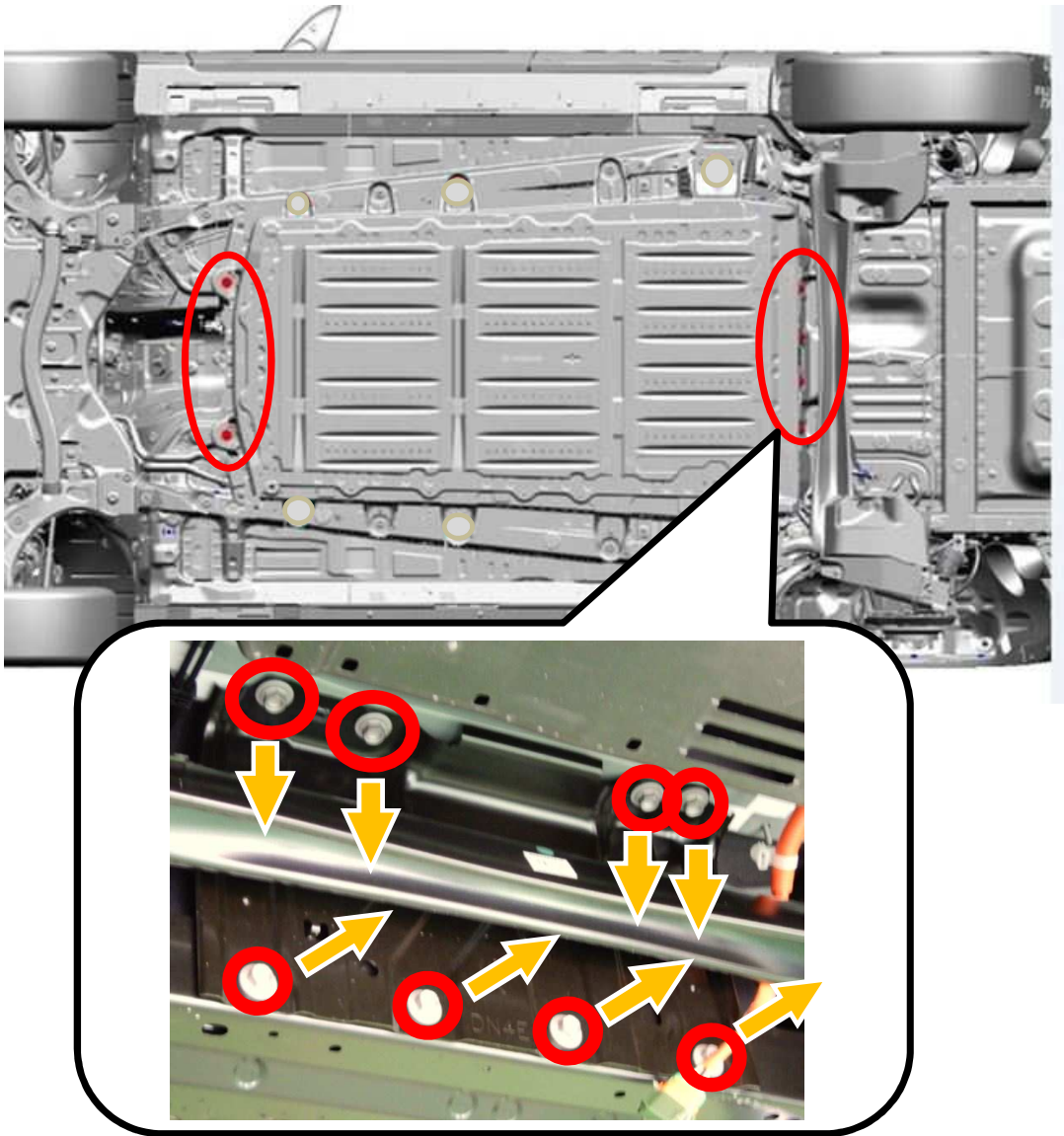
Use a table lifter and palette of the sizes shown in the picture or larger. If the table lifter or the palette are small, they will not be able to support the high voltage battery (weight approx. 310 kg {684 lb}) and the table lifter will fall, which may cause serious injury or death, and equipment damage. In addition, the high voltage battery may be damaged and the high voltage parts may be exposed, which could cause electrical shock or a fire.



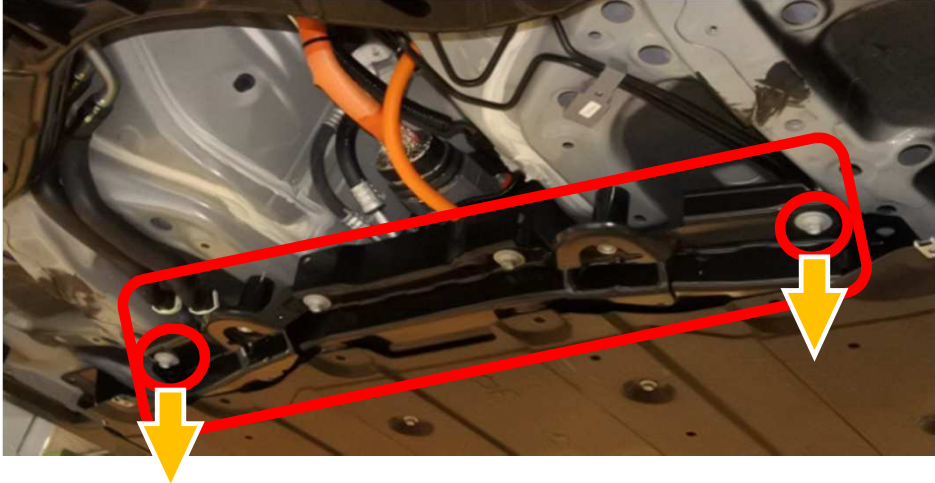
Caution

The high voltage battery is very heavy with a weight of approx. 310 kg {684 lb}. If handled incorrectly, the high voltage battery and the equipment could be damaged due to it falling over or falling down. Carefully handle the high voltage battery.

25) Wear insulating gloves and remove the bolts shown in the figure.



26) Remove the shield.



Warning

- When lowering the table lifter, verify that the vehicle on the auto lift is not tilted or unbalanced. If the vehicle is tilted or unbalanced, it may fall off auto lift and cause a serious injury or death, and equipment damage.

27) Wear insulating gloves, and while verifying that the vehicle, high voltage battery, and the table lifter are not tilted and unbalanced, lower the table lifter slowly to remove the high voltage battery.



Caution

If the high voltage battery is subjected to an impact, it could be damaged.
When carrying a high voltage battery, carefully handle it so that it does not get hit.

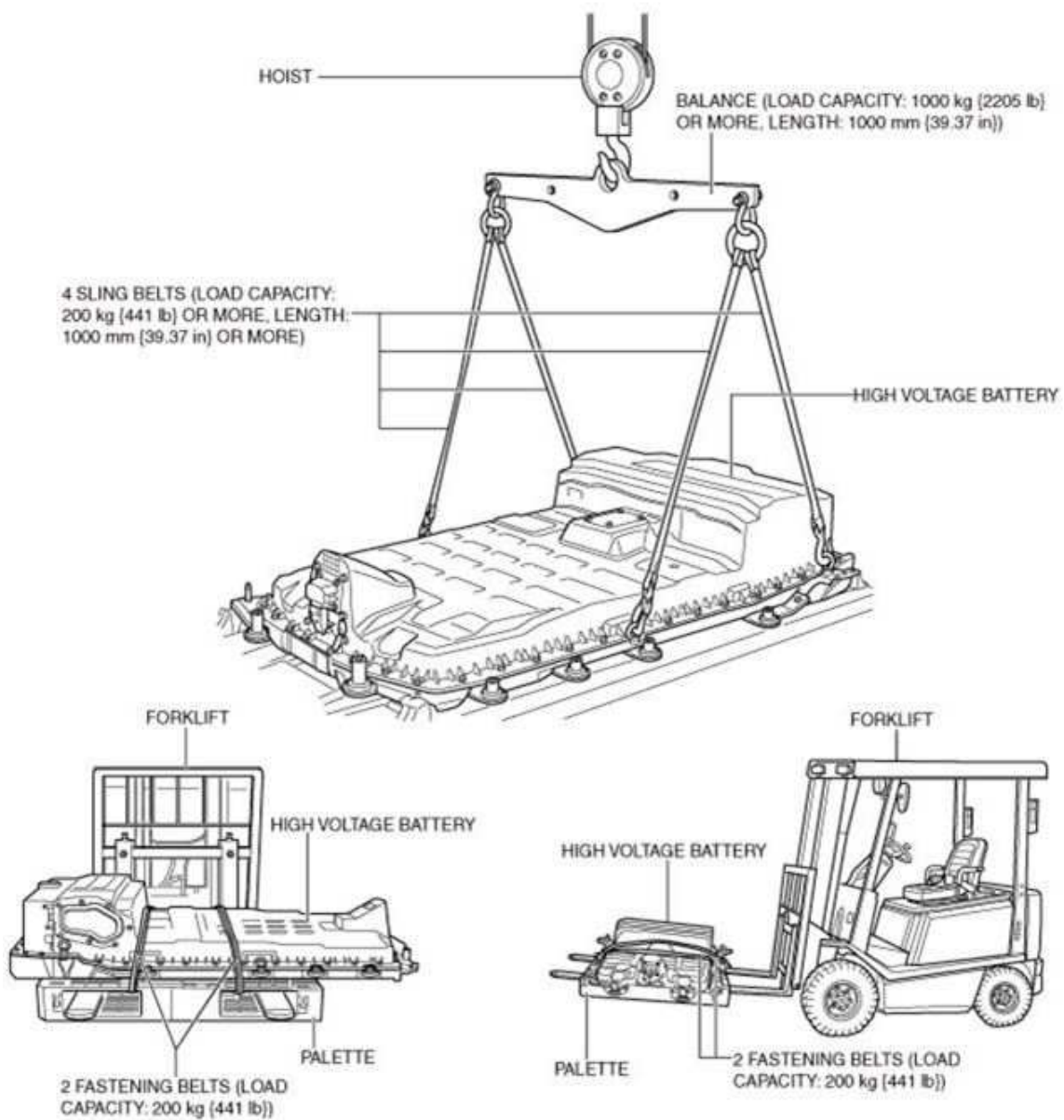
Example of high voltage battery transportation method

< The high voltage battery transportation and packing >

Prepare for transportation and packing as following.

< Caution >

Make sure that the terminals of the high voltage cable are insulated with insulation tape.
Use two fastening belts to secure the high voltage battery to the pallet.
The weight of the high voltage battery is 310 kg {684 lb}, so do not use a pallet that is severely deteriorated.



7. Storage of the Remove high voltage battery

Take care of the following situations with the removed high voltage battery.

- | | |
|-----------------------------------|---|
| Mixed touch prohibited substances | : Metal products, water, seawater, strong oxidizers, and strong acids. |
| Appropriate storage conditions | : In a cool, dark place (temperature: 0 to 35°C, humidity: 45 to 85%) and, away from rainwater. |
| Improper storage conditions | : Direct sunlight, high temperature, and high humidity. |