MITSUBISHI

i-MiEV Emergency Response Guide

Lithium-Ion Battery Electric Vehicle

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MITSUBISHI MOTORS

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Introduction

This manual provides safety instructions that need to be followed when rescuing passenger's from the vehicle after an accident and describes how to handle the damaged vehicle.

Failure to follow these instructions and the warnings / cautions provided throughout this manual may result in serious injury including electrical shock due to the high voltage battery installed on i-MiEV.

For your safety and the safety of others, please read and understand this manual.

Throughout this manual the words **WARNING**, **CAUTION** and **NOTE** appear.
These serve as reminders to be especially careful. Failure to follow instructions could result in personal injury or damage to your vehicle.

WARNING:
Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION:
Means hazards or unsafe practices that could cause minor personal injury or damage to your vehicle.

NOTE:
Gives helpful information.

*: indicates optional equipment.
It may differ according to the sales classification: refer to the sales catalogue.

Mitsubishi Motors reserves the right to make changes in design and specification and/or to make additions to or improvements in this product without obligation to install them on products previously manufactured.

Please note that the contents of this manual may not fit completely with actual vehicle due to the change of vehicle specification.

Table of contents

1. Safety precaution for handling high voltage

i-MiEV uses two types of batteries. One is a 12V battery that is the same as the 12V battery used in vehicles powered by internal combustion engines. The other is a high voltage maximum 370V (*1) lithium-ion battery (Main drive lithium-ion battery). The Main drive lithium-ion battery provides high voltage current to the high voltage components shown on page 2. Before rescue work can begin, it is necessary to ensure “isolation” and “cut off” from the high voltage circuit in order to prevent the risk of electric shock before handling the vehicle.

*1: Main drive lithium-ion battery specification is “16kWh lithium-ion, 330V”. Main drive lithium-ion battery maximum voltage capacity is 370V when the Main drive lithium-ion battery is being charged.

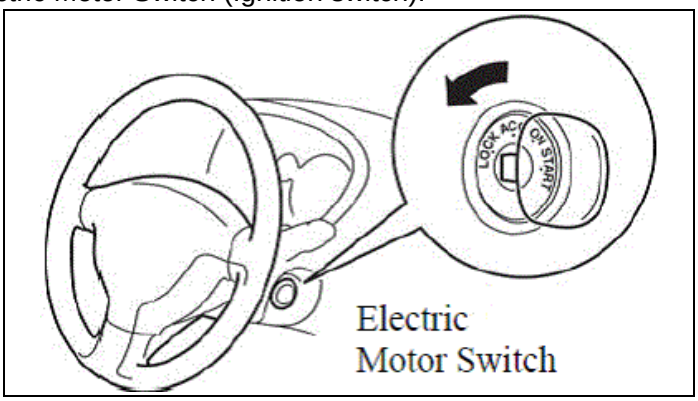
(1) Design features of high voltage components

1) The high voltage circuit is insulated from the vehicle body.
2) All high voltage components are covered by cases and covers. These cases and covers are insulated from the high voltage circuits inside.
3) High voltage wiring cables can be distinguished from normal wiring harness by their orange-colored insulation.
   Before handling the vehicle after an accident, and in order to reduce the risk of electric shock, you must check to determine if any high voltage components have been damaged.

(2) Shutting off high voltage components

The high voltage circuits can be shut off by the following procedures:

1) Turn off the Electric Motor Switch (Ignition switch).



2) Disconnect the 12V battery or remove the power control unit fuse in the fuse box under the front hood.
3) Remove the Service Plug.

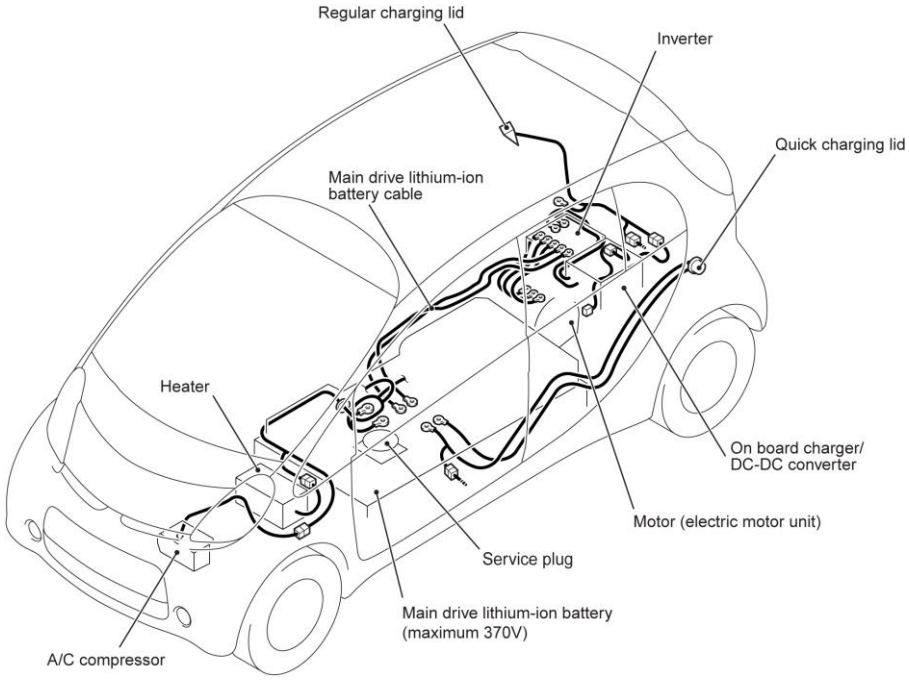
Detailed procedures for shutting off the high voltage circuits are provided later in this manual.

Be advised that this vehicle is also equipped with sensors that are designed to shut down the high voltage circuits in the event of moderate to severe impacts.

⚠ WARNING:
Always handle the vehicle in accordance with the instructions provided throughout this manual to reduce the risk of injury from electric shock.

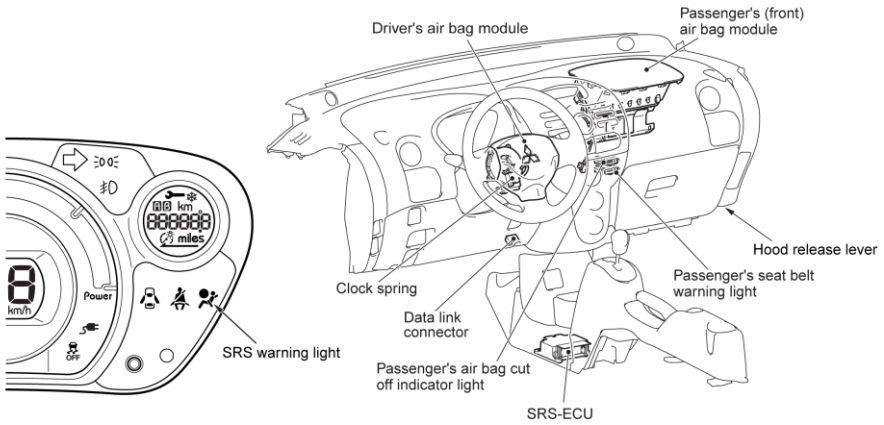
2. High voltage components layout

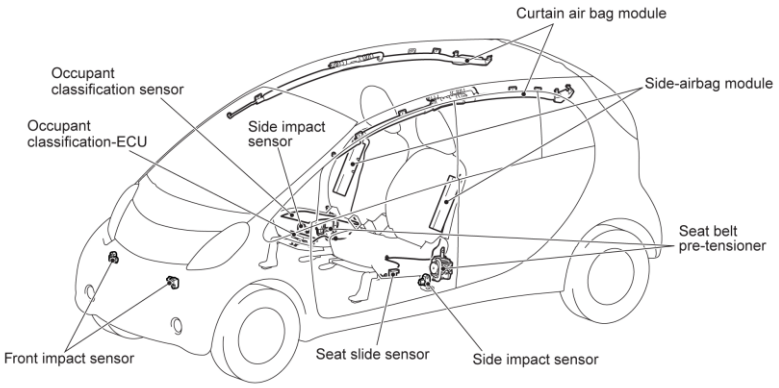
High voltage (maximum 370V) components and wiring cables are located as shown in the figure below.



3. SRS airbags system layout

SRS airbags system (airbags and related wiring harness) are located as shown in the figure below. (Powered by 12V battery)





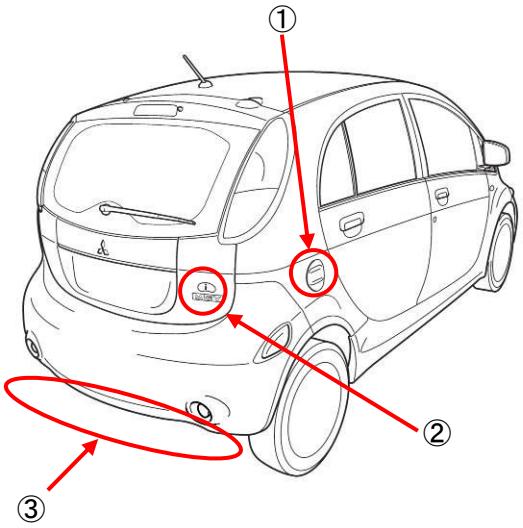
4. To identify i-MiEV

Handle i-MiEV using the appropriate Personal Protective Equipment (PPE) and only the methods described in this manual.

(1) i-MiEV features

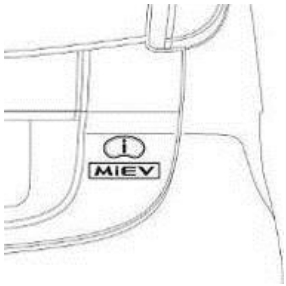
Regular charging lid, MiEV logo mark, Absence of exhaust pipe, Chassis number.

(2) Exterior

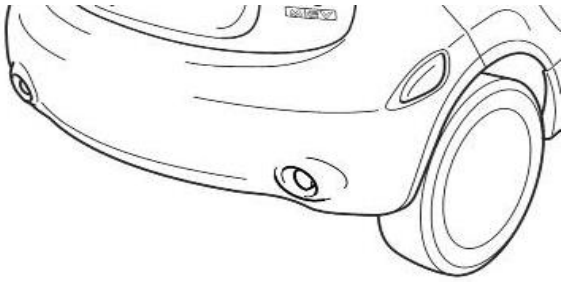


① Regular charging lid on the right side of the vehicle.

② MiEV logo mark is on right side of liftgate.



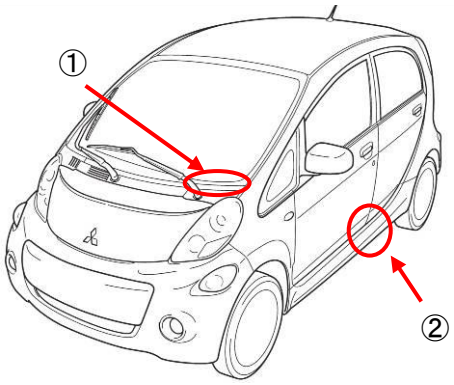
③ Absence of exhaust pipe
i-MiEV does not have an exhaust pipe.



(3) Chassis number & Model code

The Model code is stamped on the “Vehicle identification number plate” and “Vehicle information code plate”.

The Chassis number is stamped on the “Quarter Trim”.

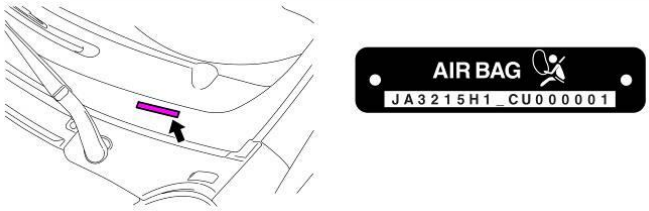


① VEHICLE IDENTIFICATION NUMBER PLATE

The vehicle identification number (VIN) plate is located on a plate attached to the left top side of the instrument panel.

The first 6 digits are “JA3215” for i-MiEV.

Ex) Model code stamp : **JA3215H1_CU00001**

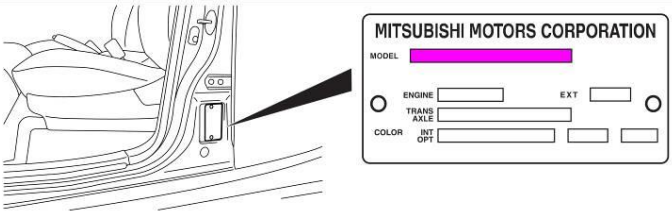


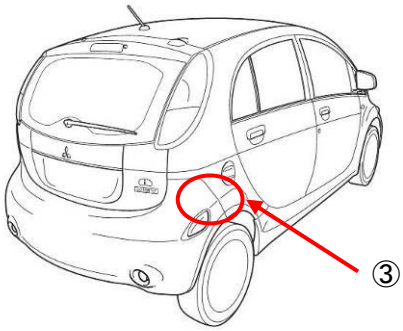
② VEHICLE INFORMATION CODE PLATE

The vehicle information code plate is riveted to the face of the driver’s door sill.

i-MiEV includes “HA3W” or “HA4W” in the MODEL code.

Ex) MODEL code stamp:**HA3WGLDDL2M**





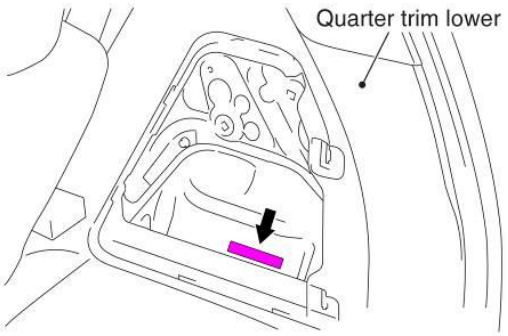
(inside of vehicle)

③ CHASSIS NUMBER

The chassis number is stamped on the body panel, quarter trim lower, inside the vehicle.

i-MiEV includes “HA3W” or “HA4W” in the Chassis number.

Ex) Chassis number stamp:**HA3W-0000010**



5. Consideration points at the accident site

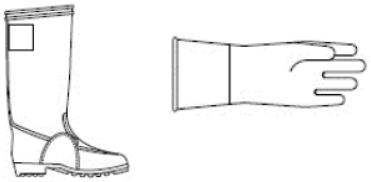
The following precautions need to be observed when you handle the vehicle at the accident site.

⚠ WARNING:
After submergence or if there is a large damage (deformation or hole) in the Main drive lithium-ion battery, since there is a risk of smoking or fire after a lapse of time, be careful when handling.

(1) Required tools and equipment

Marked ★ items are required. The other items should be available and used as necessary.

1) ★ Insulating Personal Protective Equipment (PPE) with a minimum resistance rating of 370V. Rubber insulating gloves and rubber soled insulating shoes should be worn to help prevent electrical shock while working on high voltage circuits. PPE pants and jacket are also recommended.



2) Mask for organic gas, solvent-resistant gloves (or heavy-duty rubber gloves) and eye protection (safety glasses) should be used in case there is electrolyte leakage from the Main drive lithium-ion battery.
3) ★Wrench (size 10mm), to disconnect the negative terminal on the 12V battery.
4) ★Needle-nose pliers, to remove the power control unit fuse.
5) Absorption mat and/or sand to help absorb leaking electrolyte or oil.

⚠ CAUTION:
- The Main drive lithium-ion battery uses an electrolyte made of flammable “Carbonate ester solution of lithium salts”.
- Put the absorption mat and sand which adsorbed the electrolyte in a plastic bag and should be properly disposed it according to the rules of local governments etc. as industrial waste.

6) Fire extinguisher suitable for flammable liquid and electrical equipment fires.
7) Insulating plastic tape which can be used to cover exposed high voltage wiring and/or 12V battery negative terminal.

(2) Required tools and equipment for discharging the Main drive lithium-ion battery

Marked ★ items are required. The other items should be available and used as necessary.

1) Easy set pool and Leak-proof thick plastic sheet
Easy set pool with a minimum size of approximately 450cm X 200cm X 70cm [approximately 180 inch X 80 inch X 30 inch] (length X width X height), and a leak-proof thick plastic sheet as necessary.
2) ★ Socket wrench (size 10mm) and Flat head screwdriver, to detach the Under cover below the Main drive lithium-ion battery.
3) ★ Drill (size φ6mm or less), eye protection (safety glasses), solvent resistant protective equipment and container to drill the drain holes on the bottom of the Main drive lithium-ion battery for draining.

⚠ WARNING:
Do not use non-waterproof electric operated drill because there is a danger of electric shock from drainage in the Main drive lithium-ion battery.

6. Rescue Procedures

⚠ WARNING:

Inappropriate rescue procedures can increase the risk of serious injury or death to rescuers and/or vehicle occupants. Always follow the instructions described in this manual.

- Always wear insulated Personal Protective Equipment (PPE).
- Never directly touch any exposed high voltage wiring cables, protective covers detached from high voltage components, or high voltage components that might be damaged.
- If fluid leakage is observed under the body, the fluid may be electrolyte leaking from the Main drive lithium-ion battery. This electrolyte is flammable and poisonous acid gas will evaporate from the electrolyte. Wear mask for organic gas, solvent-resistant gloves (or heavy-duty rubber gloves) and eye protection (safety glasses). Use an absorption mat or sand to absorb spilled electrolyte. (The electrolyte is clear and colorless and with a slightly sweet odor. It has similar viscosity to water.)
- The Main drive lithium-ion battery uses an electrolyte made of flammable “Carbonate ester solution of lithium salts”.
- Used absorption mat or sand shall be properly disposed as an industrial waste according to state and/or local regulations.
- If electrolyte comes into contact with your skin, flush with water immediately.
- If electrolyte gets into your eyes, do not rub your eyes. Immediately flush your eyes with a large quantity of water and seek medical treatment as soon as possible.
- Before starting rescue work, shut off the high voltage circuits in accordance with instructions on the following pages, unless immediate rescue is required.
- Do not assume high voltage components have been shut off simply because the vehicle is quiet.
- If a charge connector is connected to the vehicle, remove it.
- If the damaged vehicle must be left unattended, display a sign indicating “HIGH VOLTAGE WORK IN PROGRESS!! DANGER! DO NOT TOUCH!”. Refer to the signboard example at the end of this manual.
- Advise all rescuers that an electric v

Colors of fluids used on i-MiEV:

Unit name	Liquid (Fluid) name	Color
Transmission	ATF	Red
Cooling system	Coolant	Blue-green
Heater	Coolant	Blue-green
Brake	Brake fluid	Clear & colorless
Main drive lithium-ion battery	Electrolyte	Clear & colorless
12V battery	Electrolyte	Clear & colorless

⚠ CAUTION:

The Main drive lithium-ion battery uses an electrolyte made of flammable “Carbonate ester solution of lithium salts”.

(1) Preparation of rescue operation

1) Always approach vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
2) Obtain the Key (remote key) from the driver who may be carrying it in a pocket or purse. The vehicle cannot be moved without the Key (remote key).
3) Alert other road users of an emergency by activating the hazard warning lamps, etc.
4) Move the Key (remote key) away from the vehicle to prevent unintended start-up of the system by inadvertent contact with a switch or damage from the crash.
5) Set the select lever to “P (Parking)” position, apply the parking brake, and install wheel chocks.

NOTE:
When the 12V battery is disconnected or removed, you cannot open the liftgate.

(2) To approach the passengers

WARNING:

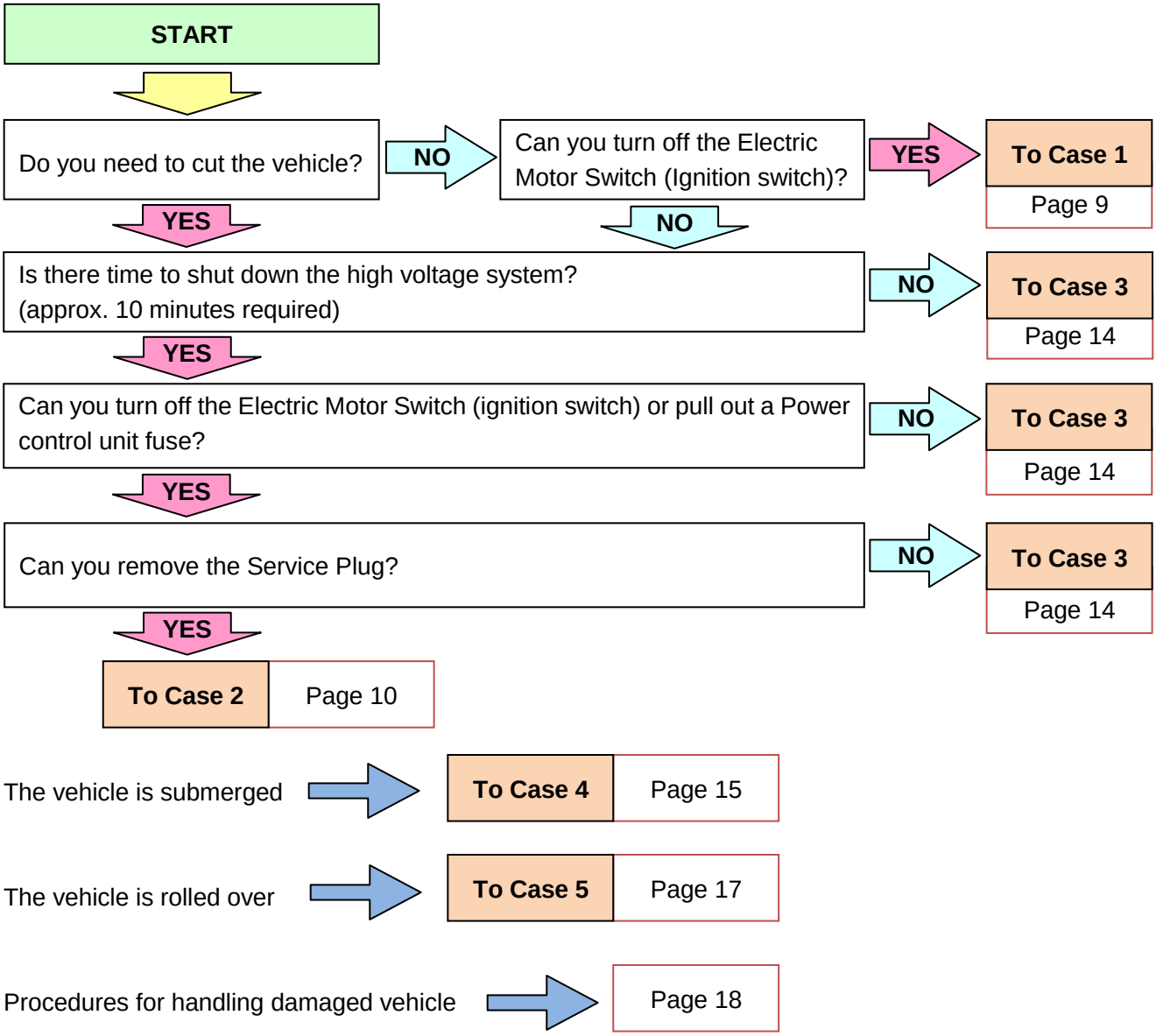
- Make sure the high voltage system is deactivated before performing the rescue operation, if not, resulting in serious injury by electrical shock and in the worst case, it could result in death.
- Wear the insulated Personal Protective Equipment (rubber insulating gloves and rubber soled insulating shoes) [withstand voltage of 400 V or more] if it is inevitable to touch the internal exposed portion of high voltage parts or high voltage harness, or if there is a danger of touching them.

CAUTION:

- On vehicles with the MiEV Remote System, be sure to disconnect the negative terminal of the 12V battery because the system (12V battery charging function, Remote Climate Control function) may be activated unexpectedly and there is a risk of high voltage operation.
- Open and close the door to ensure deactivation of the MiEV Remote System, because the MiEV Remote System is in the activated state and the high voltage system is operating in case that the negative terminal of the 12V battery is disconnected while the MiEV Remote System is activated.

1) After confirming the stop of the vehicle (high voltage system), open or remove the window or the door to approach the passengers.
2) Secure the rescue space inside the vehicle by adjusting the position of the steering wheel or the seat, and removing the head restraint or the seat belt.

(3) Procedures to rescue passenger's



The vehicle is submerged → **To Case 4** Page 15

The vehicle is rolled over → **To Case 5** Page 17

Procedures for handling damaged vehicle → Page 18

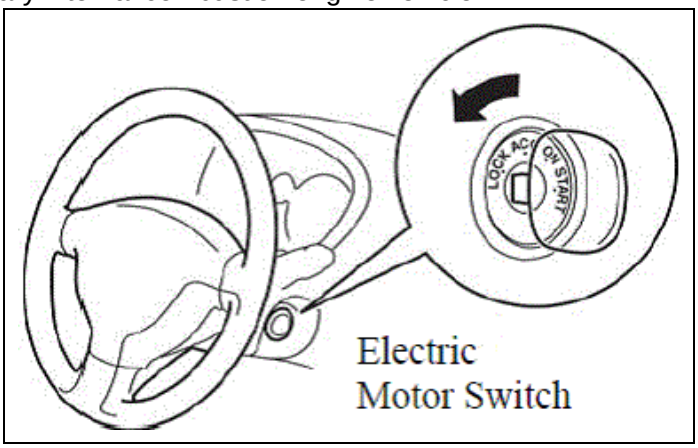
Case 1

It is not necessary to cut the vehicle body and the high voltage components are intact

CAUTION:

- On vehicles with the MiEV Remote System, be sure to disconnect the negative terminal of the 12V battery because the system (12V battery charging function, Remote Climate Control function) may be activated unexpectedly and there is a risk of high voltage operation.
- Open and close the door to ensure deactivation of the MiEV Remote System, because the MiEV Remote System is in the activated state and the high voltage system is operating in case that the negative terminal of the 12V battery is disconnected while the MiEV Remote System is activated.

Inspect the vehicle to determine if the high voltage components or wiring have been damaged. Orange-colored wiring cables indicate high voltage components. If large body damage is observed in areas where high voltage components are located, or if an orange-colored cable or high voltage component is exposed, use the **Case 2** procedure shown below. Otherwise, turn the Electric Motor Switch (Ignition switch) to the “LOCK” position first. Then you can follow the same rescue actions used with an ordinary internal combustion engine vehicle.



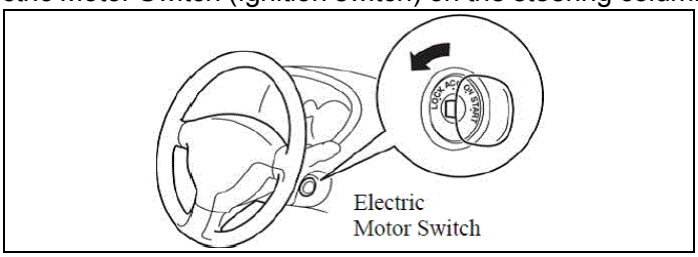
Case 2

It is necessary to cut the vehicle body, but immediate rescue is not essential
(About 10 minutes is required before actual rescue work can begin.)

⚠ CAUTION:

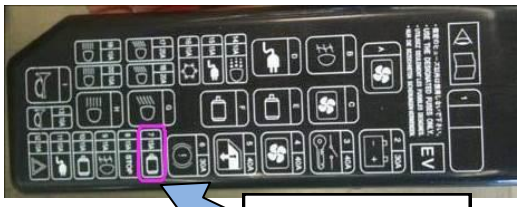
- On vehicles with the MiEV Remote System, be sure to disconnect the negative terminal of the 12V battery because the system (12V battery charging function, Remote Climate Control function) may be activated unexpectedly and there is a risk of high voltage operation.
- Open and close the door to ensure deactivation of the MiEV Remote System, because the MiEV Remote System is in the activated state and the high voltage system is operating in case that the negative terminal of the 12V battery is disconnected while the MiEV Remote System is activated.

1) Shut down the vehicle's high voltage system using one of the following two methods. This will disconnect the high voltage electricity current supplied from the Main drive lithium-ion battery.
① Turn the Electric Motor Switch (Ignition switch) on the steering column to the "LOCK" position.

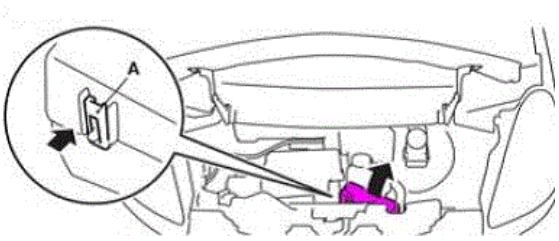


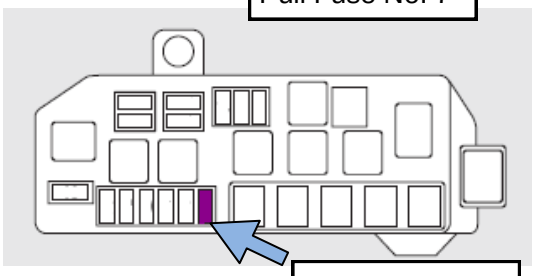
② If it is impossible to turn off the Electric Motor Switch (Ignition switch), use needle-nose pliers to remove the Power control unit fuse from the fuse box under the hood. It is the No.7 15A fuse shown in below figure. If you cannot locate this fuse, remove all fuses and relays in the fuse box.

The hood release is under the instrument panel beside the **front passenger's** door.



Pull Fuse No. 7



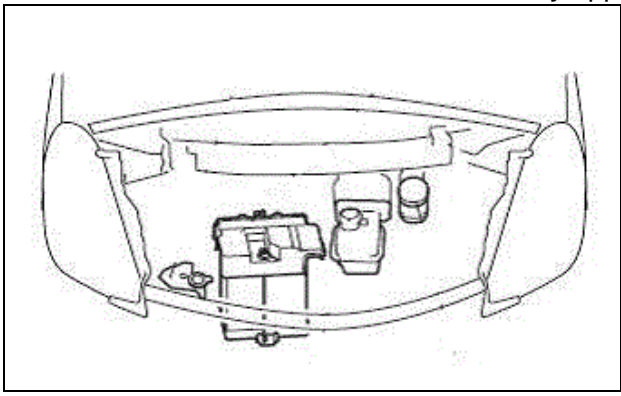


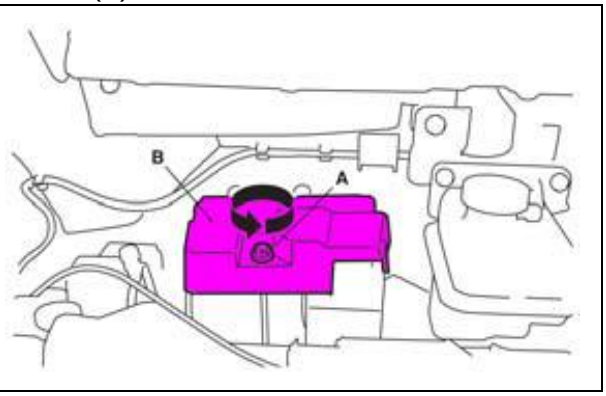
Pull Fuse No. 7

2) Wait at least 1 minute before proceeding to the next step. High voltage system shut down is performed during this waiting time.

3) Disconnect the 12V battery negative terminal. This will disconnect the power supply to SRS airbags system and the EV ECU. Disconnect the 12V battery negative terminal by using a 10mm wrench as follows:

① Remove the cover of the 12V battery under the hood. Turn the plastic nut (A) counter clockwise, and then remove the battery upper cover (B).





② Disconnect the negative terminal from the 12V battery.

③ If necessary, cut the negative 12V battery cable, then wrap electrical tape to insulate the cable ends.

⚠ **WARNING:**

- After disconnecting the 12V battery negative terminal, to avoid the risk of inadvertent air bag deployment, wait at least 1 minute. The SRS air bag system is designed to retain enough voltage to deploy the air bag for a short time even after the 12V battery has been disconnected.
- On vehicles with the MiEV Remote System, be sure to disconnect the negative terminal of the 12V battery because the system (12V battery charging function, Remote Climate Control function) may be activated unexpectedly and there is a risk of high voltage operation.
- Open and close the door to ensure deactivation of the MiEV Remote System, because the MiEV Remote System is in the activated state and the high voltage system is operating in case that the negative terminal of the 12V battery is disconnected while the MiEV Remote System is activated.

4) Wait at least 5 minutes before proceeding to the next step. Working with the high voltage circuit in the Main drive lithium-ion battery can be performed about 5 minutes after disconnecting the 12V battery negative terminal.

⚠ **WARNING:**

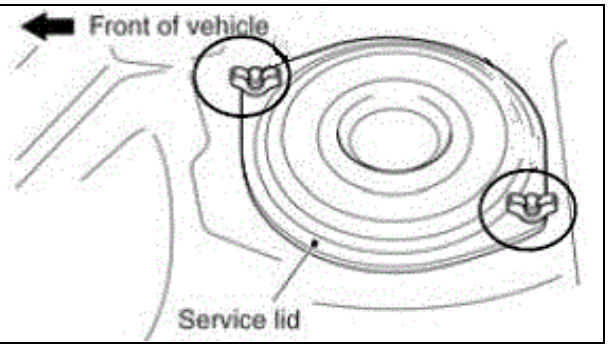
There are some high voltage components and wiring cables which retain high voltage for 5 minutes after disconnecting the 12V battery. Wait at least 5 minutes, then proceed with the removal of the Service Plug.

5) Remove the Service Plug by following the procedures below.

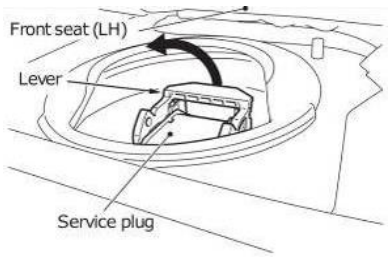
⚠ WARNING:

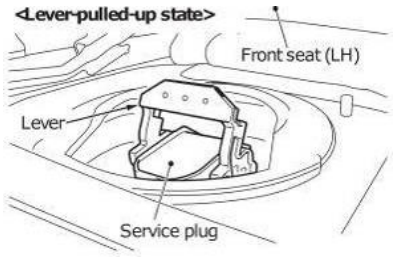
- Always wear Personal Protective Equipment (PPE) when removing the Service Plug.
- If the Service Plug is removed without following the procedures described in this section, a short circuit can occur and melted metal debris may fly from the service plug terminal, resulting in injury to rescuers and/or vehicle occupants.

① Adjust the **front left side seat** to its rear most position and roll up the carpet under the seat. Detach the service lid by removing two wing nuts.



② Pull up the lever of the Service Plug and then remove the Service Plug by pulling upward on the lever.





⚠ WARNING:

- After removing the Service Plug, keep it in a secure place away from other rescue workers to prevent accidental handling/re-installation of the Service Plug.
- There are some high voltage components and wiring cables which retain high voltage for 5 minutes after disconnecting the 12V battery. When it is necessary to cut the high voltage components and wiring cables, wait at least 5 minutes after cutting off the high voltage circuit before commencing the next action.

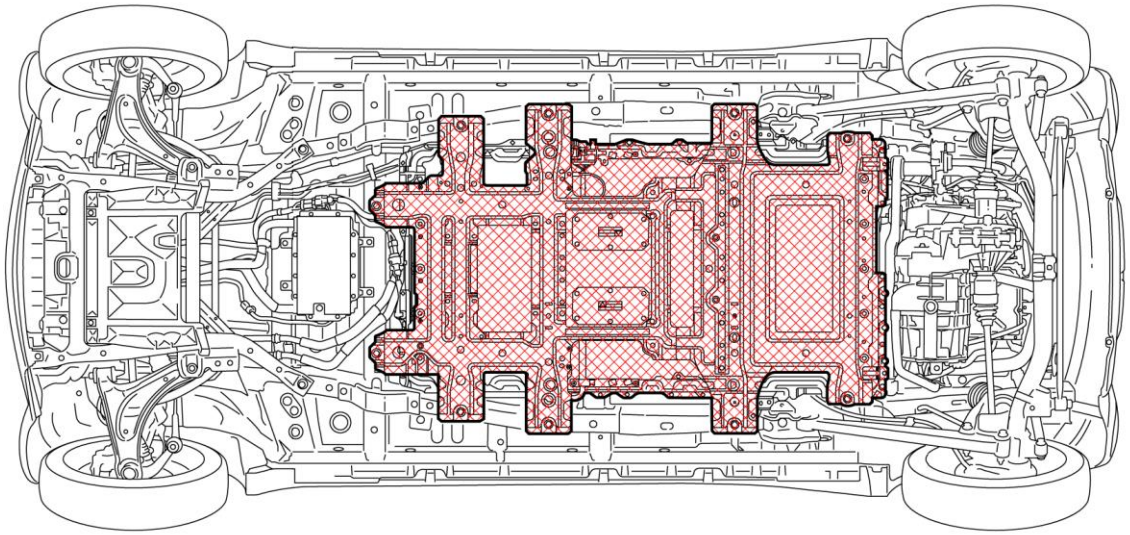
6) Begin appropriate rescue action, such as cutting the vehicle body.

⚠ WARNING:

NEVER cut the Main drive lithium-ion battery.

Bottom view of vehicle

Shaded area indicates Main drive lithium-ion battery (with under cover removed).



Case 3

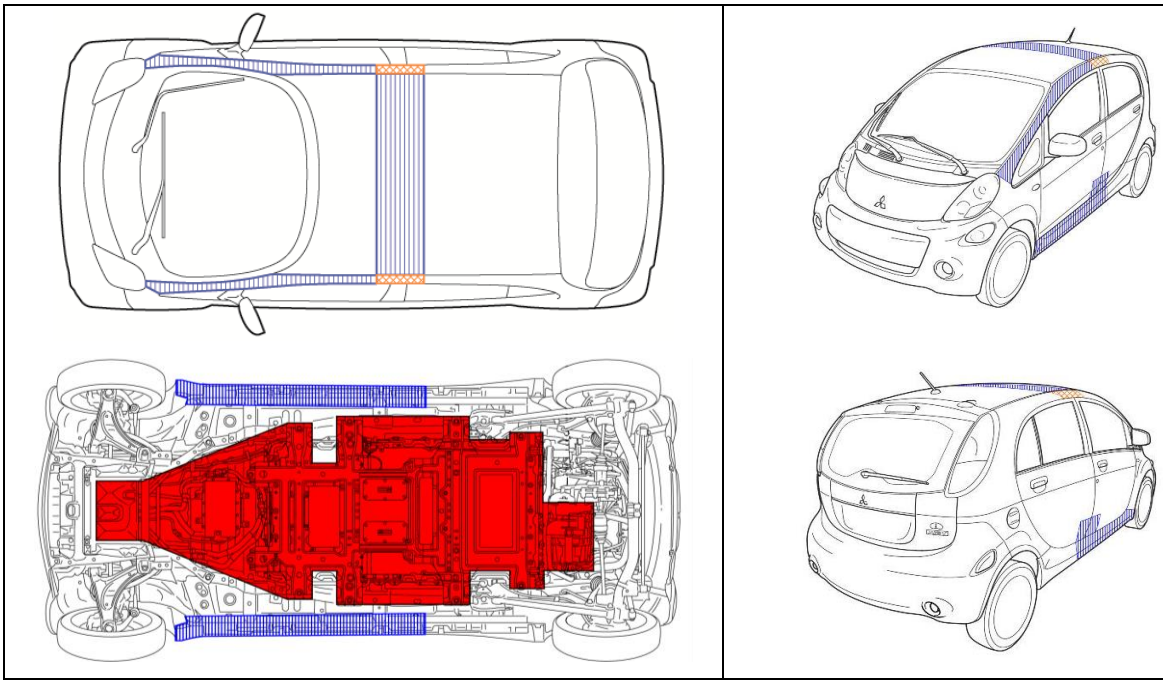
It is necessary to cut the vehicle body and immediate rescue is essential or the orange-colored high voltage cables are exposed

⚠ WARNING:

- Always wear appropriate Personal Protective Equipment (PPE).
- Before cutting the vehicle body, confirm the locations of the orange high voltage wiring, high voltage components, and SRS air bag components shown on page 2 and in the illustrations below.
- NEVER CUT THE MAIN DRIVE LITHIUM-ION BATTERY, ORANGE HIGH VOLTAGE WIRING, HIGH VOLTAGE COMPONENTS, OR THE SRS AIR BAG COMPONENTS.

To prevent the risk of a high voltage electric shock and deployment of SRS airbags system, DO NOT cut the colored (shaded) areas.

	Risk of high voltage shock Never cut this area. Risk of serious injury or death.
	Risk of curtain airbag deployment Never cut this area. It contains a device to generate compressed gases for curtain airbag deployment. If the curtain airbag is already deployed, it's possible to cut here.
	Risk of side airbag and/or curtain airbag deployment Do not cut this area because there is risk that a side airbag and/or a curtain airbag may deploy due to a short circuit caused by the accident. If both the side airbag and curtain airbag have already been deployed, this area can be cut. If at least 1 minute has elapsed after removing the negative terminal of 12V battery or turning off the “Electric Motor Switch (Ignition switch)”, it’s possible to cut this area.



Case 4

Submerged vehicle

When a vehicle is submerged, flammable hydrogen gas may be generated from the Main drive lithium-ion battery. After pulling the vehicle from the water, immediately flush the inside of the Main drive lithium-ion battery using the following procedures.

⚠ CAUTION:

Flushing the Main drive lithium-ion battery immediately with fresh water will assist in:

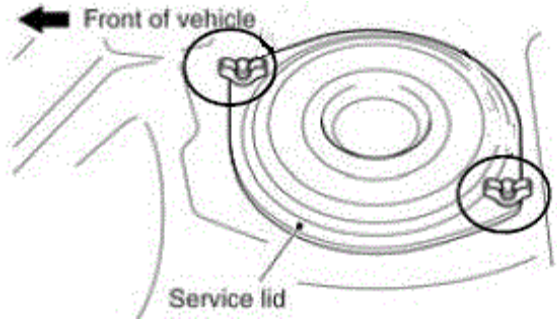
- Reduction of flammable hydrogen gas formed by electrolyzing.
  If water containing salt enters inside the Main drive lithium-ion battery while the vehicle is submerged, there is a possibility that flammable hydrogen gas is generated from suddenly electrolyzing. Therefore, it's necessary to pour fresh water into the Main drive lithium-ion battery.
- Reduction of heat and/or ignition caused by short-circuit of the Main drive lithium-ion battery.
  A short-circuit from water infiltrating into the Main drive lithium-ion battery can cause excessive heating and fire. To prevent this from occurring, high voltage discharge and cooling are necessary by filling the Main drive lithium-ion battery with fresh water.
- Process the drained water from the Main drive lithium-ion battery according to the rules of local governments etc. as industrial waste properly. Since the drained water is an aqueous solution containing a small amount (1 to several ppm) of metals such as P (Phosphorus) and Li (Lithium) etc., advise industrial waste disposer for proper disposal.

1) Inspect the vehicle for damage. If you find serious damage to the vehicle and/or the Main drive lithium-ion battery is deformed/damaged or the Main drive lithium-ion battery internals are exposed, never touch the Main drive lithium-ion battery and high voltage cable.
2) Before pulling the vehicle from the water, wear appropriate Personal Protection Equipment (PPE), then drain the water from the cabin.
3) To reduce the risk of fire by flammable hydrogen gas, the vehicle should be kept in a well-ventilated outside location with all windows, doors and liftgate open.
4) Remove the service lid.

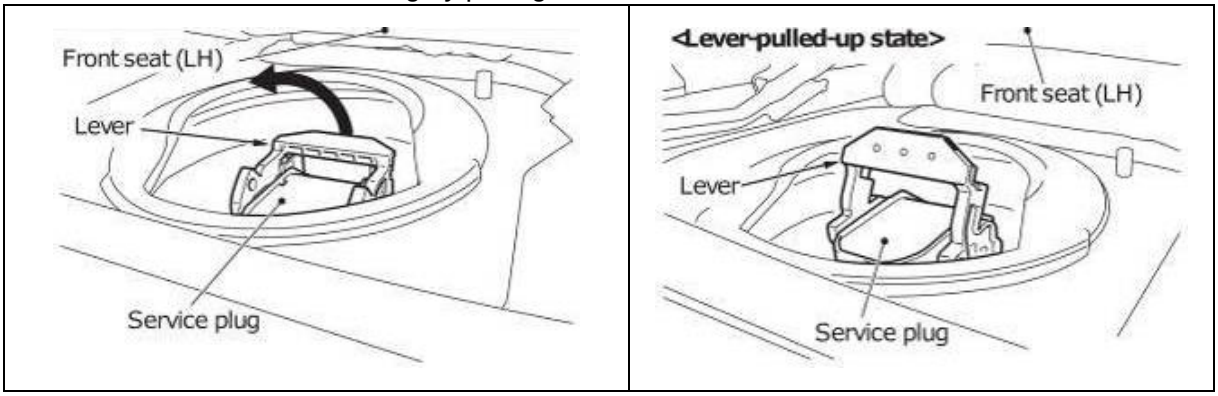
⚠ CAUTION:

If flushing the Main drive lithium-ion battery cannot be performed due to the damage of the Main drive lithium-ion battery etc., consult the nearest certified Mitsubishi EV dealer how to flush the Main drive lithium-ion battery.

① Adjust the **front left side seat** to its rear most position and roll up the carpet under the seat. Detach the service lid by removing two wing nuts.



② Wear the insulated Personal Protective Equipment (PPE), raise the lever of the Service Plug and remove the Service Plug by pulling it out.



⚠ WARNING:
After removing the Service Plug, keep it in a secure place away from other rescue workers to prevent accidental handling/re-installation of the Service Plug.

③ Flush at least 8 gallons (30 litters) of non-saline water (water not containing salt) through the service lid hole.

⚠ WARNING:
- Pour fresh water into the Main drive lithium-ion battery immediately after pulling the vehicle from the water.
- Never pour seawater or any water containing salt into the Main drive lithium-ion battery. This can result in sudden electrolyzing, which generates a large volume of flammable hydrogen gas.

5) To discharge the Main drive lithium-ion battery completely, keep the Main drive lithium-ion battery filled with water for at least 14 days.
6) When it is necessary to move a vehicle from site within 14 days, carry a fire extinguisher during transportation in case of fire. For enhanced safety, transport the damaged vehicle on a flatbed truck followed by another support vehicle for monitoring. Check the water level of the Main drive lithium-ion battery periodically and always keep the Main drive lithium-ion battery filled with water.

⚠ WARNING:
There is a possibility that a Main drive lithium-ion battery is not discharged completely even when submerged for more than 14 days. To discharge the Main drive lithium-ion battery completely, it is necessary to fill it with fresh water for at least 14 days after the vehicle is recovered.

7) If there is any leakage from the Main drive lithium-ion battery during and/or after pouring water, follow the instructions for **Case 7**.
8) After 14 days, discharge the water from the Main drive lithium-ion battery with instructions for **Case 7-3)** Drained water shall be properly disposed of as an industrial waste according to state and/or local regulations.

Case 5

Before righting a rolled over vehicle

Inspect the area for debris or objects that could damage the Main drive lithium-ion battery when the vehicle is righted. Right the vehicle slowly, taking care not to contact or damage the Main drive lithium-ion battery.

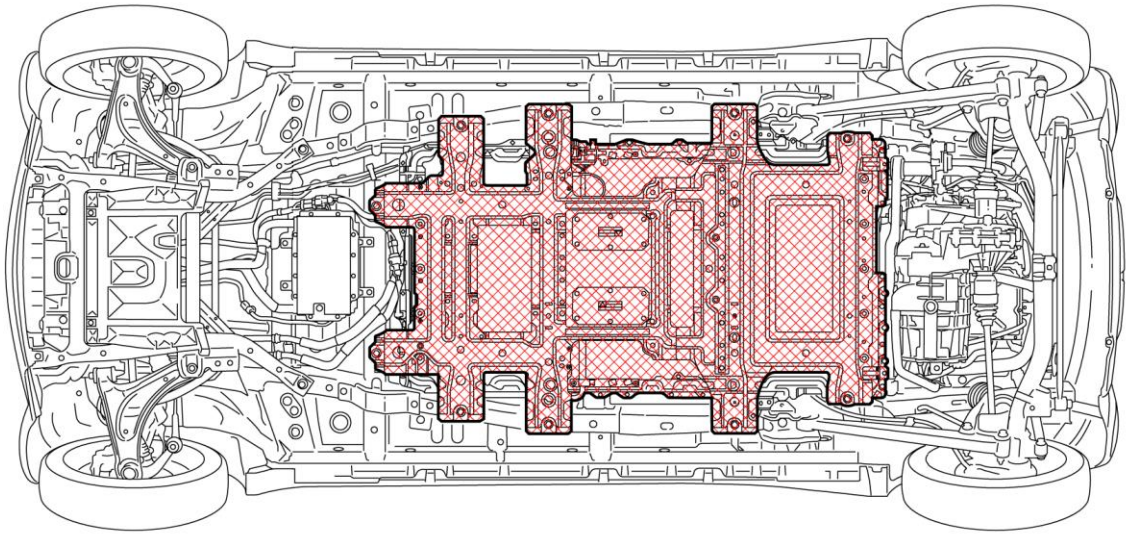
⚠ WARNING:

If the Main drive lithium-ion battery is damaged, electrolyte can leak from the Main drive lithium-ion battery and possibly cause a short circuit. If you see electrolyte leaking or observe damage to the Main drive lithium-ion battery, wear appropriate Personal Protection Equipment (PPE).

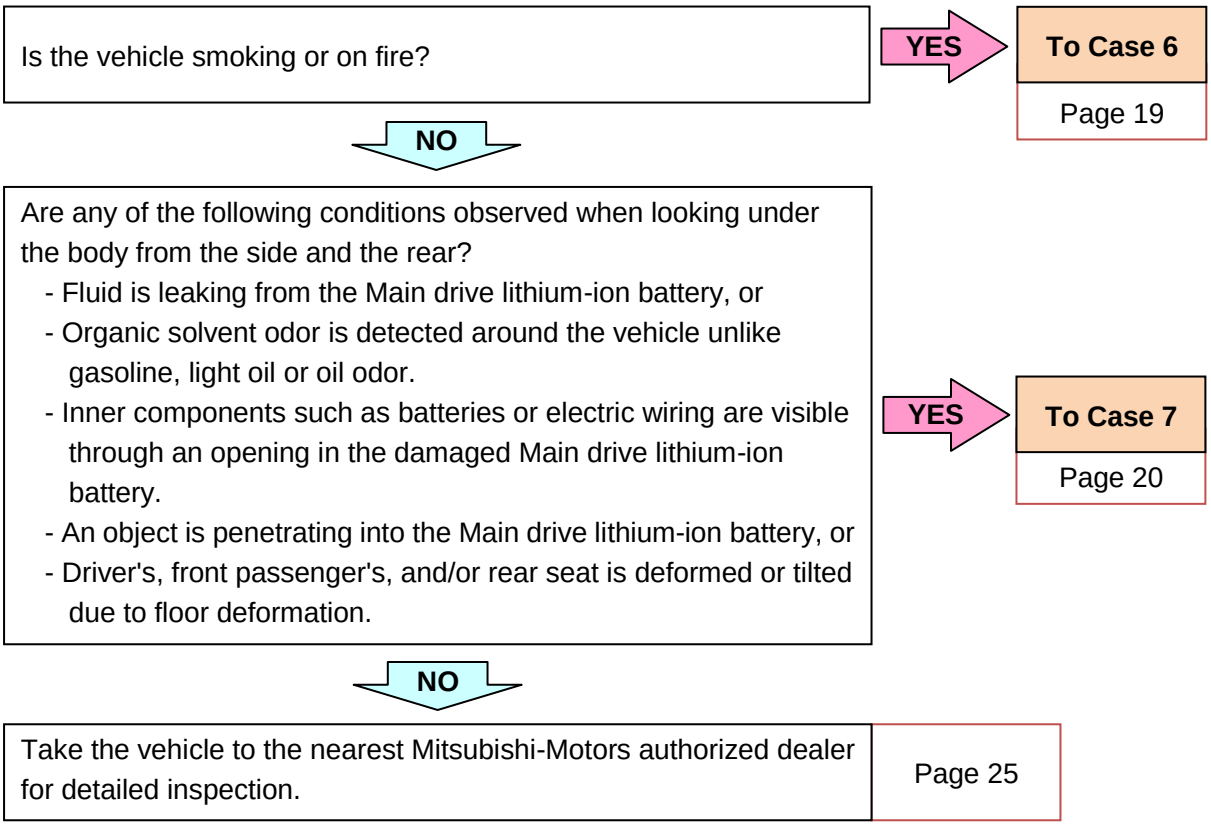
⚠ CAUTION:

Please reserve enough space around the vehicle and make the vehicle right slowly.
This vehicle equips the heavy weight Main drive lithium-ion battery at the under floor.
Therefore when the vehicle is righted, it may turned a full 1/2 turn in one motion, roof to wheels without resting on it's side.

Bottom view of vehicle
Shaded area indicates Main drive lithium-ion battery (with under cover removed).



(4) Procedures for handling damaged vehicle



Case 6

Vehicle fire

In case of vehicle fire, alert the fire department immediately and start extinguishing the fire using the following procedures where possible.

⚠ WARNING:

Failure to follow these instructions may result in serious injury such as electric shock:

- The Main drive lithium-ion battery is designed to prevent a substantial amount of electrolyte from leaking from the battery case even in the event of rupture.
- The Main drive lithium-ion battery uses an electrolyte made of flammable “Carbonate ester solution of lithium salts”, which produces toxic acid vapor when reacting with moisture in the air.
- To handle the electrolyte, wear a mask for organic gas, solvent resistant gloves and eye protection (safety glasses) to avoid exposure to potentially harmful substances.

1) Fire-extinguishing procedures

⚠ WARNING:

Never pour seawater or any water containing salt into the Main drive lithium-ion battery. This can result in sudden electrolyzing, which generates a large volume of flammable hydrogen gas

① By fire extinguisher

Use a fire extinguisher which is suitable for flammable liquid and electrical equipment fires.

② By water

A large volume of water, such as from a fire hydrant must be used. Make sure to use water not containing salt, such as tap water, well water or pond water.

DO NOT attempt to extinguish the fire with a small amount of water. If a small amount of water contacts the inner portion of the Main drive lithium-ion battery, a short circuit can occur causing the release of toxic gas.

Unless a large volume of salt-free water is available, remain a safe distance from the vehicle fire and wait for fire department to arrive.

2) Procedures after the fire is extinguished

The Main drive lithium-ion battery must always be discharged (de-energized) after the vehicle fire is extinguished. Follow the instructions in **Case 7: “The Main drive lithium-ion battery is severely damaged”** to discharge the Main drive lithium-ion battery.

⚠ WARNING:

The following may remain an issue until the Main drive lithium-ion battery is properly discharged.

- There is a potential for delayed ignition or re-ignition of the Main drive lithium-ion battery even after it is believed to be extinguished.
- If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping or hissing noises from the high voltage battery compartment, notify the Fire Department. Ensure area is clear around the vehicle. If possible, open windows to avoid potential gas build-up.

Case 7

The Main drive lithium-ion battery is severely damaged

1) If the Main drive lithium-ion battery is severely damaged, the Main drive lithium-ion battery must be discharged by **soaking in water** to reduce the risk of electric shock or fire.
Follow the instructions below to discharge the Main drive lithium-ion battery.

WARNING:

Failure to follow these instructions may result in serious injury such as electric shock:

- The Main drive lithium-ion battery is designed to prevent a substantial amount of electrolyte from leaking from the battery case even in the event of rupture.
- The Main drive lithium-ion battery uses an electrolyte made of flammable “Carbonate ester solution of lithium salts”, which produces toxic acid vapor when reacting with moisture in the air.
- To handle the electrolyte, wear a mask for organic gas, solvent resistant gloves and eye protection (safety glasses) to avoid exposure to potentially harmful substances.
- Physical damage to the vehicle or the Main drive lithium-ion battery may result in immediate or delayed release of toxic and/or flammable gases and fire.

① Transport the vehicle on a flatbed truck to an open space large enough to prevent fire from spreading in case of a vehicle fire. (For vehicle loading procedures, refer to Page 26.)

② After the damaged vehicle is loaded on a flatbed truck, inspect for leaking electrolyte from the vehicle. If you find any leakage, use an absorption mat or sand to absorb spilled electrolyte to prevent it from spreading further.

③ Used absorption mat or sand shall be properly disposed as an industrial waste according to state and/or local regulations.

④ Carry a fire extinguisher during transportation in case of fire. For enhanced safety, always have a tow truck loaded with a damaged vehicle followed by another support vehicle for monitoring.

⑤ Proceed to the Main drive lithium-ion battery discharging procedures immediately after transporting a damaged vehicle.

⑥ If it is not possible to proceed to the Main drive lithium-ion battery discharging procedures immediately, place the vehicle in an open space away from any structure or vehicle, and continue to monitor the vehicle until the discharging procedures are completed and the risk of fire is eliminated. If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping or hissing noises from the high voltage battery compartment, notify the Fire Department. Ensure area is clear around the vehicle. If possible, open windows to avoid potential gas build-up.

2) Main drive lithium-ion battery discharging procedures

⚠ WARNING:

Never pour seawater or any water containing salt. This can result in sudden electrolyzing, which generates a large volume of flammable hydrogen gas.

⚠ CAUTION:

Electrolysis of water produces hydrogen inside the Main drive lithium-ion battery for approximately 14 days after the Main drive lithium-ion battery is submerged in water.

To reduce the risk of fire, follow these instructions:

- Keep the vehicle in a well-ventilated area located outside.
- Keep all windows, doors and liftgate open to prevent hydrogen from accumulating in the passenger compartment.

Marked ★ items are required. The other items should be available and used as necessary.

Step 1. Set up a easy set pool in the size of approximately 450cm X 200cm X 70cm [approximately 180 inch X 80 inch X 30 inch] (length X width X height).

Step 2. If there is a risk of water leakage from the easy set pool, place a thick plastic sheet under the pool.

Step 3. Use a forklift or similar equipment to place the vehicle in the center of the pool.

Step 4. ★ Open all windows, doors and liftgate.

Step 5. ★ Make sure to use water not containing salt, such as tap water, well water or pond water, to prevent harmful reactions.

★ Required water level:

Keep pouring water until a minimum required depth of 50cm [20 inch] is achieved. Front and Rear tire height is about 50cm [20 inch]. (See illustration below.)

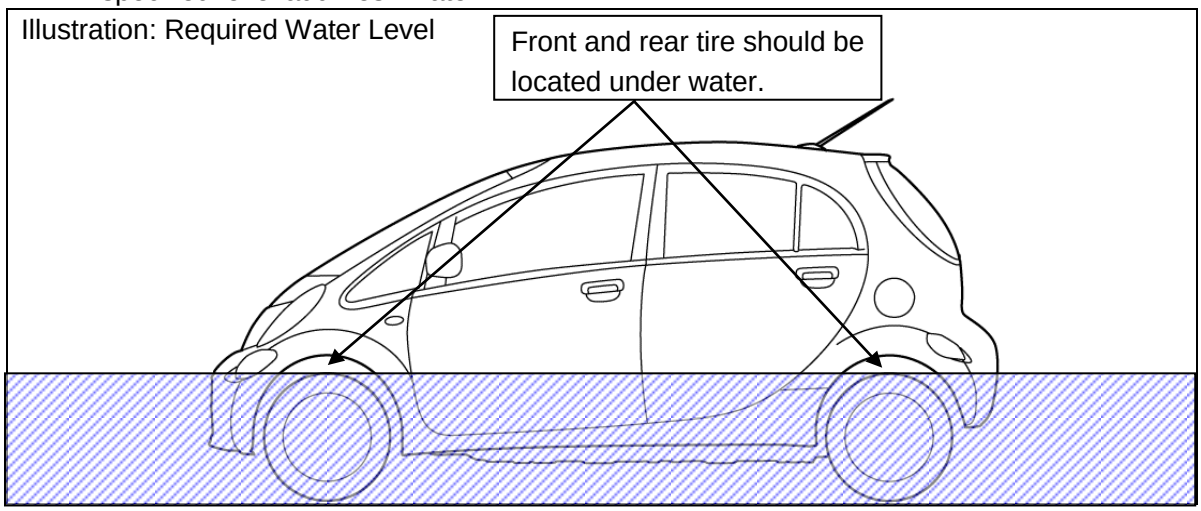
This water level is considered deep enough for the Main drive lithium-ion battery to be completely submerged in water.

If the vehicle body is significantly deformed due to impact from crash, make sure that the Main drive lithium-ion battery installed under the floor is completely submerged in water.

★ Maintain this water level for at least 14 days with the Main drive lithium-ion battery soaking in water.

Check the water level periodically, when the water level was decreased and lower than specified level add fresh water.

Illustration: Required Water Level



3) Draining the Main drive lithium-ion battery

Step 1. After 14 days have elapsed, remove the vehicle from the water.

Step 2. Remove the under cover (2 pieces) from bottom of vehicle. (See illustration below.)

- Use Socket wrench (size 10mm) for loosing of fixing bolt.
- Use Flat head screwdriver for removing of fixing clip.

Step 3. Drill drain holes in the marked locations on the bottom of the Main drive lithium-ion battery (See “Drain hole locations on Main drive lithium-ion battery” on next page). Then, drain water from the Main drive lithium-ion battery.
The drained water from the Main drive lithium-ion battery should be collected in a container.

Step 4. Drained water from the pool and the Main drive lithium-ion battery shall be properly disposed of as an industrial waste according to state and/or local regulations.

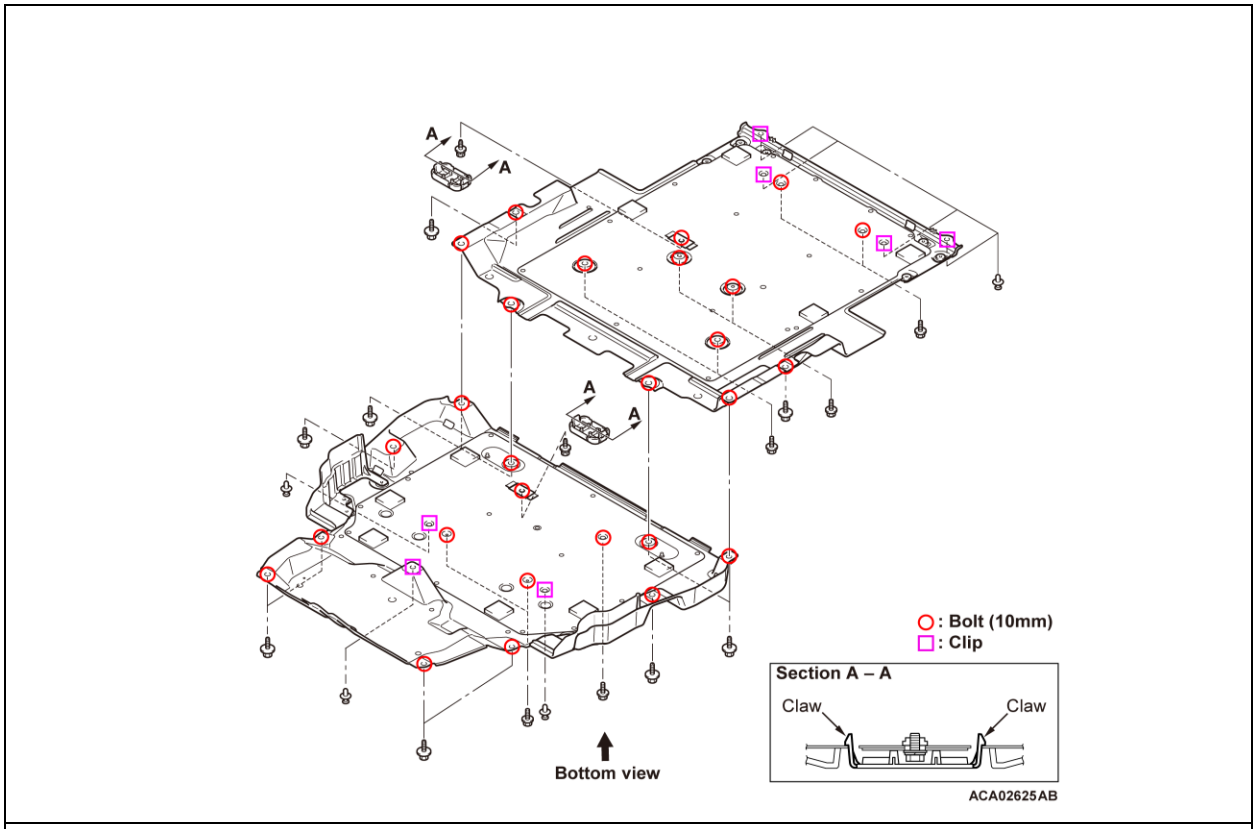
WARNING:

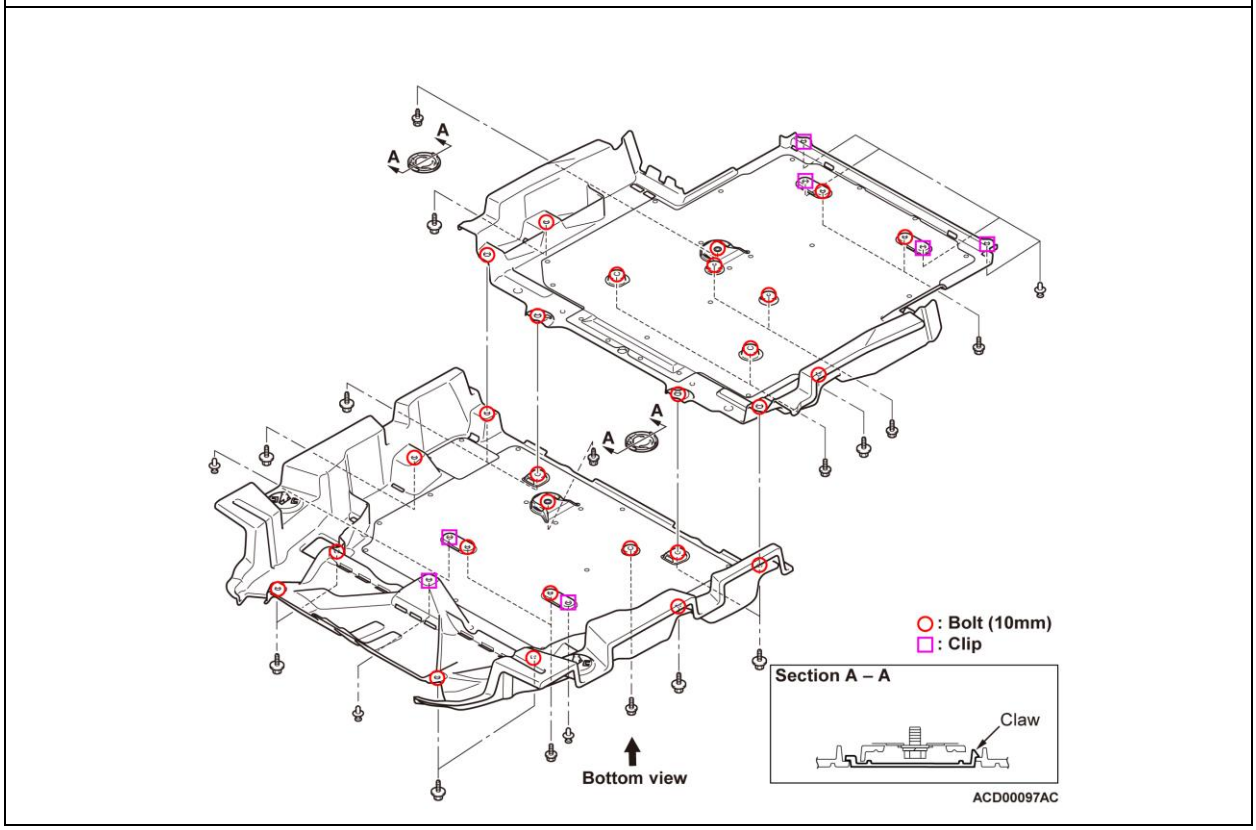
- Always wear eye protection (safety glasses) to protect from sharp flying chips and drain water for your eyes safety.
- Do not use an electric operated drill to make holes in the Main drive lithium-ion battery as water coming down may enter the drill, cause a short, and electrocute the operator. Instead, use a battery operated drill and wear rubber insulating gloves.
- If there is a danger that the drainage in the Main drive lithium-ion battery is touch the work clothes and the skin, wear the solvent resistant protective equipment and perform the operation.

CAUTION:

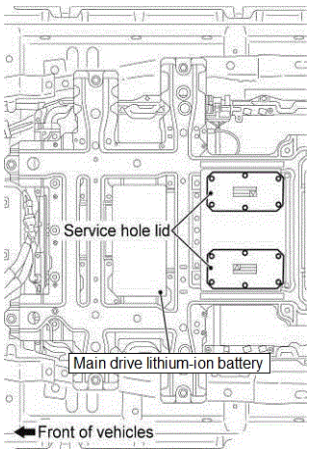
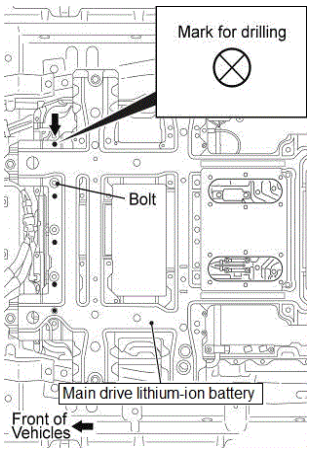
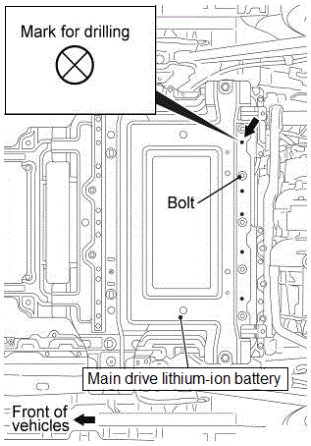
Process the drained water from the pool or the Main drive lithium-ion battery according to the rules of local governments etc. as industrial waste properly. Since the drained water is an aqueous solution containing a small amount (1 to several ppm) of metals such as P (Phosphorus) and Li (Lithium) etc., advise industrial waste disposer for proper disposal.

➢ Illustration : Fixing point of Under cover





➢ Drain hole locations on Main drive lithium-ion battery

Service hole lid: Remove the service hole lids on the bottom of the Main drive lithium-ion battery and drain the Main drive lithium-ion battery.	
Front end of Main drive lithium-ion battery: Use a drill (size φ6 or less) to drill drain holes in the five marked locations on the front bottom of the Main drive lithium-ion battery. Then drain the Main drive lithium-ion battery.	
Rear end of Main drive lithium-ion battery: Use a drill (size φ6 or less) to drill drain holes in the five marked locations on the rear bottom of the Main drive lithium-ion battery. Then drain the Main drive lithium-ion battery.	

⚠ CAUTION:

Process the drained water from the pool or the Main drive lithium-ion battery according to the rules of local governments etc. as industrial waste properly. Since the drained water is an aqueous solution containing a small amount (1 to several ppm) of metals such as P (Phosphorus) and Li (Lithium) etc., advise industrial waste disposer for proper disposal.

7. Transporting a damaged vehicle

(1) If the vehicle can be driven

You can drive the damaged vehicle for transportation purpose if there is no significant damage to the vehicle. Do not drive if any of the following conditions are evident:

- High voltage components and/or wiring cables are damaged.
- Electric motor (electric motor unit), transmission, brakes, suspension, and/or tires are damaged.
- Oil and/or cooling water are leaking.
- "READY" indicator lamp (meaning ready to drive) does not illuminate in the instrument panel after turning on the Electric Motor Switch (Ignition switch), with the selector lever in the "P (Parking)" position and with the foot brake applied.

If the "READY" indicator lamp turns off and/or Electric Vehicle related warning lamps turn on in the instrument panel, or if you find an abnormal noise, smell and/or strong vibration from the vehicle during driving, the following procedure should be carried out:

⚠ WARNING:

Always wear appropriate insulating Personal Protective Equipment (PPE) when removing the Service Plug.

① Stop the vehicle as soon as possible in a safe location.
② Set the selector lever to "P (Parking)" position and apply the parking brake.
③ Turn the Electric Motor Switch (Ignition switch) to "LOCK" position.
④ Wait at least 1 minute, then disconnect 12V battery negative terminal. Then wait 5 minutes.
⑤ Wearing Personal Protective Equipment (PPE), unplug the Service Plug. Refer to page 12 for details.
⑥ Transport the vehicle using a tow truck.

(2) If the vehicle cannot be driven

⚠ WARNING:

- Always wear Personal Protective Equipment (PPE) when removing the Service Plug.
- If the Service Plug is removed without following the procedures described in this section, a short circuit can occur and melted metal debris may fly from the service plug terminal, resulting in injury to rescuers and/or vehicle occupants.

1) Shut off the high voltage circuits by turning the Electric Motor Switch (Ignition switch) to the "LOCK" position, or by removing the No.7 fuse from the fuse box. (See page 10)
2) Wait at least 1 minute before proceeding to the next step. High voltage system shut down is performed during this waiting time.
3) Disconnect the 12V battery negative terminal. (See page 11)
4) If necessary, cut the negative 12V battery cable, then wrap electrical tape to insulate the cable ends.
5) Wait at least 5 minutes before proceeding to the next step. Working with the high voltage circuit in the Main drive lithium-ion battery can be performed about 5 minutes after disconnecting the 12V battery negative terminal.

6) Remove the Service Plug. (See page 12)

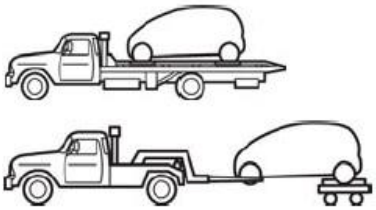
WARNING:

- After removing the Service Plug, keep it in a secure place away from other rescue workers to prevent accidental handling.
- There are some high voltage components and wiring cables which retain high voltage for 5 minutes after disconnecting the 12V battery. When it is necessary to cut the high voltage components and wiring cables, wait for at least 5 minutes after the process of cutting off the high voltage circuit, before commencing the next action.

7) Towing instructions are described below.

(3) Transportation of the accident vehicle by tow truck

Transport the vehicle on a flatbed truck or tow the vehicle with all wheels off the ground.

	Carrying method	Remarks
Acceptable	Lift up all wheels 	・ Carry the vehicle with the selector lever in the “P (Parking)” position and the parking brake applied.
Not acceptable	Lift up either front or rear wheel 	・ Carrying the vehicle with rear wheels on the ground could cause vehicle fire due to short circuit by the electricity generated from the electric motor (electric motor unit) through rolling rear wheels on the ground. ・ Do not carry the accident vehicle with only front or rear wheel lifted up.
Not acceptable	Hang front wheel 	・ Do not carry the accident vehicle by a truck with sling-type towing devices because the bumper and/or body may become damaged.

WARNING:

- Never tow the vehicle with the rear wheels (drive wheels) on the ground. It could cause damage to the electric motors. Also this may cause a fire if wiring in the electric motor unit room becomes damaged.
- After submergence or if there is a large damage (deformation or hole) in the Main drive lithium-ion battery, since there is a risk of smoking or fire after a lapse of time, keep it at least 49.3 feet (15 meters) away from other vehicles or buildings when storing the vehicle.

・ When loading the vehicle on the truck, handle carefully to prevent further damage.

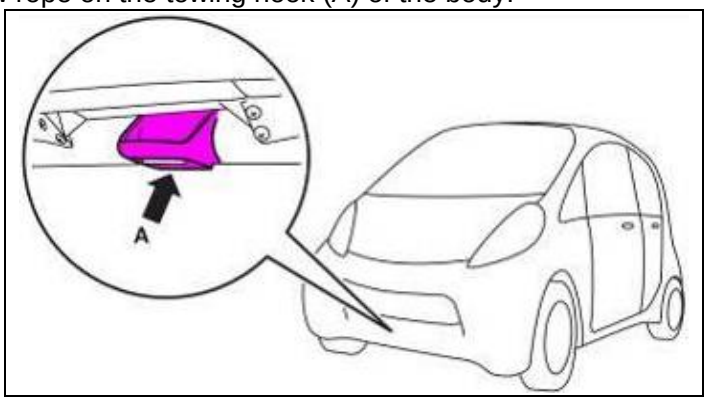
(4) Towing by tow rope (for emergency situations only)

⚠ WARNING:

Towing the vehicle with the rear wheels on the ground may cause vehicle fire due to short circuit by the electricity generated from the electric motor (electric motor unit).
If there is no other alternative, and you must tow the vehicle using a tow rope, the vehicle speed must not exceed 18 mph (30 km/h) and the towing distance must be minimized.
While towing, set the selector lever to “N (Neutral)” position.

1) Towing procedure.

① Set the tow rope on the towing hook (A) of the body.



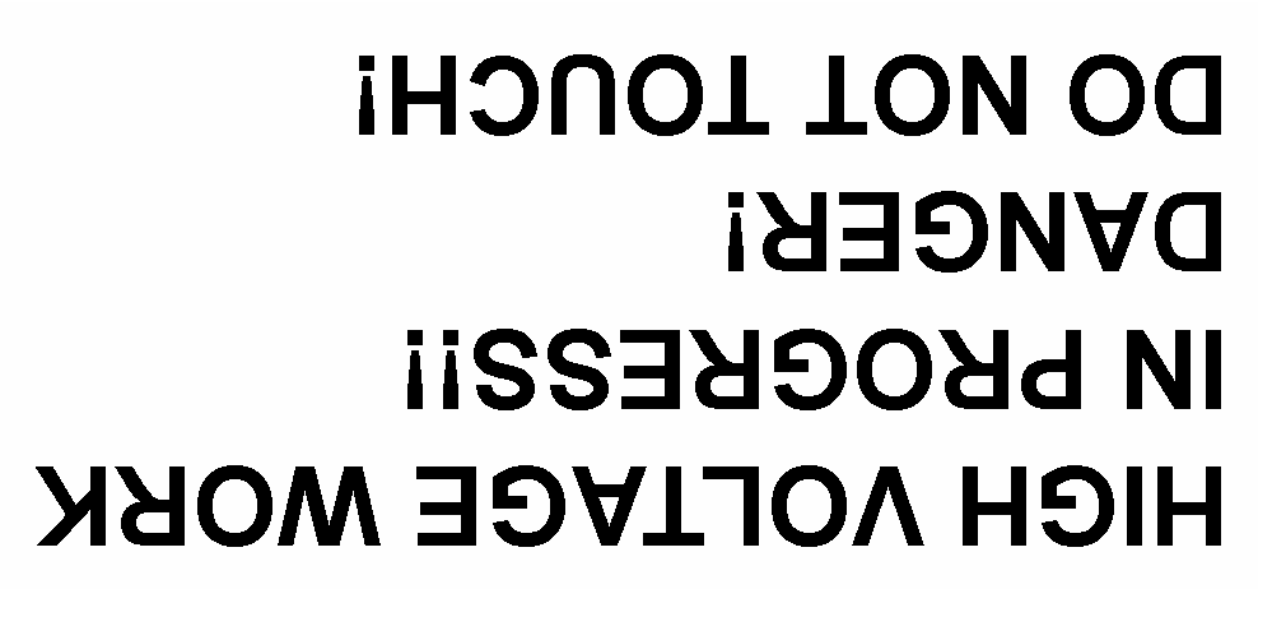
② Turn the Electric Motor Switch (Ignition switch) to the “**ACC**” position.
③ Set the selector lever to “**N** (Neutral)” position.
④ Turn on the hazard lamps to provide warning to other vehicles.

⚠ CAUTION:

When the electric motor unit is stopped, brake efficiency is reduced and steering effort increases.
If the Electric Motor Switch (Ignition switch) is in the “LOCK” position, it is impossible to use steering due to steering lock function and it could cause an accident.
Ensure there is proper tension in the tow rope at all times during towing to avoid breakage of the tow rope or the towing hook and to avoid injury to bystanders or vehicle damage.

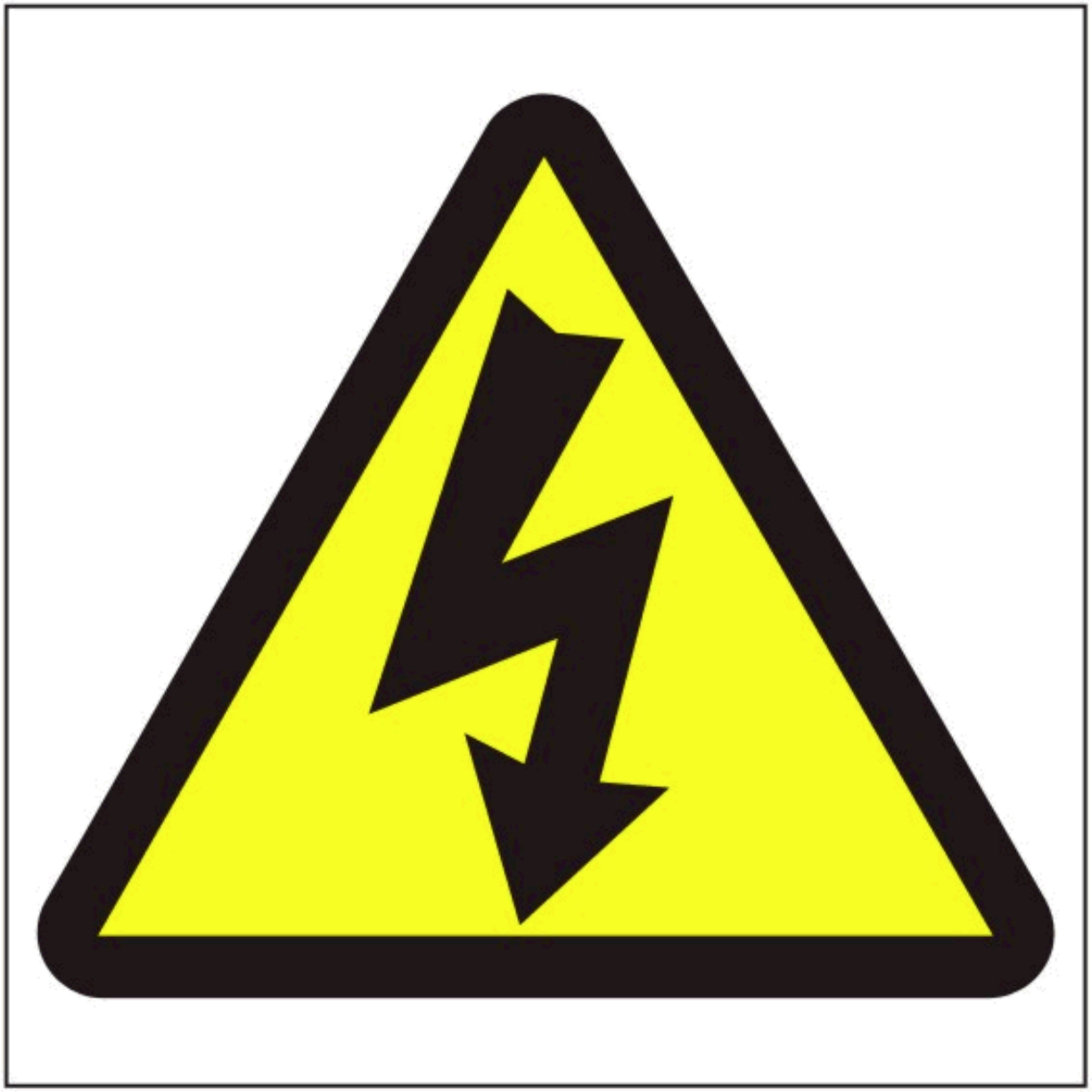
If you find an abnormal noise, smell and/or strong vibration from the vehicle while towing, stop towing and carry out the following procedures:

① Stop the vehicle as soon as possible in a safe location.
② Set the selector lever to “P (Parking)” position and apply the parking brake.
③ Turn the Electric Motor Switch (Ignition switch) to the “LOCK” position.
④ Wait at least one minute, then disconnect the 12V battery negative terminal. Then wait 5 minutes.
⑤ Wearing Personal Protective Equipment (PPE), unplug the Service Plug. Refer to page 12 and 10 for details.
⑥ Transport the vehicle using a tow truck.



HIGH VOLTAGE WORK
IN PROGRESS!!
DANGER!
DO NOT TOUCH!

*When doing high-voltage works, please putting up this signboard,
make the dotted line part a mountain fold and place it on the roof of i-MiEV.



It is recommended that a warning sign (example provided above) is fixed to or on the vehicle during any emergency work on the vehicle. A sign that complies with local regulation should be used.