



2016 Murano HYBRID

Dismantling Guide



Foreword

This manual describes dismantling operations and **important safety** related warnings and cautions for this vehicle.

This vehicle is equipped with a high-voltage battery pack. **Failure to follow recommended practices during dismantling will cause death or serious personal injury.**

Please read this manual in advance of any dismantling activities in order to understand the features of this vehicle and to help you deal with dismantling operations involving this vehicle. Follow the procedures in order to help assure a safe and successful dismantling operation.

This manual is periodically updated. If you are not viewing this manual on the Nissan web site, we urge you to go to www.nissanusa.com or www.nissan-techinfo.com to make sure you have the most recent version of this manual.

NISSAN EMERGENCY CONTACT INFORMATION

- Nissan Consumer Affairs: 1-800-647-7261 (US) or 1-800-387-0122 (Canada)
- Hours of operation are 8am - 5pm (Monday-Friday) Eastern, Central and Pacific time zones

IMPORTANT INFORMATION ABOUT THIS MANUAL

You may see various symbols in this manual. They have the following meanings:



⚠ DANGER

This symbol is used to inform you of an operation which will result in death or serious personal injury if instructions are not followed.

Example: Touching high-voltage components without using the appropriate protective equipment will result in electrocution. PPE must always be worn when touching or working on high-voltage components.

⚠ WARNING

This symbol is used to inform you of an operation which may cause death or serious personal injury if instructions are not followed.

⚠ CAUTION

This symbol is used to inform you of an operation which may cause personal injury or component damage if instructions are not followed.

Please note that there may be differences between this manual and the vehicle specification due to specification changes.

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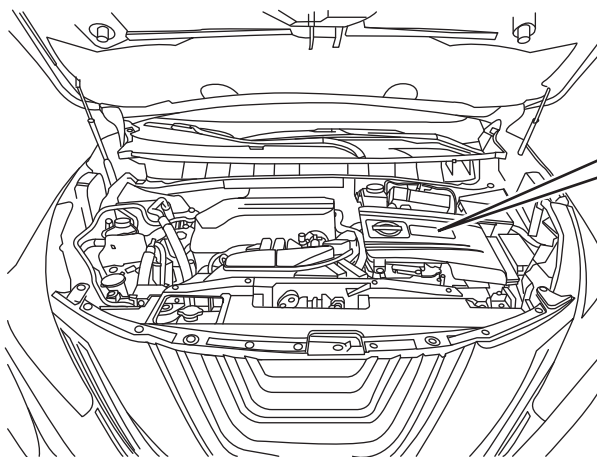
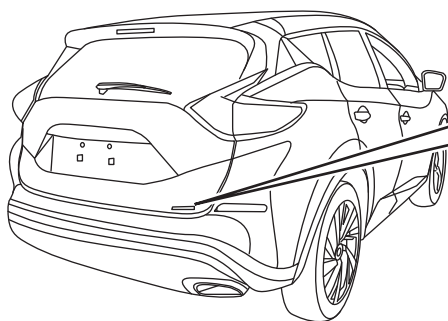
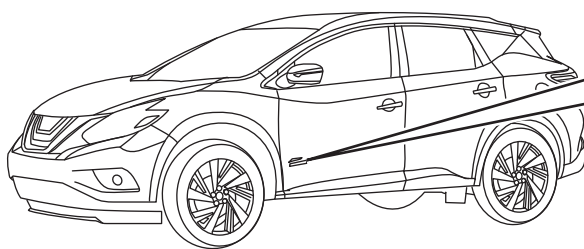
1. About the Murano HYBRID

This hybrid electric vehicle (HEV) uses two types of batteries. One is a 12-volt battery that is the same as the battery in vehicles powered by internal combustion engines. The 12-volt battery is located in the front of the vehicle on the left side of the engine compartment. The other is the high-voltage battery for the traction motor which propels the vehicle. The high-voltage battery is located under the center console between the driver's and passenger's seats with service plug access through the center console area storage bin.

When the high-voltage battery level is low, engine output is used to generate power from the traction motor and charge the high-voltage battery. Additionally, the vehicle system can recharge the high-voltage battery by converting driving force into electricity while the vehicle is decelerating or being driven downhill. This is called regenerative charging.

1-1 MURANO HYBRID IDENTIFICATION

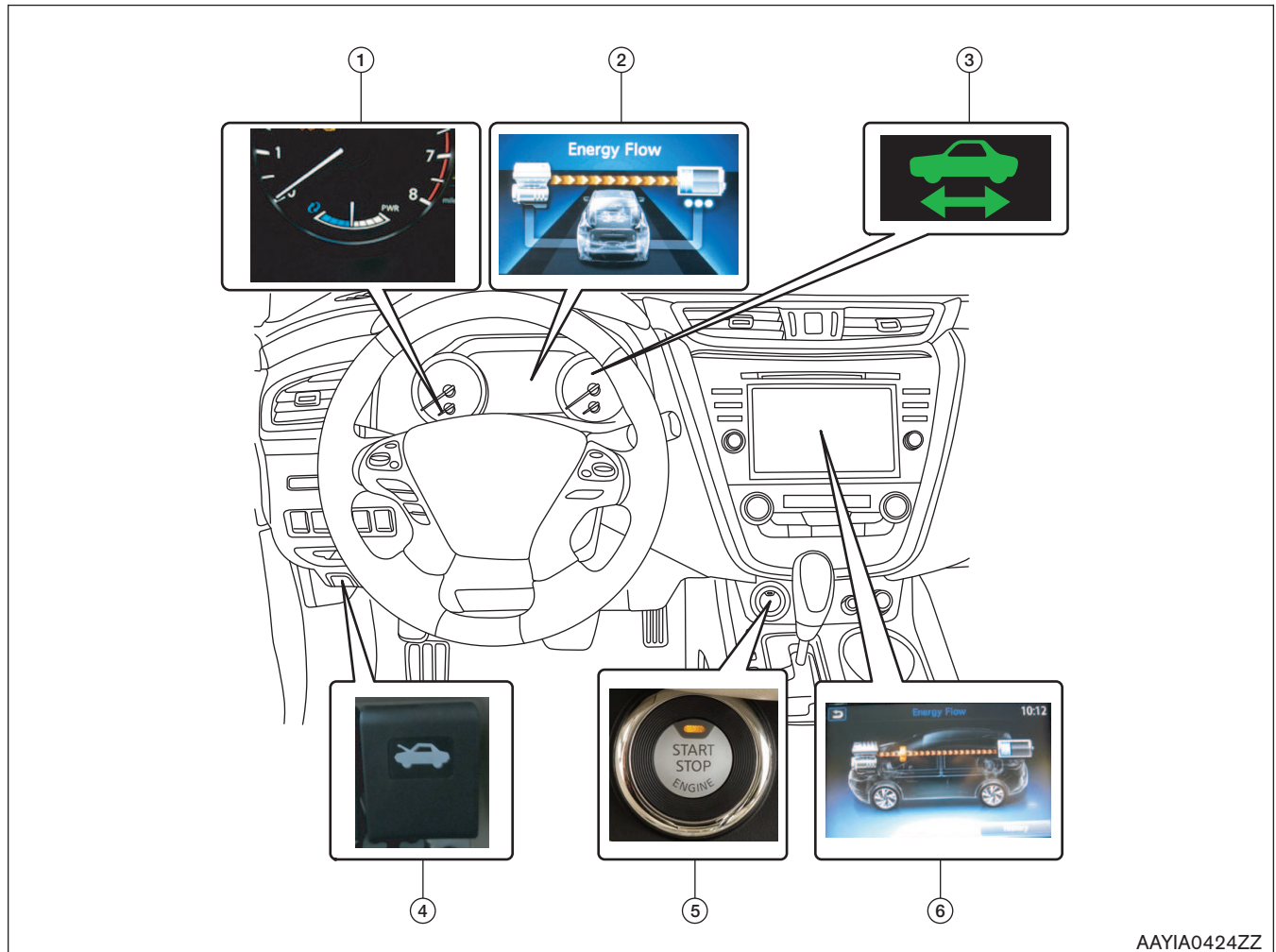
1-1.1 Exterior and Engine Compartment



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1-1.2 Interior

Interior components referenced in this manual are as follows:



1. Assist charge gauge

2. Energy flow display *1

3. READY indicator (green)

4. Hood release handle

5. Ignition switch and ON indicator lamp (orange)

6. Energy flow display *1

*1: This screen may not be displayed due to customer settings. Only one of these screens will display energy flow depending on vehicle optional equipment.

1-2 Vehicle Identification Number (VIN) Layout

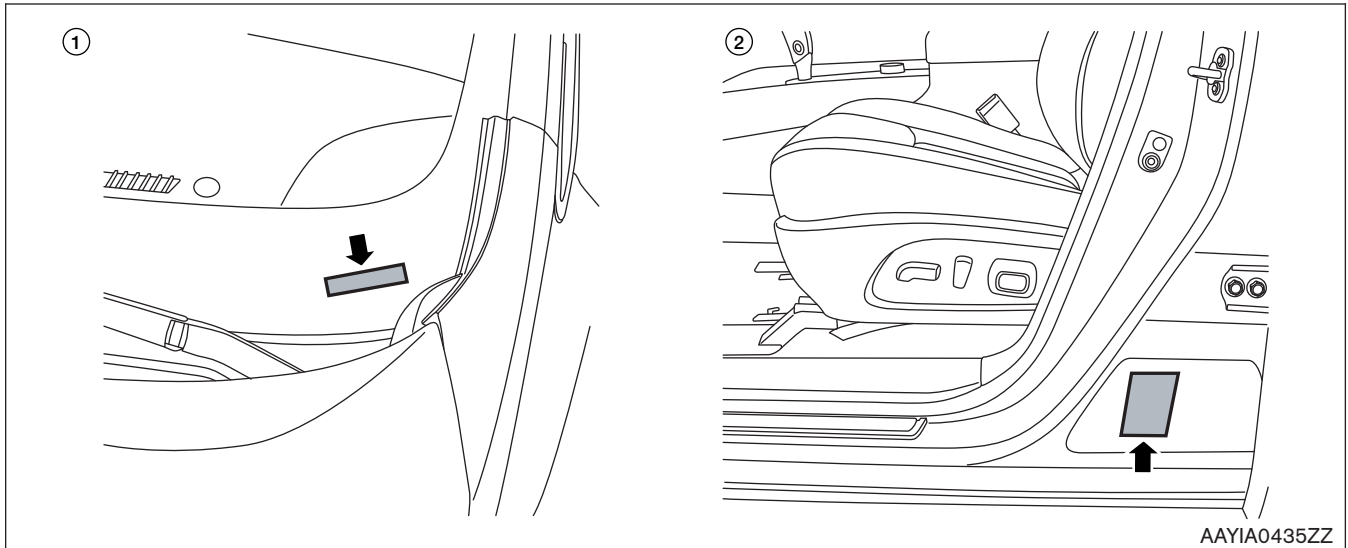
In exterior appearance the Murano HYBRID is nearly identical to the conventional Nissan Murano series vehicles.

The vehicle identification number can be located as follows:

Example VIN : 5N1 **C**Z2MG4GN052129

The Murano HYBRID is identified by the 4th alphanumeric character: **C**

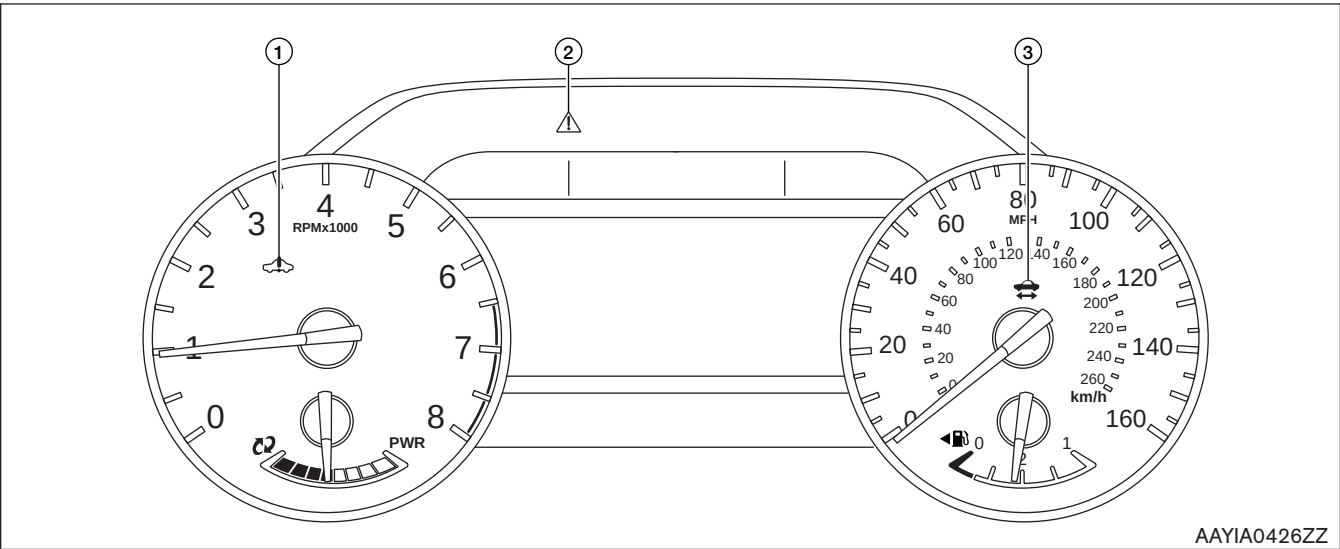
C = Murano HYBRID



1. VIN plate (visible through windshield)

2. Vehicle certification label (lower center pillar)

1-3 Warning and Indicator Lamp Information



1. Hybrid System Warning Lamp
(Orange)

2. Master Warning Lamp
(Orange or Red)

3. READY Indicator (Green)

Lamp Name	Icon	Description
READY Indicator (Green)		This lamp is on when the high-voltage system is powered up and the vehicle is ready to drive.
Master Warning Lamp (Orange or Red)	 	This lamp is on when another warning lamp or message is displayed in the instrument cluster.
Hybrid System Warning Lamp *1 (Orange)		This lamp is on or blinking when: ▪ Malfunction has occurred in the hybrid control system and/or ▪ High-voltage leak to vehicle chassis and/or ▪ Emergency shut-off system has been activated. The shut-off system activates in the following conditions: – Front and side collisions in which the air bags are deployed. – Certain rear collisions. – Certain high-voltage system malfunctions.

*1: When this lamp is ON, the READY Indicator will turn OFF.

2. Basic High-voltage System and 12-volt System Information

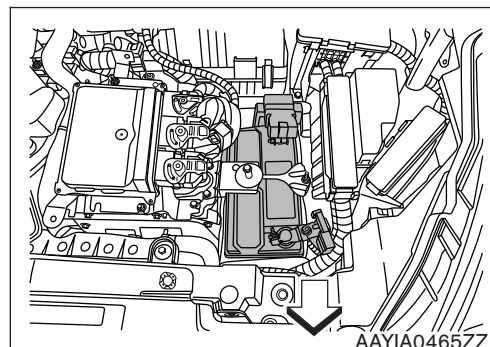
2-1 Battery Information

The Murano HYBRID utilizes two batteries in order to supply both high and low voltage.

2-1.1 12-Volt Battery

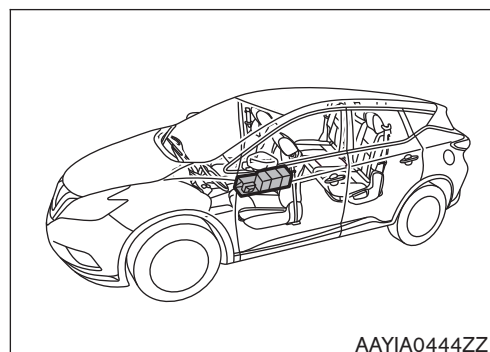
- The Murano HYBRID contains a conventional lead-acid 12-volt battery.
- The 12-volt battery is located in the front of the vehicle on the left side of the engine compartment.
- The 12-volt battery is charged by the high-voltage battery through the DC/DC converter.

← : Vehicle front



2-1.2 High-voltage Battery

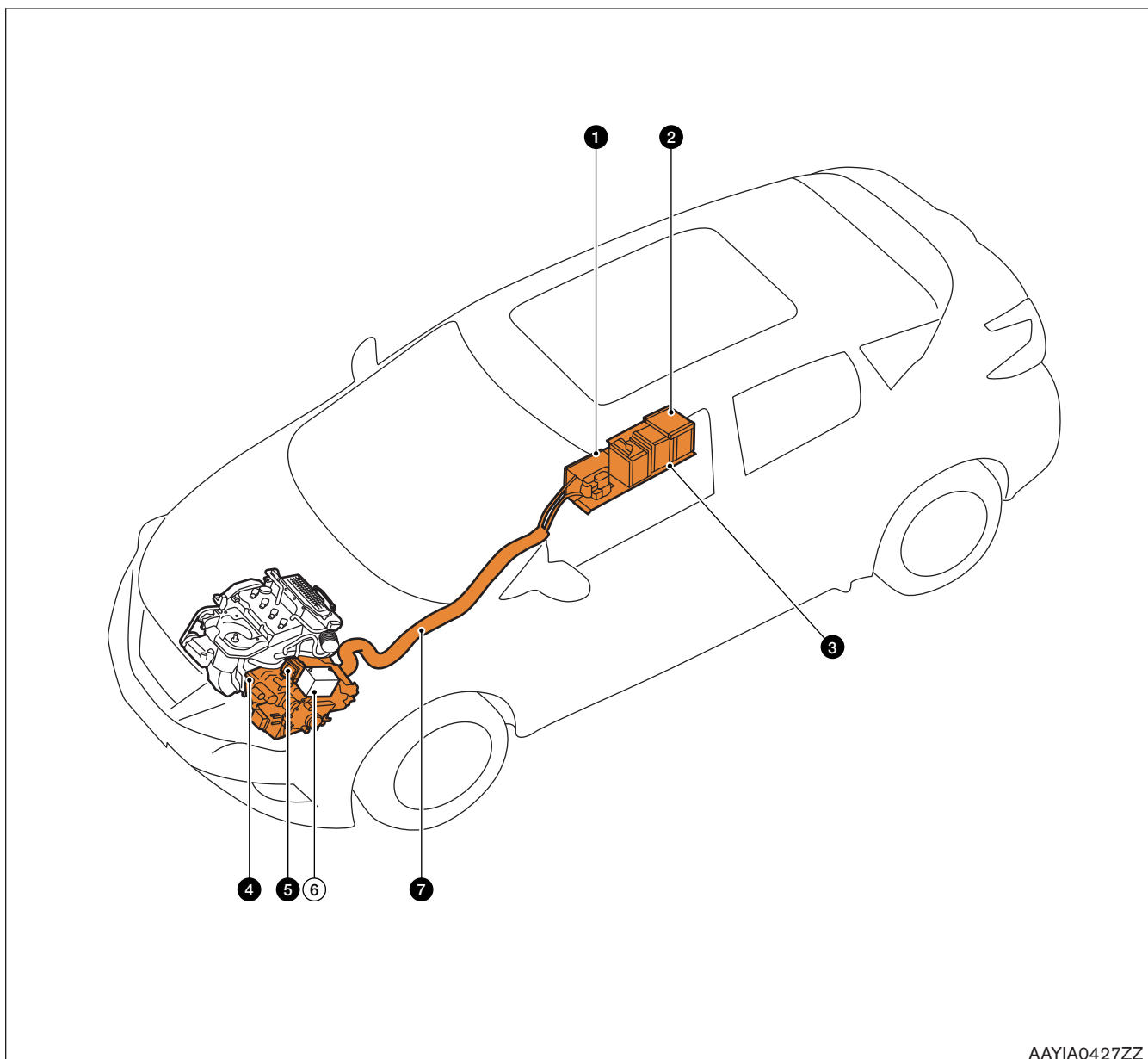
- The Murano HYBRID contains a high-voltage battery.
- The high-voltage battery is mounted under the center console and enclosed in a metal case.
- The high-voltage battery stores approximately 144 volts DC.
- A vent hose is provided to exhaust gasses outside the vehicle, if necessary.
- Air for battery cooling is drawn in from the front of the center console, under the instrument panel, and is vented into the RH side B-pillar with the use of a fan located under the passenger seat.



The high-voltage battery supplies power to the following:

- High-voltage harnesses
- DC/DC converter
- Traction motor inverter
- Traction motor

2-2 High-voltage-Related and 12-Volt-Related Component Locations and Descriptions



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NOTE:

Components with white number in black background are high-voltage components.

No.	Component	Location	Description
❶	DC/DC Converter	Inside the center console area (mounted right of high-voltage battery)	The DC/DC converter reduces the voltage of the high-voltage battery to provide power to the 12-volt battery in order to operate the vehicle's electric components (headlights, audio system, etc.).
❷	Service Plug	Center console (inside storage bin under access door)	This is used to disable the high-voltage system.
❸	High-voltage Battery	Inside the center console area (between the front driver's and passenger's seats)	The high-voltage battery stores and outputs DC power (Maximum voltage 144V) needed to propel the vehicle.
❹	Traction Motor	Engine compartment (built-into the transmission)	Converts three-phase alternating current (AC) power to drive power (torque) which propels the vehicle.
❺	Traction Motor Inverter	Engine compartment (front driver side)	Converts the DC power stored in the high-voltage battery to three-phase AC power and controls motor torque (revolution) by regulating the motor current. The inverter has a built in high-voltage capacitor.
❻	12-volt Battery	Front of the vehicle on the left side of the engine compartment.	A lead-acid battery that supplies power to the low voltage devices.
❼	High-voltage Harness	Center console area (on high-voltage battery), under floor, engine compartment	Orange-colored power cables carry high DC voltage between each of the high-voltage components.

2-3 High-voltage Battery Pack Specifications

High-voltage Battery Specifications	
High-voltage battery voltage	144V
Number of high-voltage battery modules in the pack	3 modules (40 cells)
High-voltage battery module voltage	43.2V- 50.4V (depending on individual module)
High-voltage battery dimensions	27.91 L x 9.41 W x 16.65 H in. (709.0 L x 239.0 W x 423.0 H mm)
High-voltage battery weight	70.60 lbs (32.0 kg)

2-4 High-voltage Safety Measures

Circuit insulation	The high-voltage positive (+) and negative (-) circuits are insulated from the metal chassis.
Reducing the risk of electrocution	The high-voltage components and harnesses have insulated cases or orange-colored coverings which provide insulation and easy identification. The high-voltage battery case is electrically connected to the vehicle ground. This connection helps protect the vehicle occupants and vehicle dismantlers from high-voltage electrical shock.
Identification	The high-voltage components are labeled “WARNING” similar to label shown below. All high-voltage harnesses are coated in orange.

2-4.1 Warning Labels

The following warning label is applied to the high-voltage inverter located in the engine compartment.



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The following warning label is applied to the service plug access cover located inside the passenger compartment center console.



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The following warning label is applied to the high-voltage battery located inside the passenger compartment center console.

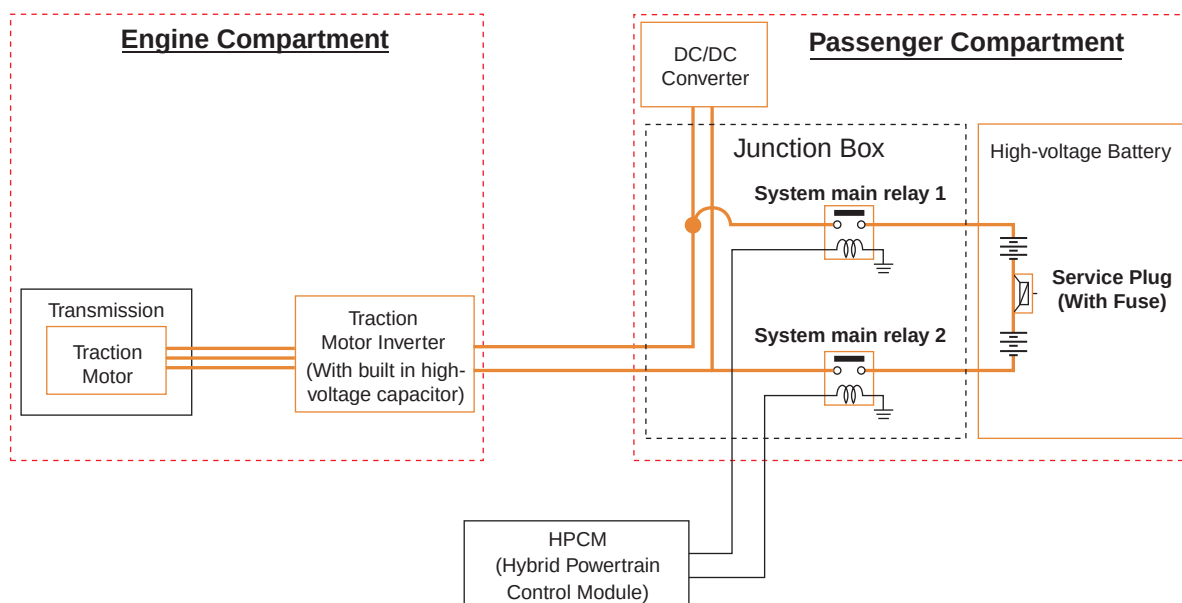


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2-5 High-voltage Safety System

The high-voltage safety system is intended to help keep vehicle occupants and emergency responders safe from high-voltage electricity.

- A high-voltage fuse provides short circuit protection inside the high-voltage battery.
- The high-voltage safety system is insulated from the metal chassis.
- Positive and negative high-voltage power cables are connected to the high-voltage battery and are controlled by normally open system main relays (SMR1 and SMR2). When the vehicle is shut off, the relays stop electrical flow from leaving the high-voltage battery. However, it can take approximately ten (10) minutes for the high-voltage capacitor to fully discharge.



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⚠️ WARNING

- The high-voltage system and high-voltage capacitor may remain powered for up to approximately 10 minutes after the vehicle is shut off. Appropriate Personal Protective Equipment (PPE) must always be worn when touching or working on high-voltage components to avoid risk of electrical shock and severe personal injury or death.
- The high-voltage battery retains high-voltage at all times. Appropriate PPE must always be worn when touching or working on high-voltage components to avoid risk of electrical shock and severe personal injury or death.

- A ground fault monitor continuously monitors for high-voltage leakage to the metal chassis while the vehicle is running. If a malfunction is detected, the HPCM (hybrid powertrain control module) will illuminate the hybrid system warning lamp  in the instrument cluster.
- The high-voltage battery relays (SMR1 and SMR2) will automatically open to stop the electrical flow in a front, side or certain rear collisions that are sufficient enough to activate the supplemental restraint system (SRS).

2-6 High-voltage Circuit Shut-Off System

This vehicle is equipped with a system to shut off the current from the high-voltage battery by the following methods:

Service plug	Positioned on top of the high-voltage battery, this plug shuts off the output of high-voltage when manually removed.
System main relays (located in the high-voltage battery)	Controlled by the ignition switch, these relays are powered by the 12-volt system and shut off high-voltage from the high-voltage battery.
Emergency shut-off system	In the case of a collision (front and side collisions in which the air bags are deployed, certain rear collisions) or certain system malfunctions this system is designed to shut off the high-voltage from the high-voltage battery.

2-7 Preventing Electrical Shock

1. If it is necessary to touch any of the high-voltage harnesses or components, always wear appropriate Personal Protective Equipment (PPE) [refer to [3-1 Preparation Items \(DG-18\)](#)]. Shut off the high-voltage system by referring to [3-4.1 High-voltage System Shut-Down Procedure \(DG-21\)](#).
2. To avoid the risk of electrocution, NEVER touch the inside of the high-voltage battery with bare hands after shutting off the high-voltage system. The high-voltage battery maintains charge even though the high-voltage system is shut down. PPE must always be worn when touching or working on high-voltage components.
3. Cover damaged high-voltage components with insulated tape.

3. Preparation for Dismantling



⚠ DANGER

-  Failure to properly shut down the high-voltage electrical system before the Dismantling Procedures are performed will result in serious injury or death from electrical shock. To prevent serious injury or death, **NEVER** touch high-voltage harnesses or components without always wearing appropriate Personal Protective Equipment (PPE). PPE must always be worn when touching or working on high-voltage components.
-  If it is necessary to touch any of the high-voltage harnesses or components you must always wear appropriate PPE to avoid electrical shock. PPE must always be worn when touching or working on high-voltage components. Shut down the high-voltage system by following the steps outlined in [3-4.1 High-voltage System Shut-Down Procedure \(DG-21\)](#). Wait approximately ten (10) minutes for complete discharge of the high-voltage capacitor after the high-voltage system has been shut down.

⚠ WARNING

- **NEVER** assume the Murano HYBRID is shut OFF simply because it is quiet.
- If it becomes necessary for the dismantler to leave the vehicle, place a “DANGER” sign [for example, refer to [5. Storing the Vehicle \(DG-37\)](#) on the vehicle to alert other people that the vehicle contains a high-voltage battery.
- If the READY  indicator is ON the high-voltage system is active.
- If possible, be sure to check the READY  indicator on the instrument cluster and verify that the READY  indicator is OFF and the high-voltage system is stopped.

3-1 Preparation Items

Preparation Items	Specification	Purpose
PPE (personal protective equipment): Insulated gloves 	Up to 1,000V	For protection from high-voltage electrical shock.
Insulated shoes 	—	
Safety shield 	—	To protect eyes when around high-voltage components and wiring.
Safety Glasses 		
Leather gloves 	Must be able to fasten tight around the wrist (worn over insulated gloves).	To protect insulated gloves.
Wrenches 	Size:10mm	To remove the 12-volt battery terminal bolt.
Solvent resistant protection gloves Solvent resistant protection shoes	—	To utilize in the event of a high-voltage battery electrolytic solution leak.
Absorbent pad	The same pad used for internal combustion engine fluids can be used.	To absorb any high-voltage battery electrolytic solution leakage.
Standard fire fighting equipment	Standard fire fighting equipment. Depending on type of fire (vehicle or battery) use standard fire fighting equipment (water or extinguisher).	To extinguish a fire.
Insulated tape	Insulating	To cover any damaged harnesses to protect from and prevent electrical shock. Tape should cover all bare or damaged wire.

3-2 Personal Protective Equipment (PPE) and Insulated Tools

3-2.1 Personal Protective Equipment (PPE) Protective Wear Control

Perform an inspection of the Personal Protective Equipment (PPE) items before beginning work. Do not use any damaged PPE items.

3-2.2 Daily Inspection

This inspection is performed before and after use. The worker who will be using the items should perform the inspection and check for deterioration and damage.

- Insulated rubber gloves should be inspected for scratches, holes and tears. (Visual check and air leakage test)
- Insulated safety boots should be inspected for holes, damage, nails, metal pieces, wear or other problems on the soles. (Visual check)
- Insulated rubber sheet should be inspected for tears. (Visual check)

3-2.3 Insulated Tools

When performing work at locations where high-voltage is applied (such as terminals), use insulated tools meeting 1,000V/300A specifications.

3-3 Discharge Procedures



DANGER

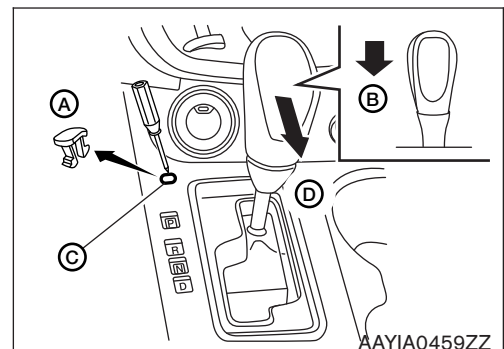
Do not perform this procedure if the battery is damaged. If you are unsure of battery damage, use extreme caution and wear appropriate Personal Protective Equipment (PPE).

High-voltage battery discharging must take place before dismantling. Sufficient discharging can be achieved by following these steps.

1. Place the shift selector into the Park (P) position
2. Apply the parking brake.
3. Set wheel chocks to ensure the vehicle is completely immobilized.
4. Fasten the driver seat belt and close the driver door.
5. Apply foot brake and press the ignition switch to turn the system ON. Confirm READY  indicator in instrument cluster turns ON.
 - a. If the engine starts, leave the engine running until reaching normal operating temperature and the idling stops. It may take more than 10 minutes for complete engine warm up and idling to stop.
 - b. If the engine is at normal operating temperature and does NOT start, move on to next step.
6. Remove the shift lock cover (A) using a suitable tool.
7. Push down the shift lock (C) as shown in the illustration.
8. Push the shift selector button (B) and move the shift selector to Neutral (N) position (D) while holding down the shift lock.

NOTE:

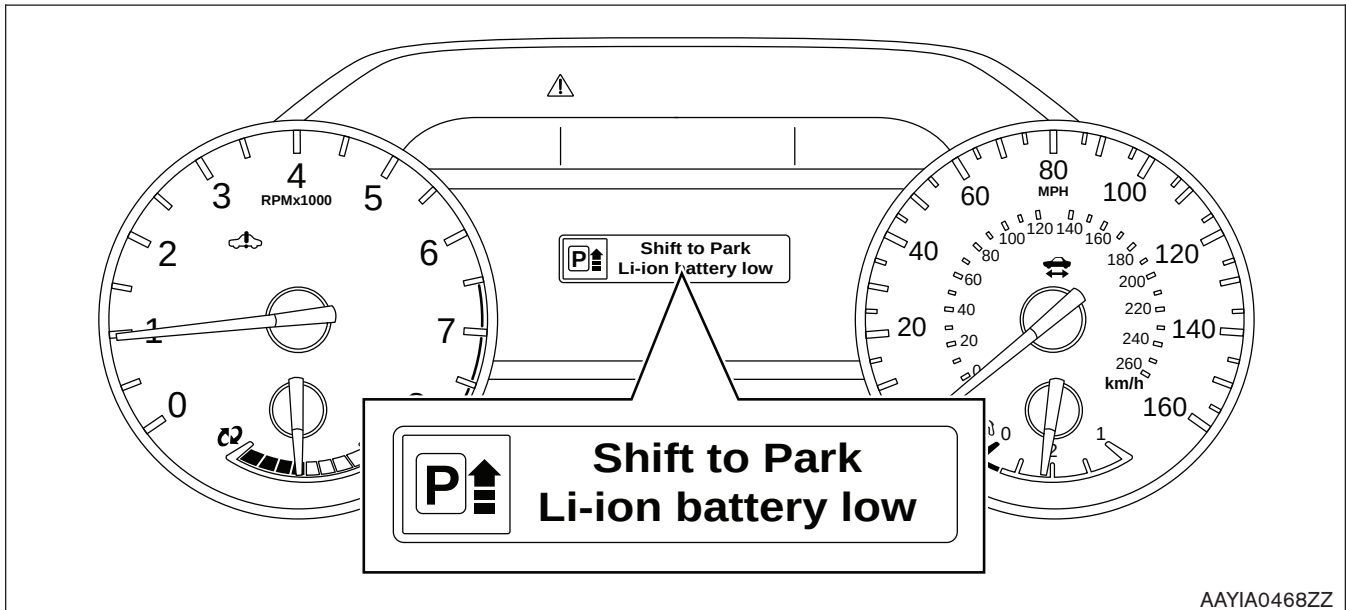
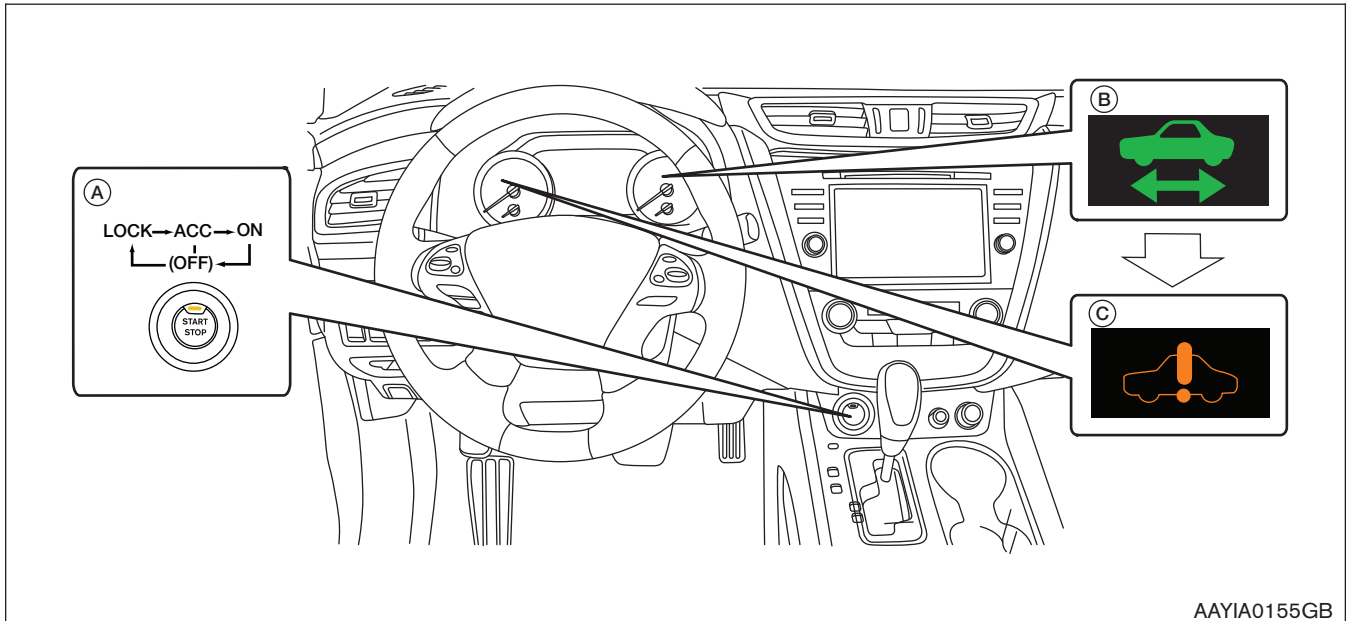
DO NOT press accelerator or foot brake after moving the shift selector to the Neutral (N) position. Otherwise high-voltage battery will start to be charged.



NOTE:

The engine must not be running at this time. If the engine has restarted, repeat the previous steps.

9. Release the parking brake.
10. Unbuckle the seat belt and open the driver door. The READY  indicator should remain ON and the engine should not be running.
11. Turn ON electric devices such as headlamps, A/C (set to the coldest temperature) and rear window defogger to discharge the high-voltage battery. Allow approximately 15 minutes to discharge. Discharge is complete when the READY  indicator (B) (green) turns OFF, the hybrid system warning indicator (C) (orange) turns ON and the message display indicates “Li-ion battery low”.



12. Press the ignition switch (A) to turn the system OFF.

Please contact following number if the vehicle could not be discharged.

- 1-800-647-7261 (US) or 1-800-387-0122 (Canada)
- Hours of operation are 8am - 5pm (Monday-Friday) Eastern, Central and Pacific time zones.

3-4 How to Handle a Damaged Vehicle

3-4.1 High-voltage System Shut-Down Procedure

Any of the following procedures can shut down the high-voltage system. The dismantling operation can only begin after shutting down the high-voltage system. If the vehicle is heavily damaged, for example the high-voltage battery is deformed, broken or cracked, appropriate PPE must always be used and the high-voltage battery and high-voltage components must not be touched.



⚠ DANGER

-  **Failure to properly shut down the high-voltage system before the dismantling procedures are performed will result in serious injury or death from electrical shock. To prevent serious injury or death, NEVER touch high-voltage harnesses or components without always wearing appropriate Personal Protective Equipment (PPE). Appropriate PPE must always be worn when touching or working on high-voltage components.**
-  **When contact with high-voltage components or high-voltage harnesses is unavoidable, or when there is risk of such contact, you must always wear appropriate PPE. PPE must always be worn when touching or working on high-voltage components.**

⚠ WARNING

-  **The vehicle contains parts that contain powerful magnets. If a person who is wearing a pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.**
- **Be sure to verify that the READY  indicator is off (if possible), and the high-voltage system is stopped.**
- **After the high-voltage system is shut down, please wait approximately ten (10) minutes for complete discharge of the high-voltage capacitor. While waiting, do not operate any vehicle functions.**
- **After shutting down the high-voltage system and removing the 12-volt battery negative (-) terminal, wait at least three (3) minutes to discharge the air bag capacitor. Even though the 12-volt battery negative (-) is disconnected, the Supplemental Restraint System (SRS) air bag maintains voltage at least three (3) minutes. During this time, there is a possibility of sudden SRS air bag inflation due to harness short circuit or damage and it may cause serious injuries.**
- **The 12-volt system will remain active even after the 12-volt battery negative (-) terminal is removed while the high-voltage system is active. This is because the charging system will not shut down and power will be supplied to the 12-volt system and high-voltage system continuously.**

Before disconnecting the 12-volt battery terminal, if necessary, lower the windows, adjust the steering column, adjust the seats, unlock the doors, open the liftgate, etc. as required. Once the 12-volt battery is disconnected, power controls will not operate.

Powering Down the High-voltage System

The high-voltage system can be shut down with any 1 of the following procedures:

- Turn OFF the ignition switch and disconnect the 12-volt battery. Refer to [Primary Procedure \(DG-22\)](#).
- Remove the underhood fuse for the high-voltage control system and disconnect the 12-volt battery. Refer to [Alternate Procedure 1 \(Remove Fuses\) \(DG-24\)](#).
- Remove the service plug and disconnect the 12-volt battery. Refer to [Alternate Procedure 2 \(Remove Service Plug\) \(DG-26\)](#).

Primary Procedure

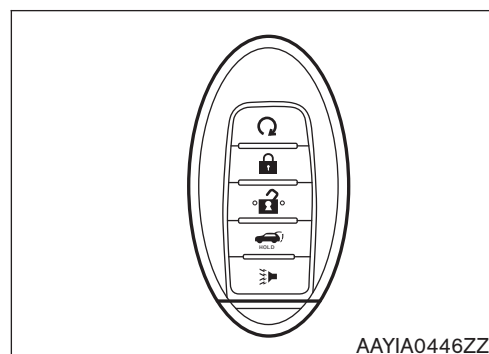
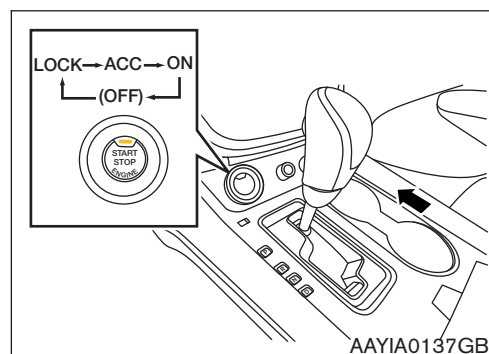
NOTE:

Before disconnecting the 12-volt battery terminal, if necessary, lower the windows, adjust the steering column, adjust the seats, unlock the doors, etc. Once 12-volt battery is disconnected, power controls will not operate.

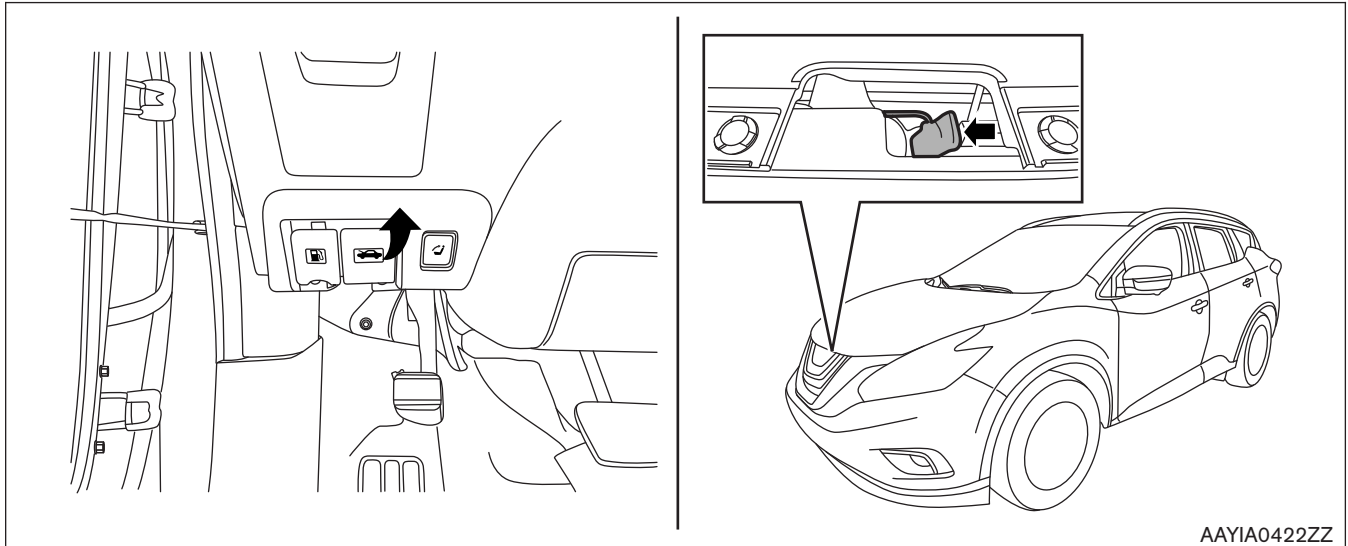
1. If possible, check the READY  indicator status in the instrument cluster. If it is on, the high-voltage system is active.
2. Place the shift selector in the Park (P) position.
3. Push the ignition switch once to turn OFF the high-voltage system. Verify that the READY indicator is off and then continue to the next steps to open the hood for 12-volt battery negative cable access.

If the READY indicator does not turn off, refer to [Alternate Procedure 1 \(Remove Fuses\) \(DG-24\)](#).

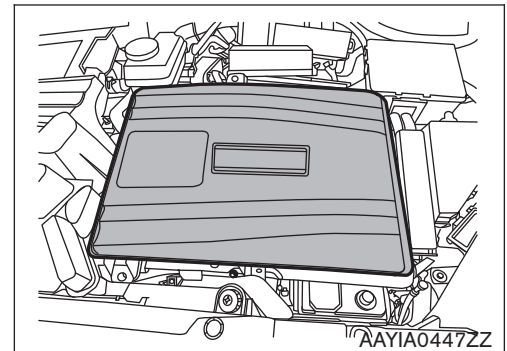
4. If possible, keep the Nissan Intelligent Key® at least 5 meters (16 feet) away from the vehicle.



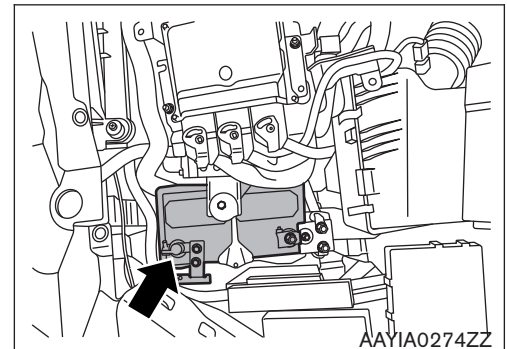
5. Pull release handle located on the instrument panel and push the release lever under the hood sideways to open hood.



6. Remove traction motor inverter cover.



7. Disconnect negative (-) battery cable and cover it with insulated tape.

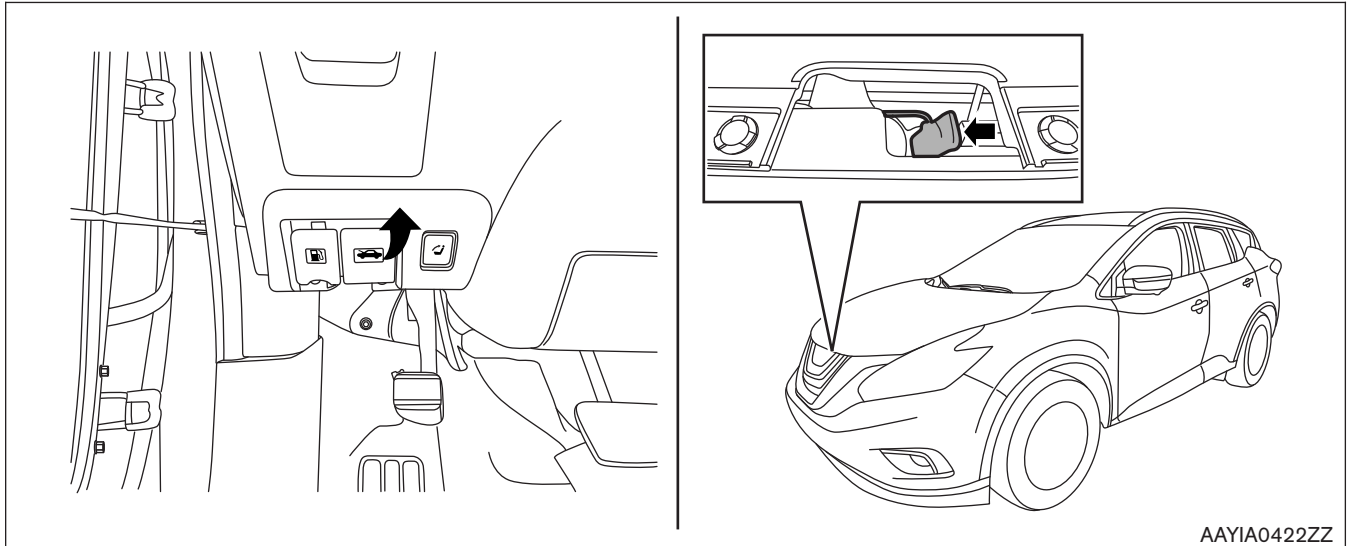


8. **Wait approximately ten (10) minutes for complete discharge** of the high-voltage capacitor after the battery cable has been disconnected.
9. Perform the dismantling operation. Refer to [6. Dismantling Information \(DG-39\)](#).

Alternate Procedure 1 (Remove Fuses)

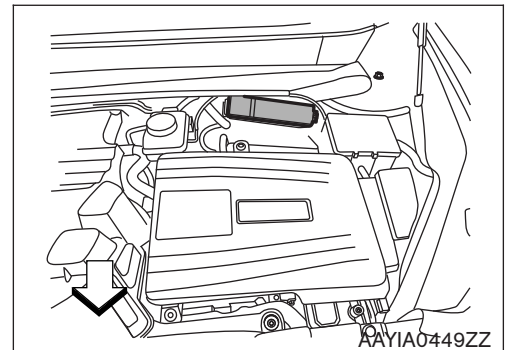
NOTE:

Before removing any fuses, if necessary, lower the windows, adjust the steering column, adjust the seats, unlock the doors, etc. Once fuses are removed, power controls will not operate.



1. Pull release handle located on the instrument panel and push the release lever under the hood sideways to open hood.
2. Release clips on the narrow ends of the fuse box cover and remove it.

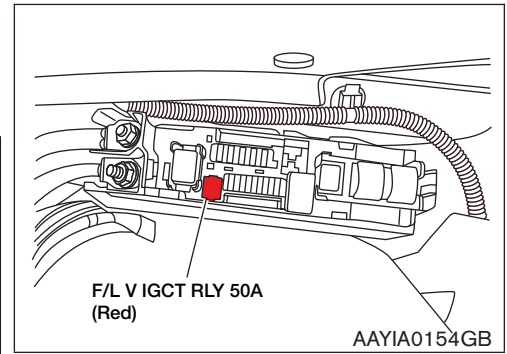
↩ : Vehicle front



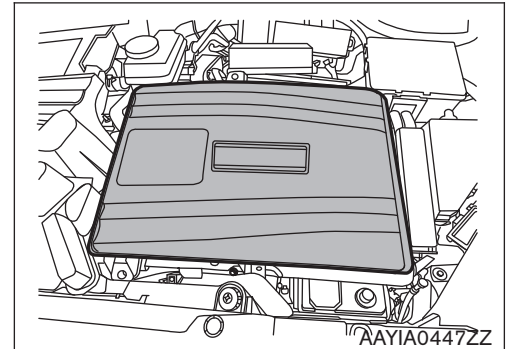
3. Remove IGCT RLY fuse (F/L IGCT RLY 50A).
4. If you cannot identify the correct fuse, remove all the fuses.

⚠ WARNING

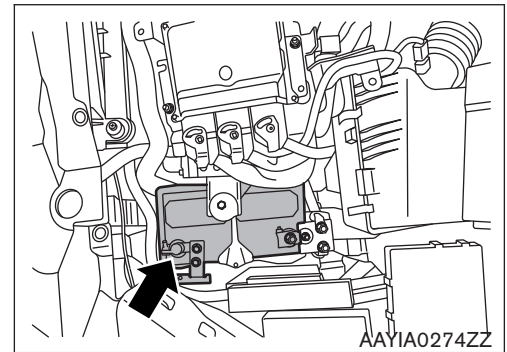
⚠ To avoid unintended reinstallation and risk of electrical shock and severe personal injury or death, the dismantler should carry the fuse or fuses on his/her person and cover the fuse box with insulated tape.



5. Remove traction motor inverter cover.



6. Disconnect negative (-) battery cable and cover it with insulated tape.



7. **Wait approximately ten (10) minutes for complete discharge** of the high-voltage capacitor after the fuse panel and battery cable have been disconnected.
8. Perform the dismantling operation. Refer to [6. Dismantling Information \(DG-39\)](#).

Alternate Procedure 2 (Remove Service Plug)



DANGER

-  **Do not remove the service plug without always wearing appropriate Personal Protective Equipment (PPE) to help protect the dismantler from serious injury or death by electrical shock.**
-  **Immediately cover the service plug socket with insulated tape. The high-voltage battery retains high-voltage power even when the service plug is removed. To avoid electric shock, NEVER touch the terminals inside the socket.**

WARNING



To avoid unintended reinstallation and risk of electrical shock and severe personal injury or death, the dismantler should carry the service plug on his/her person while work is in progress.

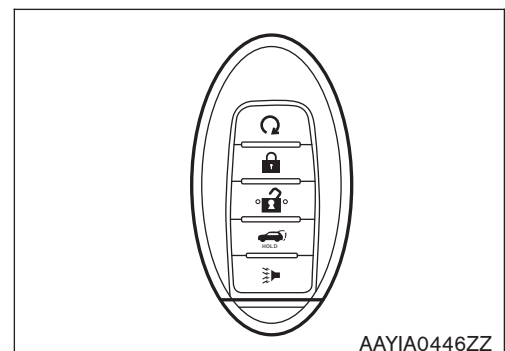
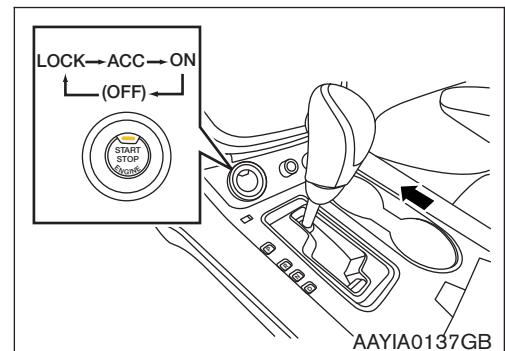
NOTE:

Before disconnecting the 12-volt battery terminal, if necessary, lower the windows, adjust the steering column, adjust the seats, unlock the doors, etc. Once 12-volt battery is disconnected, power controls will not operate.

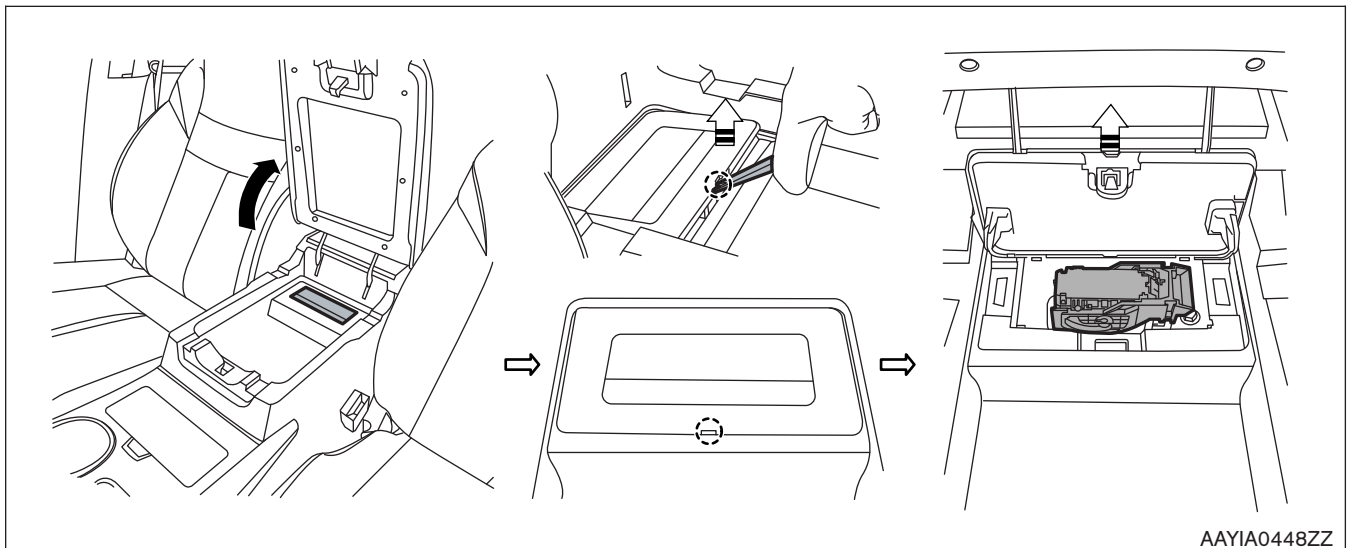
1. If possible, check the READY  indicator status in the instrument cluster. If it is on, the high-voltage system is active.
2. Place the shift selector in the Park (P) position.
3. Push the ignition switch once to turn OFF the high-voltage system. Then verify whether the READY indicator is off.

If the READY indicator does not turn off, continue to step 4.

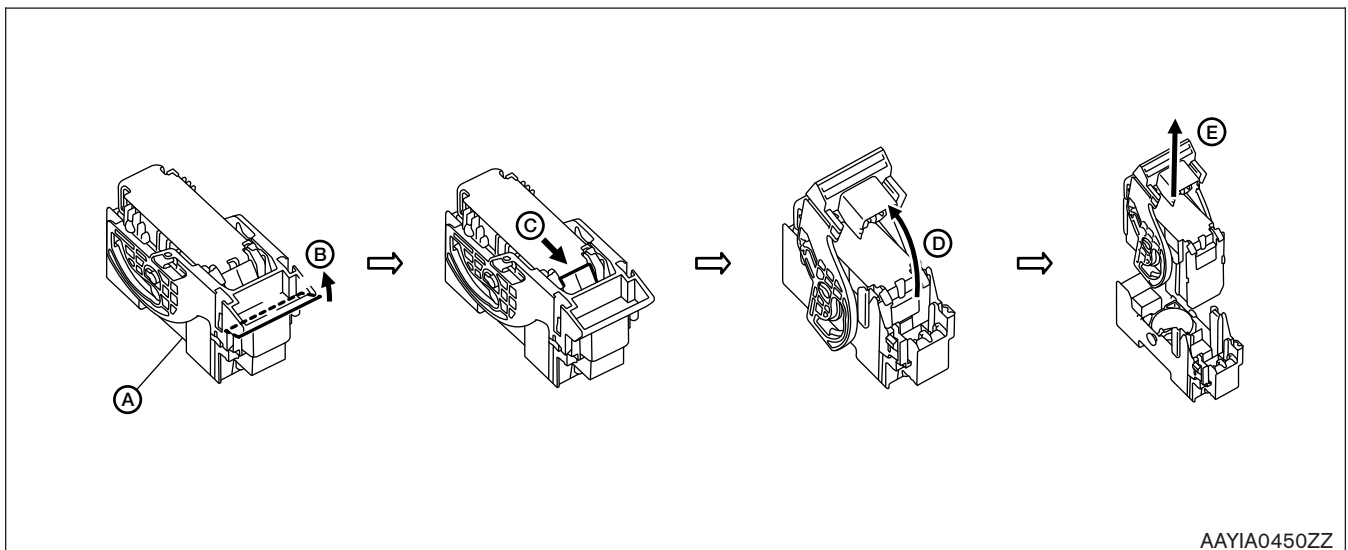
4. If possible, keep the Nissan Intelligent Key® at least 5 meters (16 feet) away from the vehicle.



5. Open the center console and use a suitable tool to remove the service plug access cover.

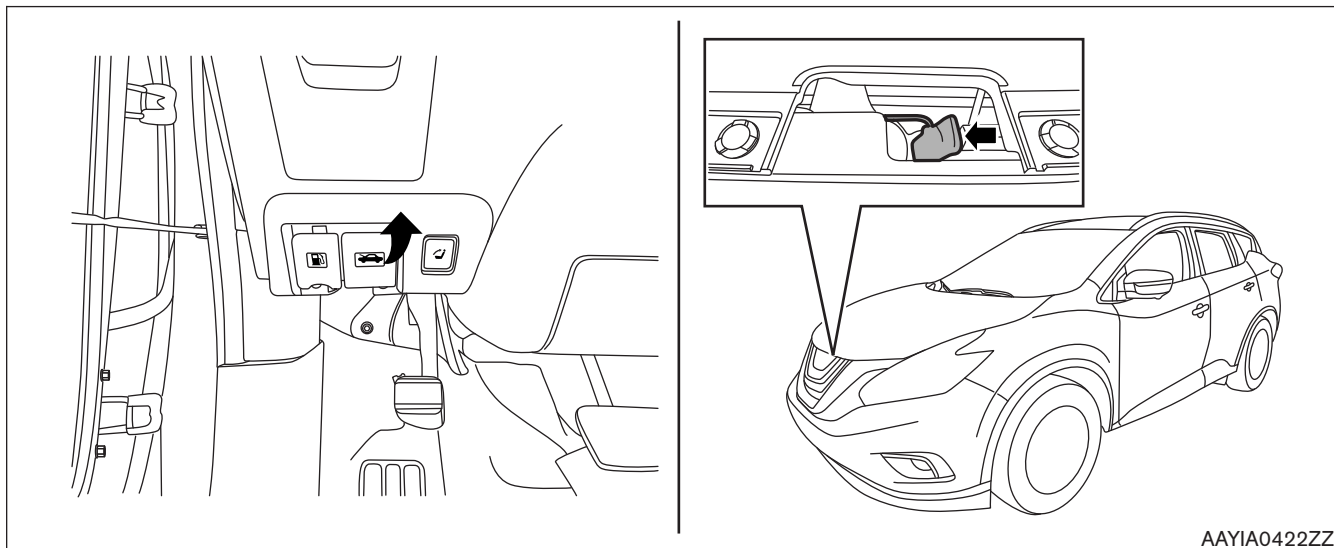


6. Remove the service plug **(A)** by pulling the locking lever **(B)**, then pressing the locking tab **(C)** and rotating the handle **(D)** fully outward. Using the handle, pull the service plug **(E)** completely out of its socket.

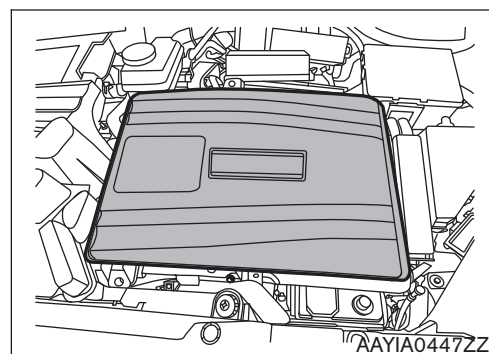


7. Cover the service plug socket with insulated tape.
8. **Wait approximately ten (10) minutes for complete discharge** of the high-voltage capacitor after the service plug has been removed.

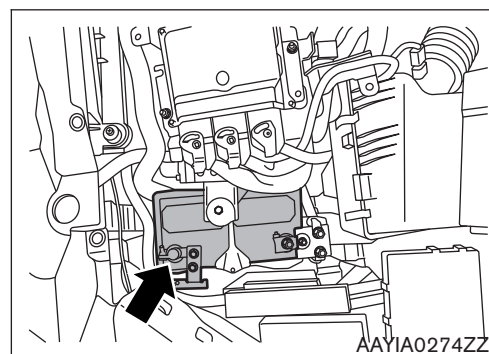
9. Pull release handle located on the instrument panel and push the release lever under the hood sideways to open hood.



10. Remove traction motor inverter cover.



11. Disconnect negative (-) battery cable and cover it with insulated tape.



12. Perform the dismantling operation. Refer to [6. Dismantling Information \(DG-39\)](#).

3-4.2 Cutting the Vehicle Body



⚠ DANGER

-  **Do not cut into high-voltage related areas to avoid severe personal injury or death.**
-  **Do not cut into the high-voltage battery to avoid severe personal injury or death.**
-  **When removing parts, NEVER touch the high-voltage parts or the insides of the exposed orange-colored high-voltage cables to avoid severe personal injury or death. Appropriate Personal Protective Equipment (PPE) must always be worn when touching or working on high-voltage components.**

⚠ WARNING

To avoid unintended reinstallation and risk of electrical shock and severe personal injury or death, the dismantler should carry the fuses or service plug on his/her person while work is in progress.

⚠ WARNING

Do not cut air bag parts to avoid unintended deployment of the air bags and the risk of severe personal injury or death.

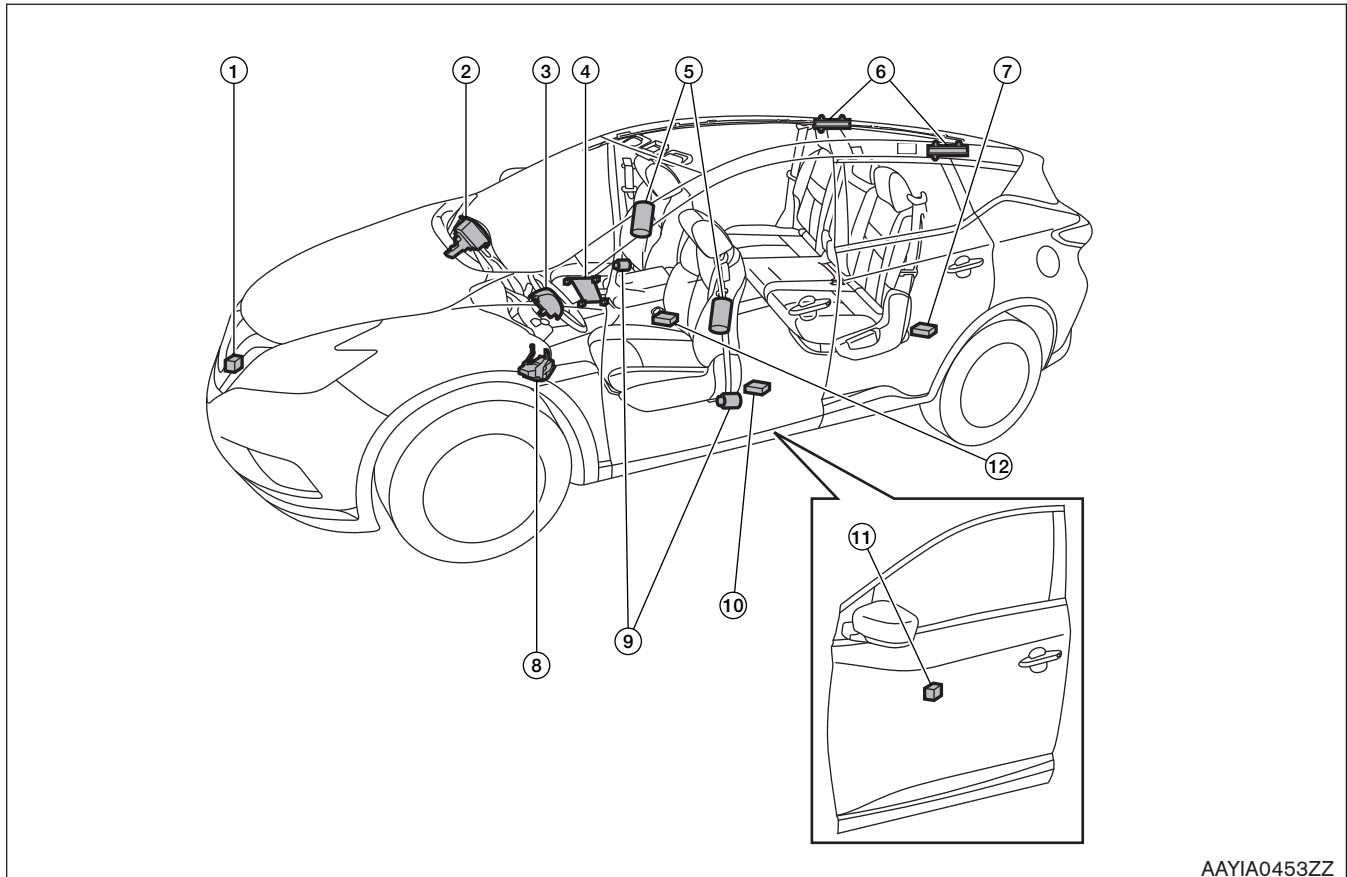
If **approximately (10) minutes** have passed since the dismantler shut down the high-voltage system [refer to [3-4.1 High-voltage System Shut-Down Procedure \(DG-21\)](#)], then the dismantler can cut the vehicle except for the high-voltage battery.

DO NOT cut the high-voltage battery due to possible electrocution risk and electrolyte solution leakage.

SRS Air Bag System Components Location

The SRS air bag system must not be cut as there is a risk of short circuit and unintentional deployment of the SRS. However, the vehicle can be cut (except inflators) under the following conditions:

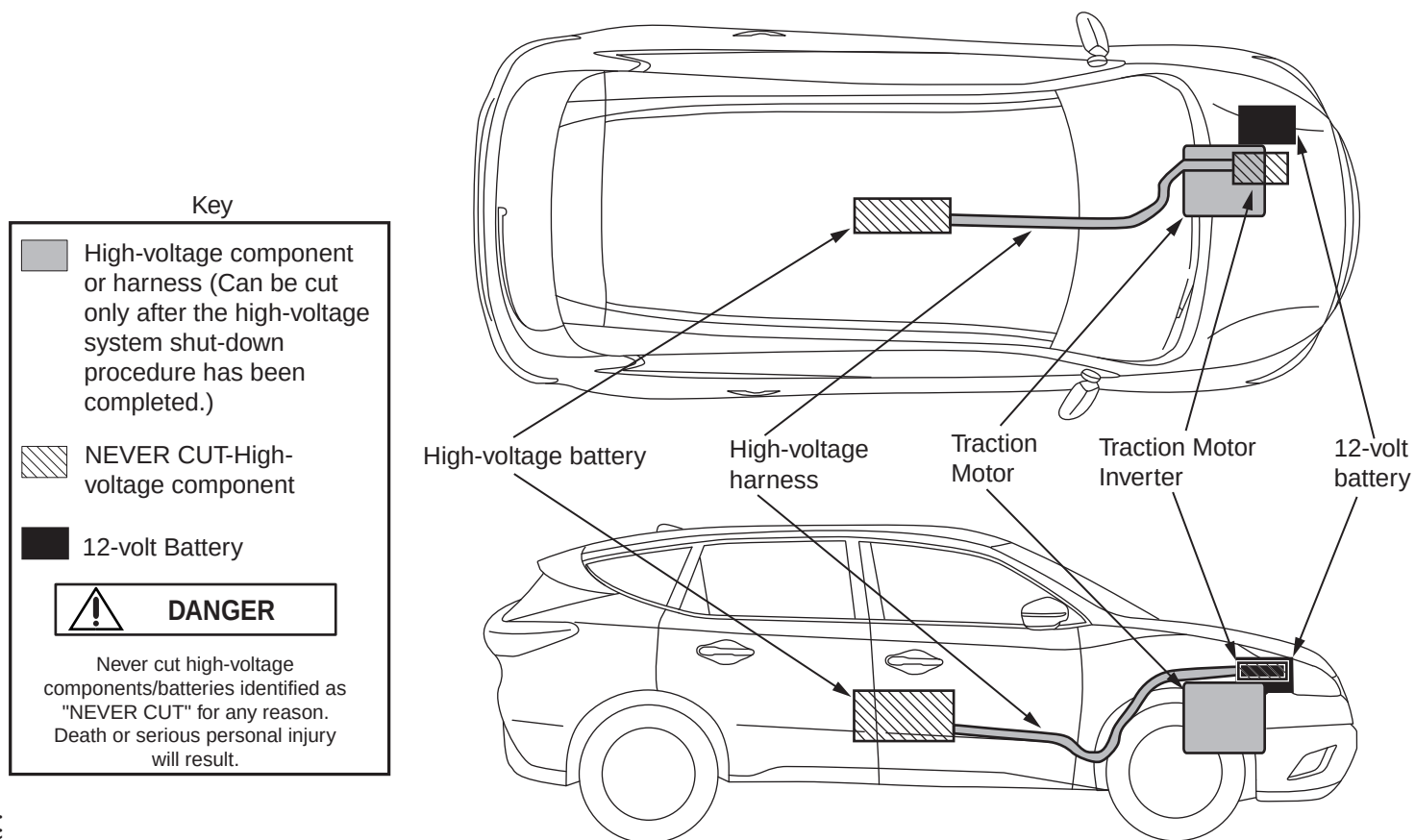
- The front, side and curtain air bags have deployed.
- At least three (3) minutes have passed after the 12-volt battery negative (-) cable has been disconnected and the high-voltage system has been shut down.



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- | | | |
|---|--|---|
| 1. Crash zone sensor | 2. Passenger supplemental front-impact air bag module | 3. Driver supplemental front-impact air bag module |
| 4. Occupant classification system control unit and sensors (weight sensors – located on passenger seat frame) | 5. Front seat-mounted side-impact supplemental air bags | 6. Roof-mounted curtain side-impact and rollover supplemental air bag inflators |
| 7. Satellite sensors (LH shown, RH similar) | 8. Driver supplemental knee air bag module | 9. Seat belts with pretensioners |
| 10. B-pillar satellite sensors (LH shown, RH similar) | 11. Pressure sensors (driver side door shown; passenger side door similar) | 12. Air bag control unit (ACU) |

Emergency Contact:
Nissan Consumer Affairs
1-800-647-7261 (US) or 1-800-387-0122 (Canada)
(Monday-Friday 8am-5pm Eastern, Central and Pacific Time Zones)



Nissan North America, Inc. Version 1, January 2015

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3-4.3 Water Submersion



⚠ DANGER



Damage level of submerged vehicle may not be apparent. Handling a submerged vehicle without appropriate Personal Protective Equipment (PPE) will result in serious injury or death from electrical shock.

⚠ WARNING

-  **The ignition switch of the submerged vehicle must be turned OFF first, if possible. Then the vehicle must be completely out of the water and drained to avoid electrical shock.**
-  **Always wear appropriate Personal Protective Equipment (PPE) and remove/drain water before removing the service plug when working on a vehicle after a fire or submersion to avoid electrical shock.**
-  **If the vehicle is in the water, to avoid electrical shock NEVER touch the high-voltage components, harnesses or service plug. PPE must always be worn when touching or working on high-voltage components.**

3-4.4 Vehicle Fire

⚠ WARNING

- **Always utilize appropriate full Personal Protective Equipment (PPE) and self-contained breathing apparatus during fire fighting operations. Smoke from a Murano HYBRID vehicle fire is similar to smoke from a conventional vehicle fire.**
- **In the case of extinguishing a fire with water, large amounts of water from a fire hydrant (if possible) must be used. DO NOT extinguish fire with a small amount of water.**

⚠ CAUTION

In the event of a small fire, a Type ABC fire extinguisher may be used for an electrical fire caused by wiring harnesses, electrical components, etc. or oil fire.

In case of vehicle fire, contact fire department immediately and extinguish the fire if possible. If you must walk away from the vehicle, notify an appropriate responder or a rescue person of the fact that the vehicle is a hybrid vehicle that contains a high-voltage system and warn all others.

3-4.5 High-voltage Battery Damage and Fluid Leaks

⚠ WARNING

The high-voltage battery contains electrolyte solution. To avoid exposure to electrolyte solution and serious personal injury, always wear appropriate solvent resistant Personal Protective Equipment (PPE) and read the following precautions:

- Electrolyte solution is a skin irritant.
- Electrolyte solution is an eye irritant – If contact with eyes, rinse with plenty of water and see a doctor immediately.
- If electrolyte leak occurs, wear appropriate solvent resistant PPE and use a dry cloth to clean up the spilled electrolyte. Be sure to adequately ventilate the area.
- Electrolyte solution is highly flammable.
- Electrolyte liquid or fumes that have come into contact with water vapors in the air will create an oxidized substance. This substance may irritate skin and eyes. In these cases, rinse with plenty of water and see a doctor immediately.
- Electrolyte fumes (when inhaled) can cause respiratory irritation and acute intoxication. Move to fresh air and wash mouth with water. See a doctor immediately.

In cases of battery case breach or electrolyte leakage, contact the fire department immediately. If you must walk away from the vehicle, notify an appropriate responder of the fact that the vehicle is a hybrid vehicle and contains a high-voltage system and warn all others.

High-voltage Battery Electrolyte Solution Characteristics:

- Clear in color
- Sweet odor
- Similar viscosity to water
- Since the high-voltage battery is made up of many small sealed battery modules, electrolyte solution leakage should be minimal.

NOTE:

Other fluids in the vehicle (such as engine oil, washer fluid, brake fluid, coolant, etc.) are the same as those in a conventional vehicle.

4. Jump Starting

To start the hybrid system with a booster battery, the instructions and precautions below must be followed.

WARNING

If done incorrectly, jump starting can lead to a 12-volt battery explosion, resulting in severe personal injury or death. It could also damage your vehicle.

Jump starting provides power to the 12-volt system to allow the electrical systems to operate. The electrical systems must be operating to allow the high-voltage battery to be charged. Jump starting does not charge the high-voltage battery.

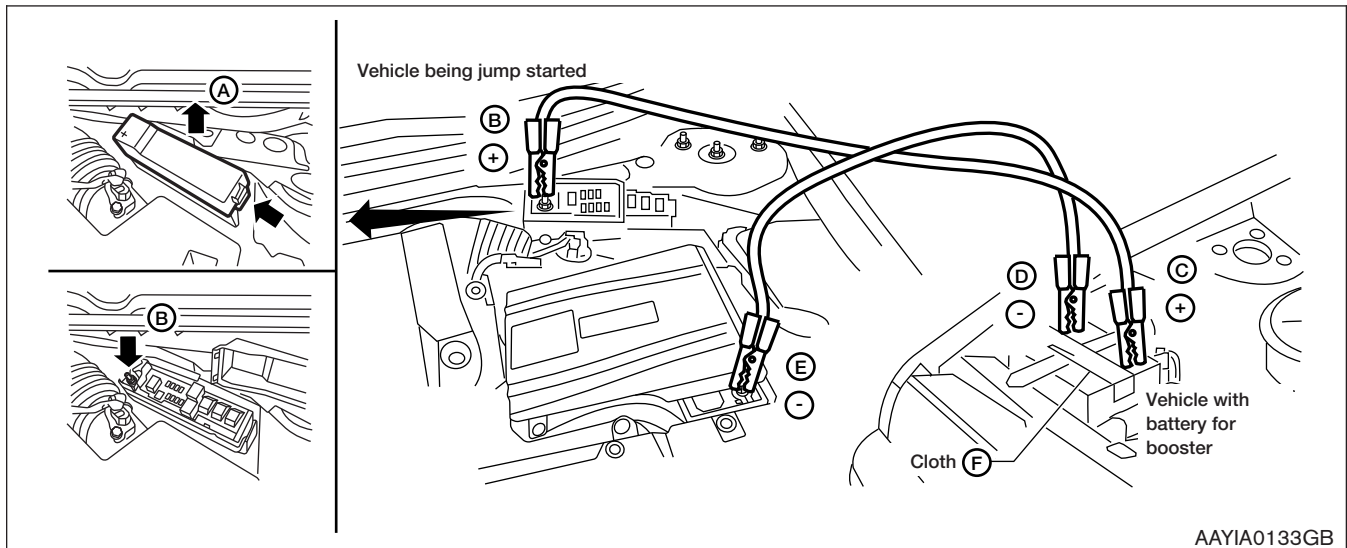
Discharged 12-volt battery may cause the following issues:

- The instrument cluster cannot be displayed while the ignition switch is turned ON. (The hybrid system cannot start.)
- Headlamps, horn, etc. are weak.

WARNING

-  To avoid electrical shock, the high-voltage battery **CANNOT** be jump started.
- Explosive hydrogen gas is always present in the vicinity of the 12-volt battery. Keep all sparks and flames away from the 12-volt battery. Make sure the vent tube is mounted.
- Do not allow battery fluid to come into contact with eyes, skin, clothing or painted surfaces. Battery fluid is a corrosive sulfuric acid solution that can cause severe burns. If the fluid comes into contact with anything, immediately flush the contacted area with water.
- The booster battery must be rated at 12 volts. Use of an improperly rated battery can damage the vehicle.
- Whenever working on or near a 12-volt battery, always wear suitable eye protectors (for example, goggles or industrial safety spectacles) and remove rings, metal bands, or any other jewelry. Do not lean over the 12-volt battery when jump starting.
- Do not attempt to jump start a frozen battery. It could explode and cause serious injury.
- Murano HYBRID is equipped with an automatic cooling fan. It could come on at any time. Keep hands and other objects away from it.
- Always follow the jump starting instructions below. Failure to do so could result in damage to the charging system and cause personal injury.

4-1 Jump Starting Procedures



NOTE:

Jumper cable connections under the hood of the Murano HYBRID are not connected directly to a battery. They are connected to chassis ground and a fuse box terminal. Refer to the following instructions and the above illustration.

1. Locate the fusible link box behind the engine air cleaner.
2. Push the tab in and lift up (A) to remove the lid and expose the remote positive battery terminal (B).
3. If the booster battery is in another vehicle, position the two vehicles to bring their batteries near each other.

DO NOT allow the two vehicles to touch.

4. Apply the parking brake. Move the selector lever to the P (Park). Switch off all unnecessary electrical systems (lights, heater, air conditioner, etc.).
5. Remove vent caps on the battery (if so equipped) of the vehicle with battery for booster. Cover the battery with an old cloth (F) to reduce explosion hazard.
6. Connect jumper cables in the sequence as illustrated (B → C → D → E).

⚠ CAUTION

- Always connect positive (+) to positive (+) and negative (-) to body ground (for example, as illustrated), not to the 12-volt battery.
- Make sure the jumper cables do not touch moving parts in the engine compartment and that the cable clamps do not contact any other metal.

7. Start the engine of the booster vehicle and let it run for a few minutes.

8. Hold down the brake pedal and press the START button. The vehicle instruments and gauges will light up, and the green READY light  will come ON.

⚠ CAUTION

If the green READY  light does not come on, press the START button to turn the Hybrid System OFF. Carefully disconnect the negative cable then the positive cable. It is recommended you visit a NISSAN dealer for repair.

9. After the green READY  light in the meter display comes ON, carefully disconnect the negative cable and then the positive cable.
10. Replace the vent caps (if so equipped). Be sure to dispose of the cloth used to cover the vent holes as it may be contaminated with corrosive acid.
11. Reinstall the fusible link box cover.

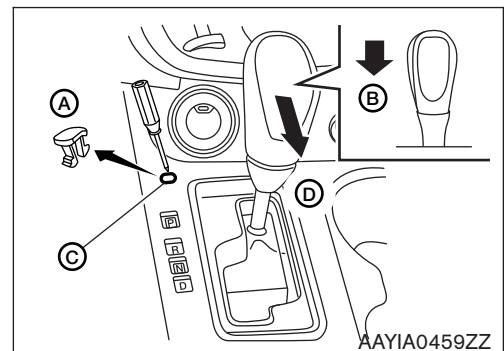
NOTE:

If it is not possible to turn the hybrid system ON by following this procedure, it is recommended you contact a NISSAN dealer immediately.

4-2 Shift Selector Lever Lock Release

If the 12-volt battery is low or discharged, the selector lever cannot be moved from the Park (P) position. If a booster battery is not available, the selector lever lock can be manually released. To manually release the selector lever lock, perform the following procedure:

1. Push the ignition switch to the LOCK or OFF position.
2. Apply the parking brake.
3. Remove the shift lock cover (A) using a suitable tool.
4. Push down the shift lock (C) using a suitable tool as shown in the illustration.
5. Push the selector lever button (B) and move the selector lever to the Neutral (N) position (D) while holding down the shift lock.



5. Storing the Vehicle

⚠ WARNING

The service plug must be removed to shut down the high-voltage system for storage.

Do not store a vehicle inside a structure. Keep the vehicle away from other vehicles if the high-voltage battery is severely damaged. There is possibility of delayed fire from a severely damaged high-voltage battery.

If the Murano HYBRID needs to be stored or left unattended, the high-voltage system must be shut down by removing the service plug [refer to [Alternate Procedure 2 \(Remove Service Plug\) \(DG-26\)](#)] and a sign put on the vehicle indicating it is a hybrid vehicle with high-voltage dangers. For example:

Person in charge: _____

**DO NOT TOUCH!
IN PROGRESS.
HIGH VOLTAGE REPAIR
DANGER:**

**DANGER:
HIGH VOLTAGE REPAIR
IN PROGRESS.
DO NOT TOUCH!**

Person in charge: _____

Copy this page and put it after folding on the roof of the vehicle in service.

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6. Dismantling Information

Removal or repair of the high-voltage battery requires special tools and specific training. Nissan strongly recommends that only certified NISSAN dealer technicians perform these operations.

6-1 Precautions for Handling High-voltage Battery



⚠ DANGER

-  Because Murano HYBRID contains a high-voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high-voltage components or vehicle is handled incorrectly. Be sure to follow the correct work procedures when performing inspection and dismantling.
-  If it is necessary to touch any of the high-voltage harnesses or components you must always wear appropriate Personal Protective Equipment (PPE) and properly shut-down the high-voltage system by removing the service plug.
-  Be sure to always wear appropriate PPE before beginning work on the high-voltage system.
-  Be sure to remove the service plug in order to shut-down the high-voltage system before performing inspection or dismantling of high-voltage system harnesses and parts.
-  If the vehicle is heavily damaged, for example the high-voltage battery is deformed, broken, or cracked; appropriate PPE must always be used at all times to avoid electrical shock.

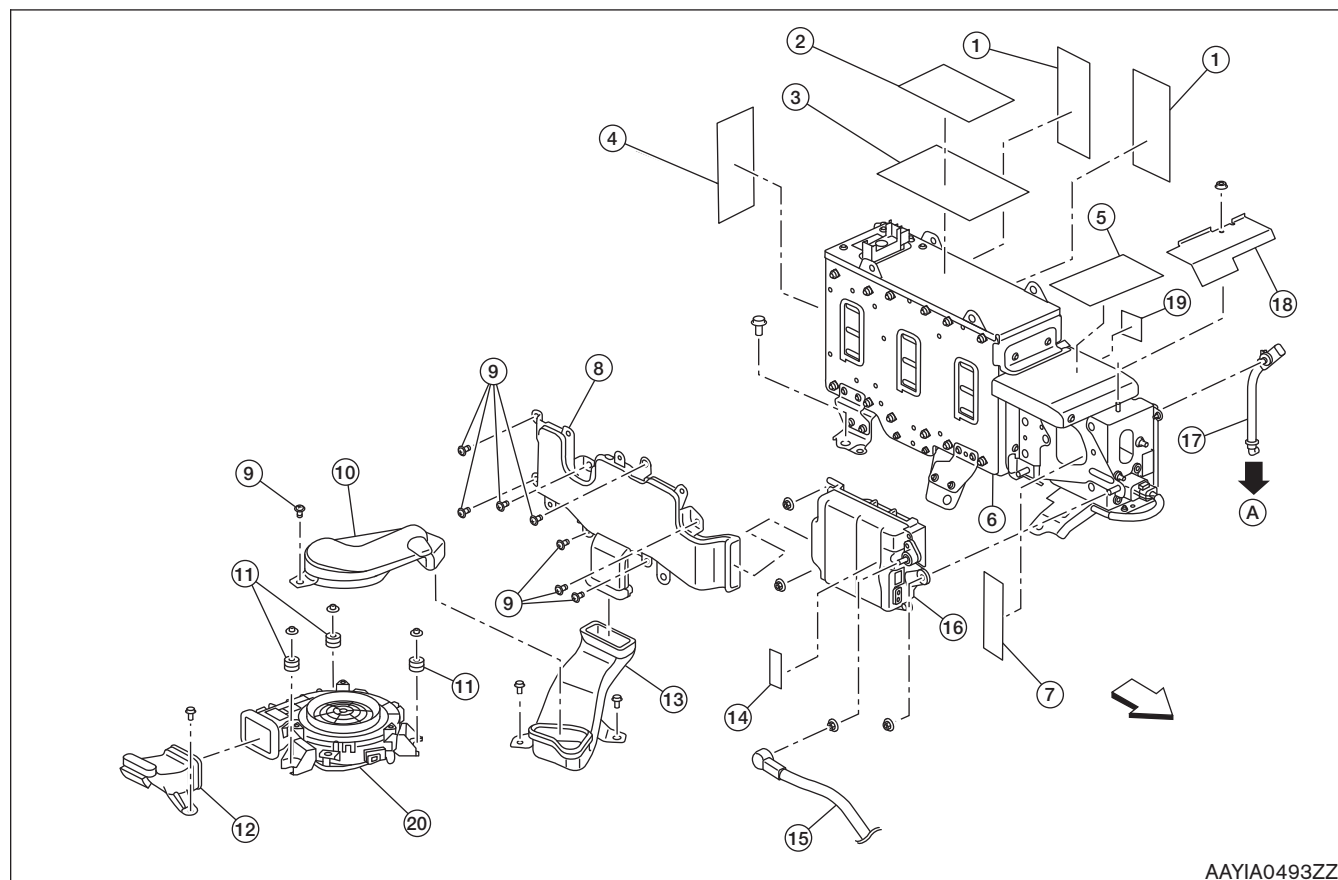
⚠ WARNING

-  The colors of the high-voltage harnesses and connectors are all orange. Orange "high-voltage" labels are applied to the high-voltage battery and other high-voltage devices. Do not touch the high-voltage battery or other high-voltage devices without always wearing appropriate PPE.
-  Clearly identify the persons responsible for high-voltage work and ensure that other persons do not touch the vehicle. When not working, cover high-voltage parts with an insulating cover sheet and sign or similar item to prevent other persons from contacting them.
-  Be sure to put the removed service plug in your pocket and carry it with you so another person does not accidentally reinstall it while work is in progress.
-  The high-voltage battery retains high-voltage at all times. Appropriate Personal Protective Equipment (PPE) must always be worn when touching or working on high-voltage components to avoid risk of electrical shock and severe personal injury or death.
-  Immediately insulate disconnected high-voltage connectors and terminals with insulated tape.
-  The vehicle contains parts that contain powerful magnets. If a person who is wearing a pacemaker or other medical device is close to these parts, the medical device may be affected by the magnets. Such persons must not perform work on the vehicle.
-  Because this vehicle uses components that contain high-voltage and powerful magnetism, do not carry any metal products which may cause short circuits, or any magnetic media (cash cards, credit cards, etc.) which may be damaged when working on the vehicle.
-  Keep removed high-voltage battery packs away from rain to avoid electric shock.
- Do not heat removed battery packs higher than 158° F (70° C).

6-2 High-Voltage Battery Pack Removal

6-2.1 Exploded Views

High-Voltage Battery Exploded View

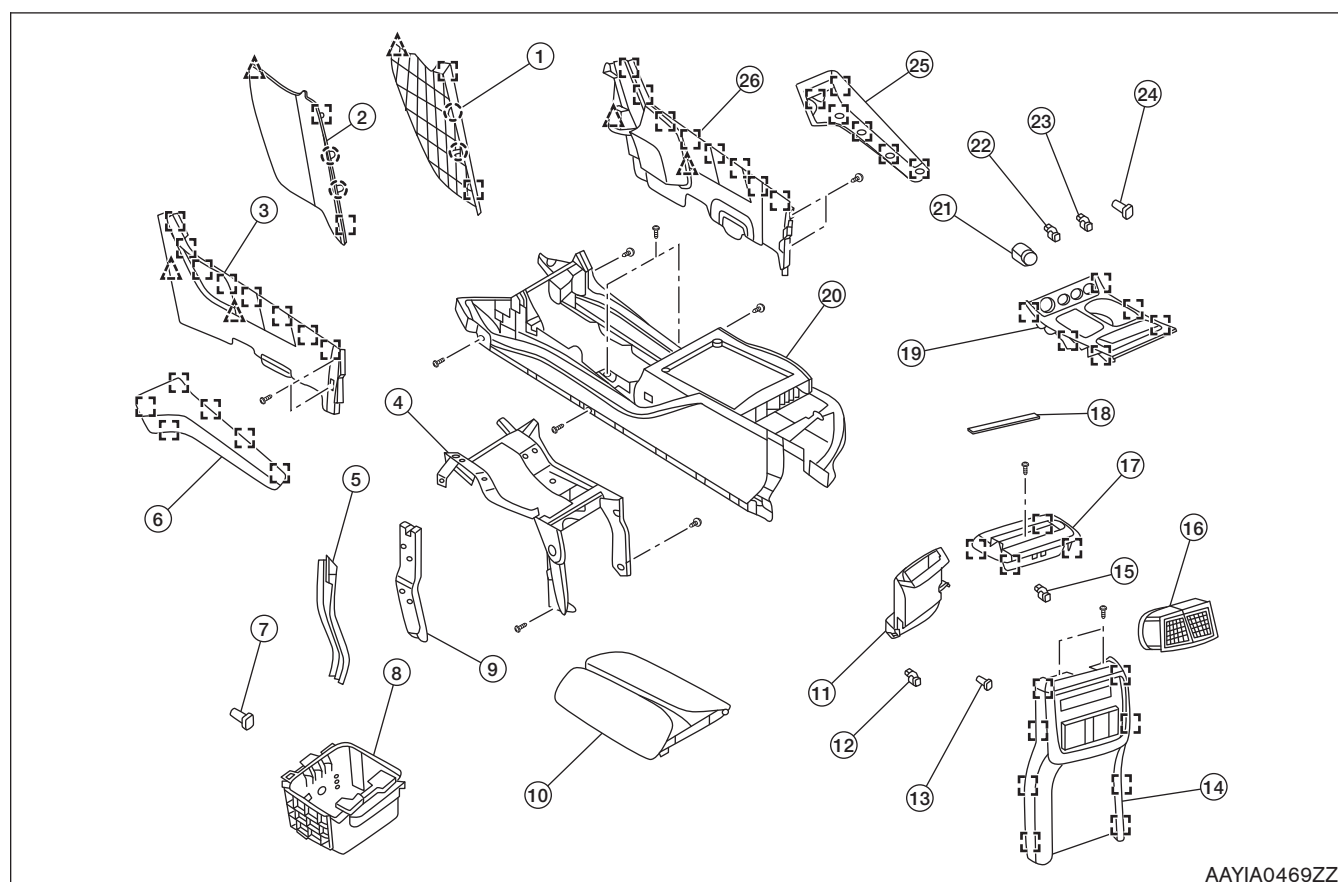


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← : Vehicle front

- | | | |
|--------------------------------|--------------------------------|---------------------------------------|
| 1. Damping sheet 1 | 2. High-voltage warning label | 3. Damping sheet 2 |
| 4. Damping sheet 3 | 5. Damping sheet 4 | 6. High-voltage battery assembly |
| 7. Damping sheet 5 | 8. Battery air duct | 9. Clip |
| 10. Battery inlet duct B | 11. Bushing | 12. Battery outlet duct |
| 13. Battery inlet duct A | 14. High-voltage warning label | 15. 12-Volt battery positive terminal |
| 16. DC/DC converter | 17. Gas discharge tube | 18. DC/DC converter cover |
| 19. High-voltage warning label | 20. Battery cooling fan | A. To floor |

Center Console Assembly Exploded View



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○ : Pawl

□ : Metal clip

△ : Clip

1. Center console side finisher (RH)

4. Center console rear brace

7. Console power socket

10. Center console lid

13. Rear USB interface

16. Rear ventilator grille assembly

19. Shift selector finisher

22. Front heated seat switch (LH)

25. Center console upper side finisher (RH)

2. Center console side finisher (LH)

5. Instrument stay (LH)

8. Center console bin

11. Rear center ventilator duct

14. Center console rear finisher

17. Center console tray

20. Center console assembly

23. Front heated seat switch (RH)

26. Center console lower side finisher (RH)

3. Center console lower side finisher (LH)

6. Center console upper side finisher (LH)

9. Instrument stay (RH)

12. 2nd row heated seat switch (LH) (if equipped)

15. 2nd row heated seat switch (RH) (if equipped)

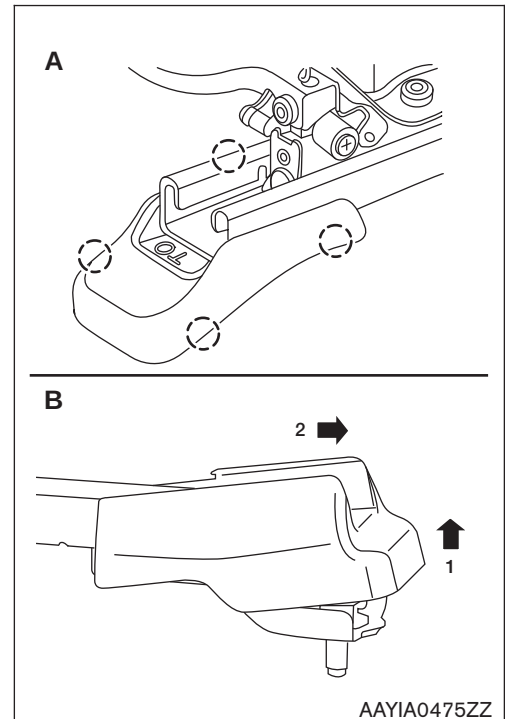
18. Center console tray mat

21. Push-button ignition switch

24. Front power socket

6-2.2 Removal Procedure

1. Discharge high-voltage battery. Refer to [3-3 Discharge Procedures \(DG-19\)](#).
2. Remove the front seats.
 - a. Slide front seats to full rearward position.
 - b. Disconnect negative and positive battery terminals then wait at least three minutes.
 - c. Disconnect harness connectors for side airbag modules.
 - d. Release pawls using a suitable tool and remove front finishers (LH/RH) **(A)** then remove seat front bolts.
 - e. Connect negative and positive battery terminals then slide seats to full forward position.
 - f. Disconnect negative and positive battery terminals then wait at least three minutes.
 - g. Remove rear slide finishers (LH/RH) **(B)** by lifting up and then pulling rearward, then remove seat rear bolts.
 - h. Tilt seats rearward and disconnect harness connectors from seats.
 - i. Remove front seats from the vehicle.



3. Remove the service plug. Refer to [Alternate Procedure 2 \(Remove Service Plug\) \(DG-26\)](#).



⚠ DANGER

Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.



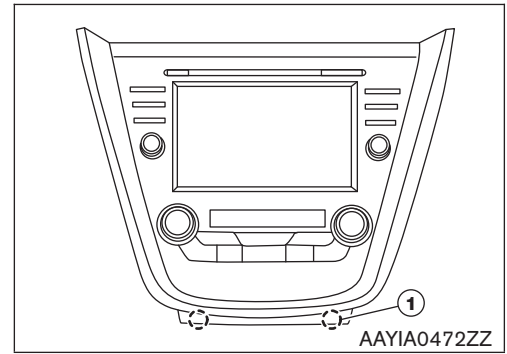
⚠ DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

4. Release clips and pawls using a suitable tool and remove center console side finisher (LH/RH).
5. Release clips and remove center console upper side finisher (LH/RH).
6. Release clips and screws and remove center console lower side finisher (LH/RH).

7. Release pawls using a suitable tool and remove cluster lid C (1).

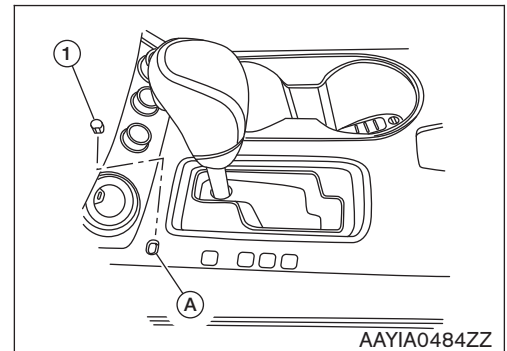
○ : Pawl



8. Apply the parking brake.

⚠ CAUTION Make sure the vehicle cannot move with the parking brake applied.

9. Remove shift lock override button cover (1) using suitable tool, and insert suitable tool into opening (A) to depress the shift lock override button. Move shift selector to "N" position while depressing shift lock override button.

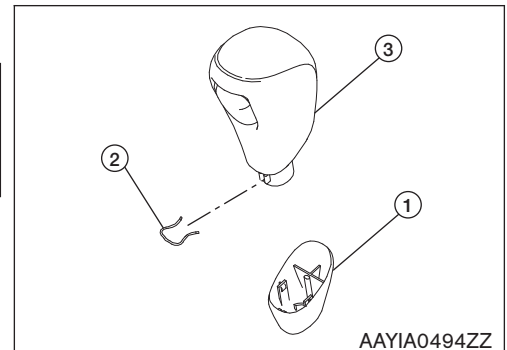


10. Remove the shift selector knob with the following procedure.
 - a. Slide the selector lever knob cover (1) down.

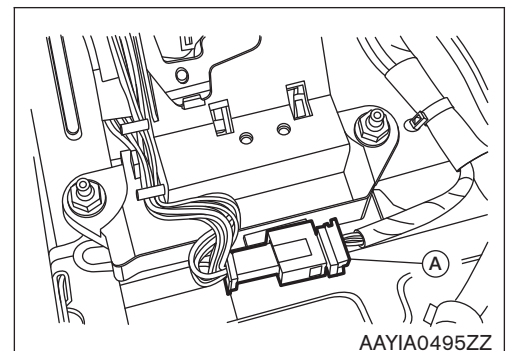
⚠ CAUTION

Do not damage the selector lever knob cover.

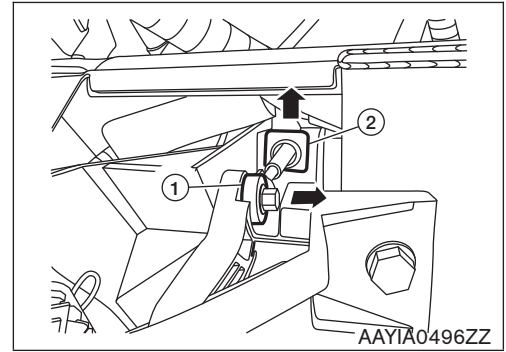
- b. Pull out the lock pin (2) from the shift selector knob (3).
 - c. Pull the shift selector knob and the selector lever knob cover upwards to remove them.



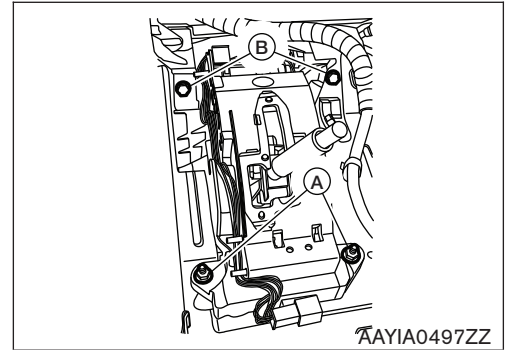
11. Remove the shift selector finisher.
12. Shift the selector lever to "P" position.
13. Disconnect the harness connector (A) from the CVT shift selector.



14. Disconnect the tip **(1)** of control cable in the direction shown and remove socket **(2)** from the CVT shift selector assembly in the direction shown.

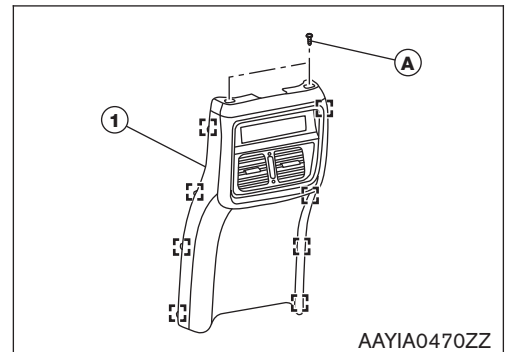


15. Remove the CVT shift selector assembly nuts **(A)** and bolts **(B)** and remove the CVT shift selector assembly from the vehicle.

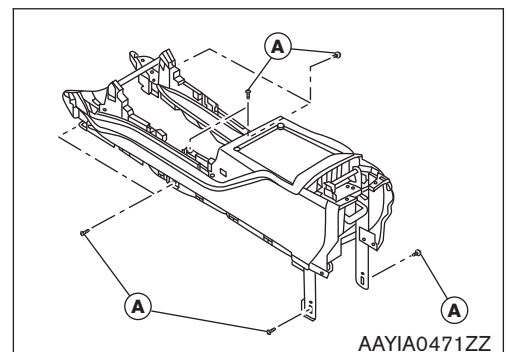


16. Remove center console tray mat.
17. Remove screw and release clips then remove center console tray.
18. Remove screws **(A)** and release clips using a suitable tool then remove center console rear finisher **(1)**.

 : Metal clip



19. Remove center console screws **(A)**.

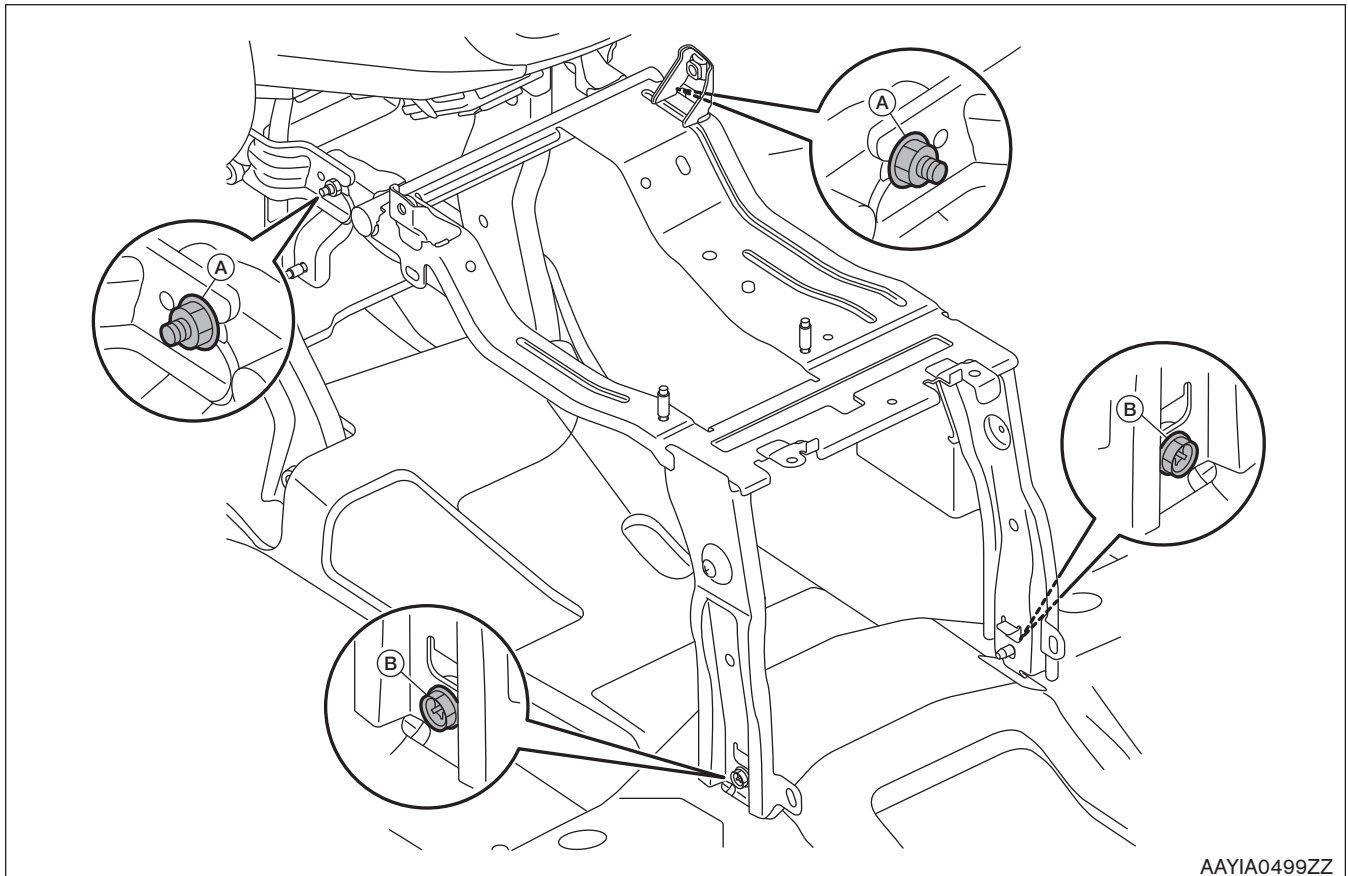
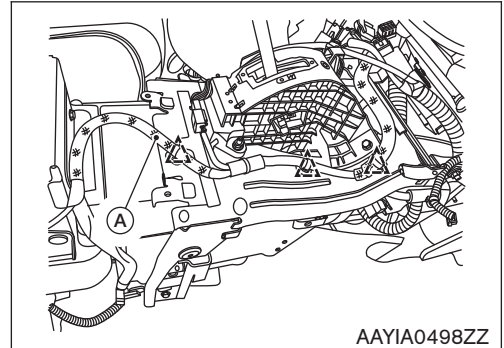


20. Disconnect the remaining harness connectors and remove center console.
21. Remove the high-voltage battery.

Use the following steps and refer to the [6-2.1 Exploded Views \(DG-40\)](#).

- a. Release front USB interface and AUX in jack harness retainer clips, then position harness **(A)** aside.
- b. Remove nuts **(A)** and bolts **(B)** then remove CVT shift selector bracket.
- c. Remove DC/DC converter cover **(1)**.

△ : Clip

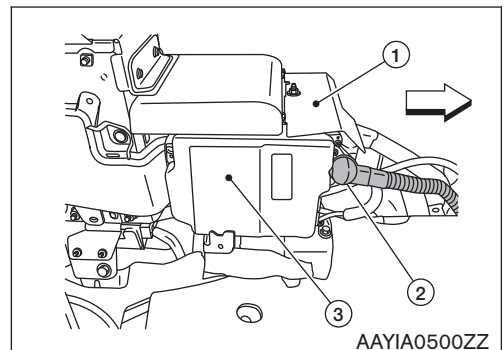


⚠ CAUTION Check that the 12-volt battery negative terminal is disconnected before removing the 12-volt battery positive terminal.

- d. Remove 12-volt battery positive terminal **(2)**.

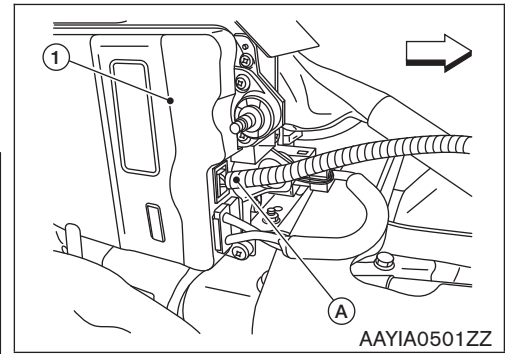
(3): DC/DC converter

↔ : Vehicle front



- e. Using a suitable tool disconnect the harness connector **(A)** from DC/DC converter **(1)**.

← : Vehicle front



⚠ DANGER

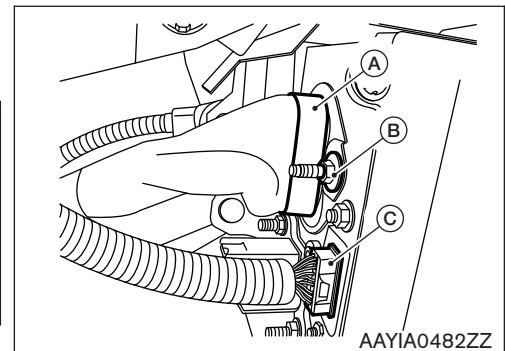
Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.



⚠ DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

- f. Remove nut **(B)** and disconnect main harness connector **(A)** from high-voltage battery.



⚠ DANGER

Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.



⚠ DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

- g. Using a suitable tool disconnect inverter harness connector **(C)** from high-voltage battery.



⚠ DANGER

Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.



⚠ DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

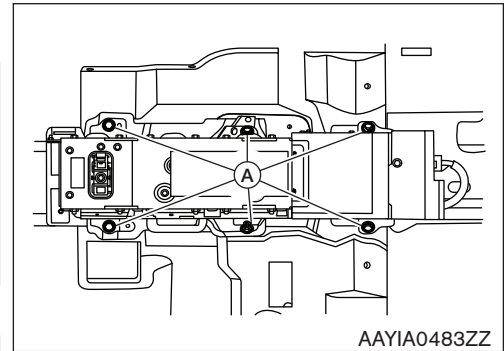
- h. Release harness clips from battery inlet duct A and place harness aside.

- i. Remove gas discharge tube from floor panel.
- j. Remove bolts **(A)** and high-voltage battery.



DANGER

Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.

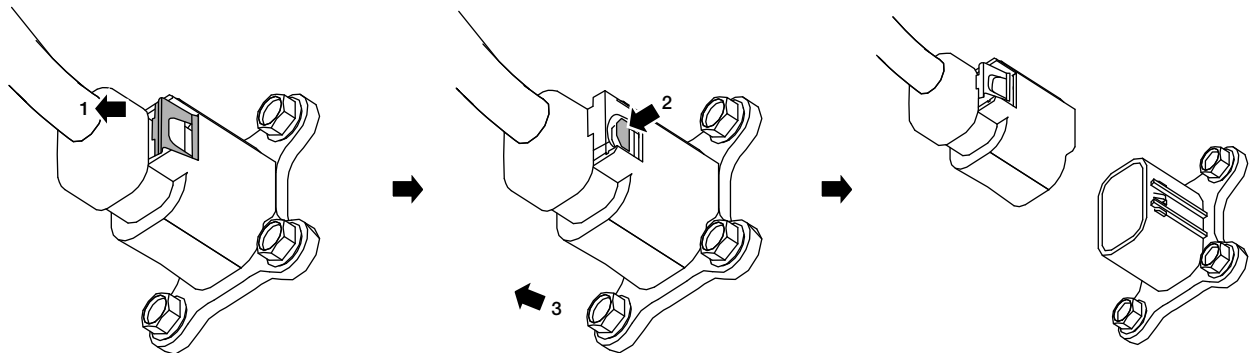


DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

WARNING To avoid personal injury, when removing the high-voltage battery, two people are required.

- 22. Remove DC/DC converter.
 - a. Follow the procedure below to disconnect the DC/DC converter harness connector.



DANGER

Immediately protect the terminals of the disconnected high-voltage harness connector socket using insulated tape so that they are not exposed.



⚠ DANGER

Touching high-voltage components without wearing appropriate Personal Protective Equipment (PPE) will cause electrocution.

23. Confirm that the insulated tape is still securely in place on the high-voltage battery.
24. Dismantling the remainder of the Murano HYBRID may be performed like conventional Nissan vehicles once the high voltage system is properly shut down and discharged.

6-3 High-voltage Battery Recycling

The high-voltage battery is recyclable. For information regarding recycling of the high-voltage battery, it is recommended you contact the nearest NISSAN dealer or Nissan Consumer Affairs at: United States: 1-800-647-7261 or in Canada: 1-800-387-0122.



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