



# LS 600L LS 600hL

*Gasoline-Electric*

*Lexus Hybrid Drive*

## *HYBRID VEHICLE DISMANTLING MANUAL*



## Foreword

This guide was developed to educate and assist dismantlers in the safe handling of Lexus LS600h/LS600hL gasoline-electric hybrid vehicles. LS600h/LS600hL dismantling procedures are similar to other non-hybrid Lexus vehicles with the exception of the high voltage electrical system. It is important to recognize and understand the high voltage electrical system features and specifications of the Lexus LS600h/LS600hL, as they may not be familiar to dismantlers.

High voltage electricity powers an electric motor, generator, electric inverter compressor (for air conditioner) and power control unit. All other conventional automotive electrical devices such as the headlights, radio, and gauges are powered from a separate 12 auxiliary volt battery. Numerous safeguards have been designed into the LS600h/LS600hL to help ensure the high voltage, approximately 288 Volt, Nickel Metal Hydride (NiMH) Hybrid Vehicle (HV) battery pack is kept safe and secure in an accident.

The NiMH HV battery pack contains sealed batteries that are similar to rechargeable batteries used in some battery operated power tools and other consumer products. The electrolyte is absorbed in the cell plates and will not normally leak out even if the battery is cracked. In the unlikely event the electrolyte does leak, it can be easily neutralized with a dilute boric acid solution or vinegar.

High voltage cables, identifiable by orange insulation and connectors, are isolated from the metal chassis of the vehicle.

Additional topics contained in the guide include:

- Lexus LS600h/LS600hL identification.
- Major hybrid component locations and descriptions.

By following the information in this guide, dismantlers will be able to handle the LS600h/LS600hL hybrid-electric vehicles as safely as the dismantling of a conventional non-hybrid automobile.

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## About the LS600h/LS600hL

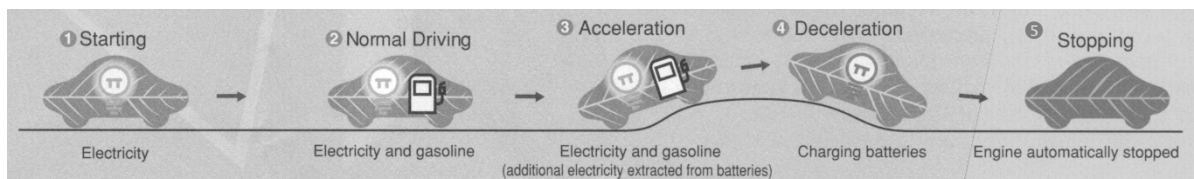
The LS600h/LS600hL sedan joins the RX400h and GS450h as a hybrid model for Lexus. Lexus Hybrid Drive means that the vehicle contains a gasoline engine and an electric motor for power. The two hybrid power sources are stored on board the vehicle:

1. Gasoline stored in the fuel tank for the gasoline engine.
2. Electricity stored in a high voltage Hybrid Vehicle (HV) battery pack for the electric motor.

The result of combining these two power sources is improved fuel economy and reduced emissions. The gasoline engine also powers an electric generator to recharge the battery pack; unlike a pure all electric vehicle, the LS600h/LS600hL never needs to be recharged from an external electric power source.

Depending on the driving conditions one or both sources are used to power the vehicle. The following illustration demonstrates how the LS600h/LS600hL operates in various driving modes.

- ❶ During light acceleration at low speeds, the vehicle is powered by the electric motor. The gasoline engine is shut off.
- ❷ During normal driving, the vehicle is powered mainly by the gasoline engine. The gasoline engine also powers the generator to recharge the battery pack.
- ❸ During full acceleration, such as climbing a hill, both the gasoline engine and the electric motor power the vehicle.
- ❹ During deceleration, such as when braking, the vehicle regenerates the kinetic energy from the wheels to produce electricity that recharges the battery pack.
- ❺ While the vehicle is stopped, the gasoline engine and electric motor are off, however the vehicle remains on and operational.



## LS600h/LS600hL Identification

In appearance, the 2008 model year/2007 calendar year LS600h/LS600hL is nearly identical to the conventional, non-hybrid Lexus LS460/LS460L. The LS600h/LS600hL is a 4-door sedan and the suffix “L” indicates a long wheelbase. Exterior, interior, and engine compartment illustrations are provided to assist in identification.

The alphanumeric 17 character Vehicle Identification Number (VIN) is provided in the front windshield cowl, driver door pillar, and engine compartment.

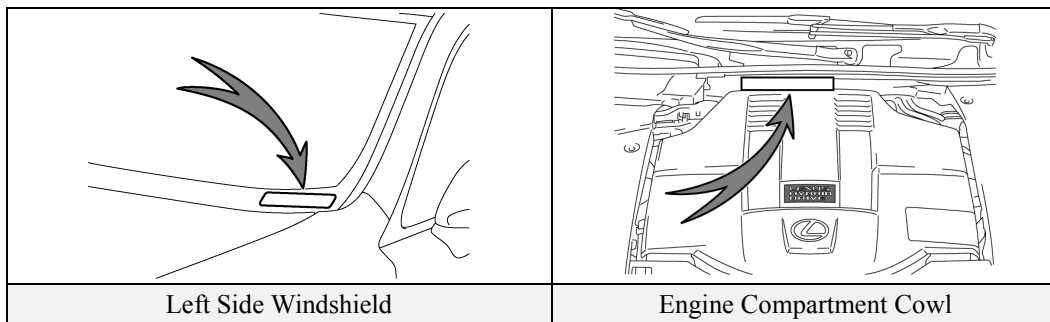
Example VIN:     JTHCU45F740020211    (standard type: LS600h)  
                  JTHDU46F840020208    (long wheelbase type: LS600hL)

An LS600h is identified by the first 6 alphanumeric characters

**JTHCU4.**

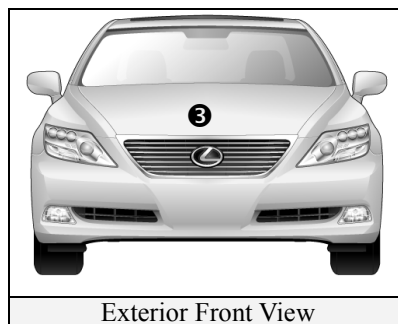
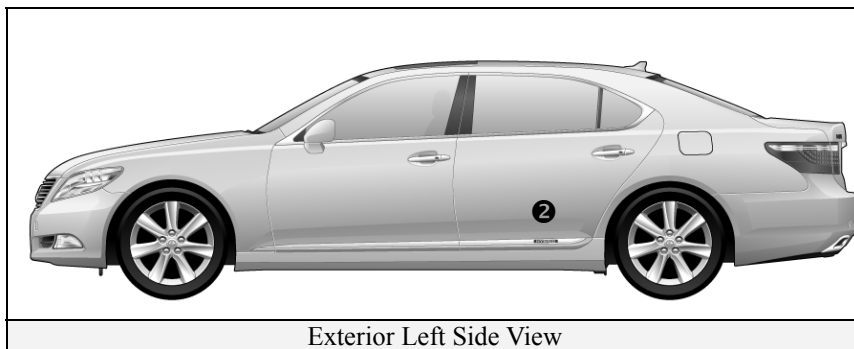
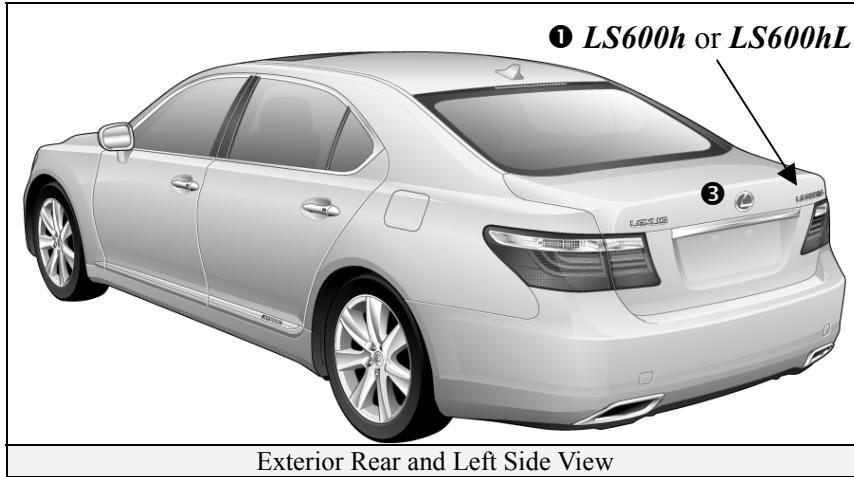
An LS600hL is identified by the first 6 alphanumeric characters

**JTHDU4.**



Exterior

- ❶ *LS600h* or *LS600hL* logos on the trunk.
- ❷ *HYBRID* logos on the rear door moldings.
- ❸ Lexus logos that have blue in the background.



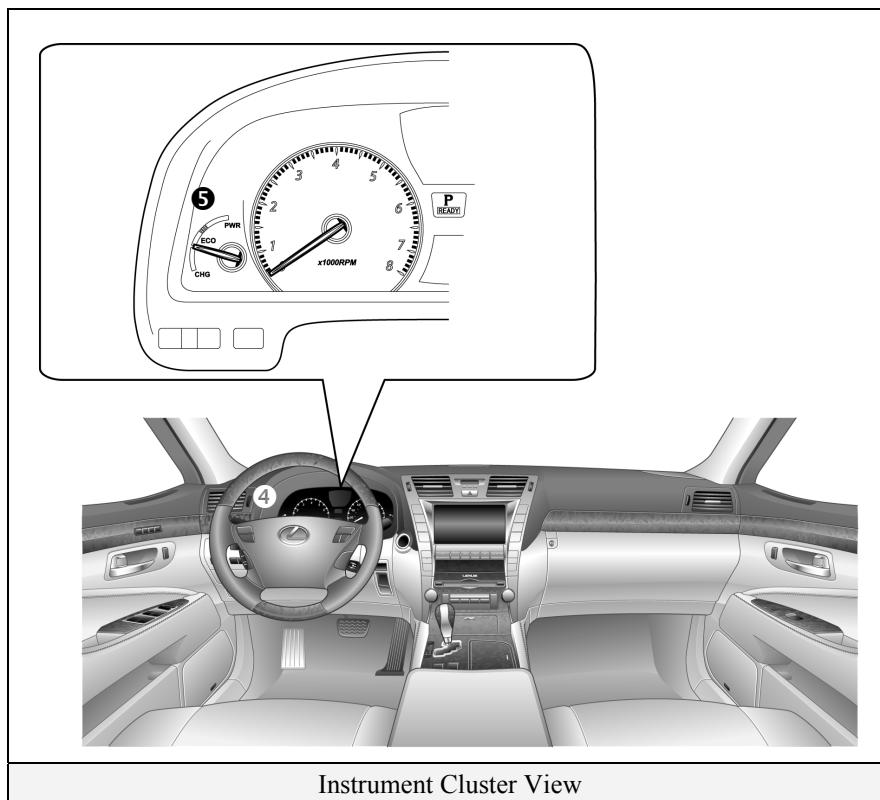
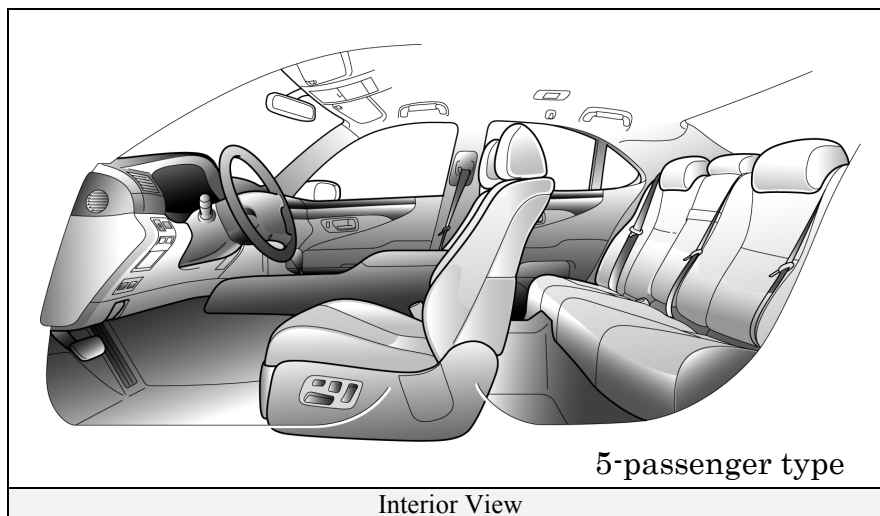
## LS600h/LS600hL Identification (Continued)

### Interior

- ④ The instrument cluster (speedometer, fuel gauge, warning lights) located in the dash behind the steering wheel, is different than the one on the conventional, non-hybrid LS460/LS460L.
- ⑤ The hybrid system indicator (power meter) is located next to the tachometer.

### Hint:

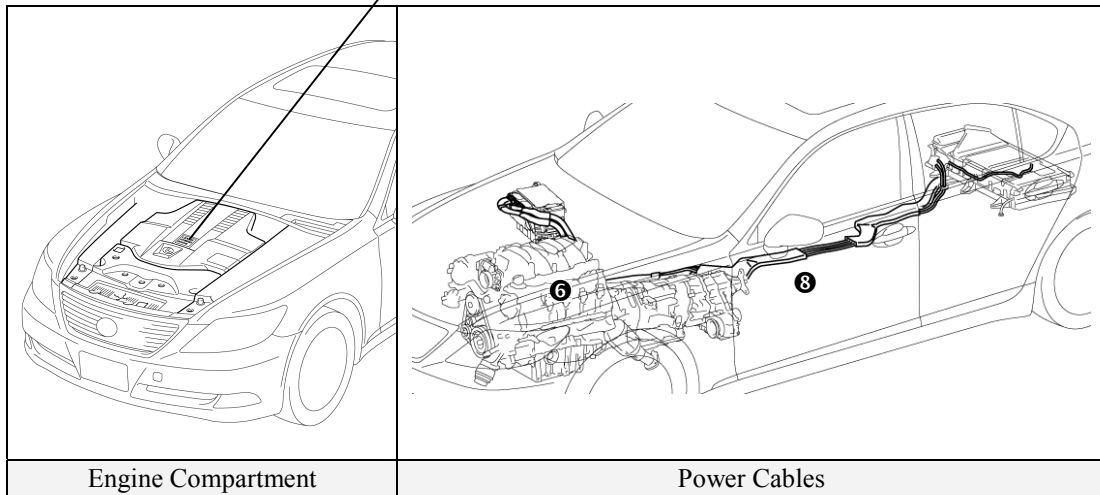
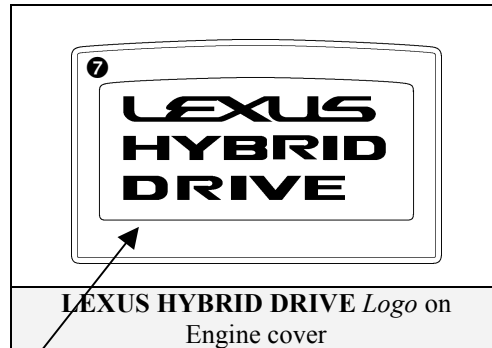
If the vehicle is shut off, the instrument cluster gauges will be “blacked out”, not illuminated.





Engine Compartment

- ⑥ 5.0-liter aluminum alloy gasoline engine.
- ⑦ Logo on the plastic engine cover.
- ⑧ Orange colored high voltage power cables.



## Hybrid Component Locations & Descriptions

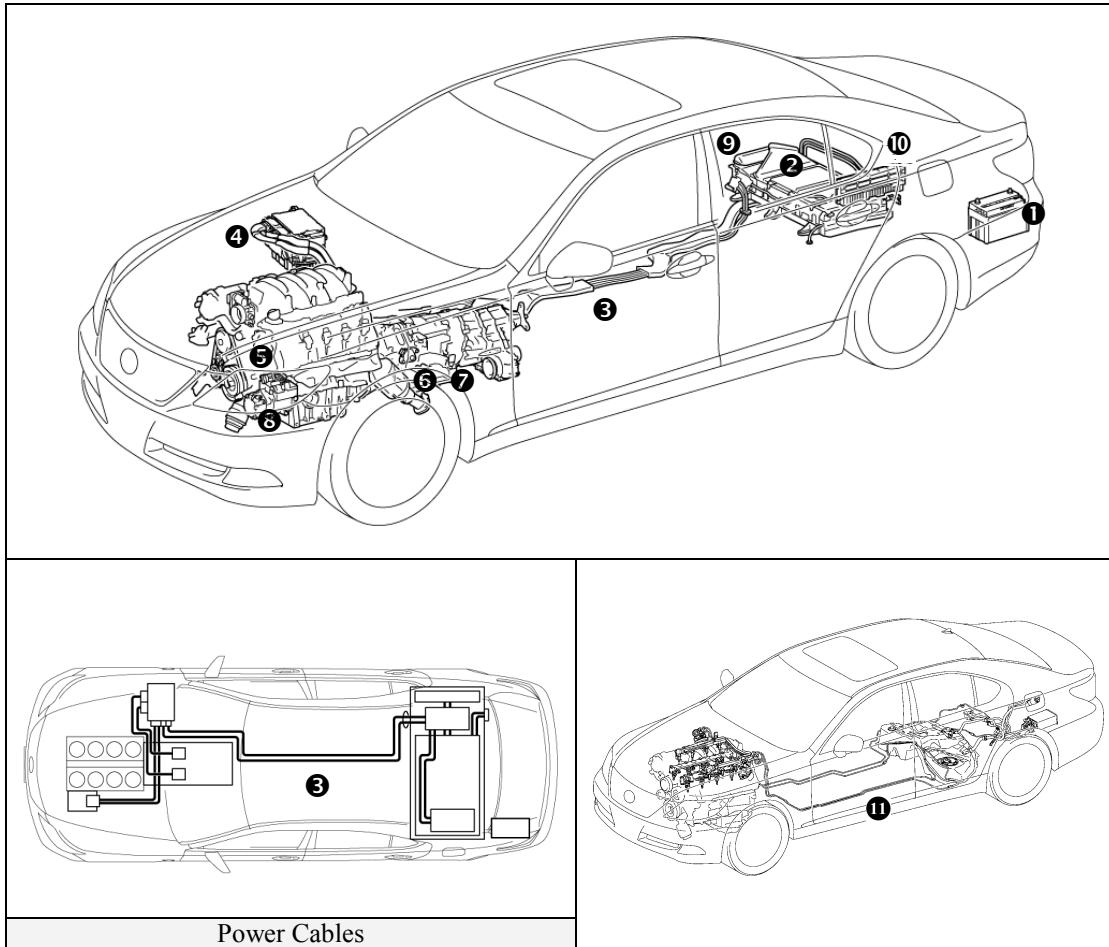
Component*	Location	Description
12 Volt ❶ Auxiliary Battery	Trunk, Driver Side	A lead-acid battery that supplies power to the low voltage devices.
Hybrid ❷ Vehicle (HV) Battery Pack	Trunk Area, Mounted to Cross Member and behind Rear Seat	288 Volt Nickel Metal Hydride (NiMH) battery pack consisting of 20 low voltage (14.4 Volt) modules connected in series.
Power ❸ Cables	Undercarriage and Engine Compartment	Orange colored power cables carry high voltage Direct Current (DC) between the HV battery pack, power control unit, and A/C compressor. These cables also carry 3-phase Alternating Current (AC) between the power control unit, electric motor, and generator.
Power Control Unit ❹	Engine Compartment	Boosts and inverts the high voltage electricity from the HV battery pack to 3-phase AC electricity that drives the electric motor. The power control unit also converts AC electricity from the electric generator and electric motor (regenerative braking) to DC that recharges the HV battery pack.
Gasoline ❺ Engine	Engine Compartment	Provides two functions: 1) Powers the vehicle. 2) Powers the generator to recharge the HV battery pack. The engine is started and stopped under control of the vehicle computer.
Electric ❻ Generator	Transmission	3-phase high voltage AC generator that is contained in the transmission and recharges the HV battery pack.
Electric ❼ Motor	Transmission	3-phase high voltage AC permanent magnet electric motor contained in the transmission and drives the four wheels through the transfer case and propeller shafts.
A/C Compressor (with Inverter) ❸	Engine Compartment	3-phase high voltage AC electrically driven motor compressor.
DC-DC Converter❹ for 12 Volt Auxiliary Battery	Inside HV Battery Pack in Trunk	Converts 288 Volts from the HV battery pack to 12 Volts for low voltage vehicle power.
DC-DC Converter ❺ for EPS and Active Stabilizer Suspension System	On HV Battery Pack	Converts 288 Volts from the HV battery pack to 46 Volts for EPS and active stabilizer suspension system power. Dull yellow colored sheathing identifies 46 Volt wires that are routed under the vehicle body to power the EPS and the active stabilizer suspension system.
Fuel Tank and Fuel Lines ❻	Undercarriage, Driver Side and Center	The fuel tank provides gasoline via fuel lines to the engine. The source fuel lines are routed under the vehicle along the center tunnel and the return line is routed along the driver side under the floor pan.

\*Numbers in the component column apply to the illustrations on the following page.

## Specifications

Gasoline Engine:	390 hp (290 kW), 5.0-liter Aluminum Alloy Engine
Electric Motor:	221 hp (165 kW), Permanent Magnet Motor
Transmission:	Automatic Only
HV Battery:	288 Volt Sealed NiMH-Battery
Curb Weight:	5,004-5,357 lbs/2,270-2,430 kg
Fuel Tank:	18.5 Imp gals, 22.1 US gals/84 liter
Frame Material:	Steel Unibody, Steel Panels and Aluminum Engine Hood

This illustration is for an LHD model.



## Lexus Synergy Drive Operation

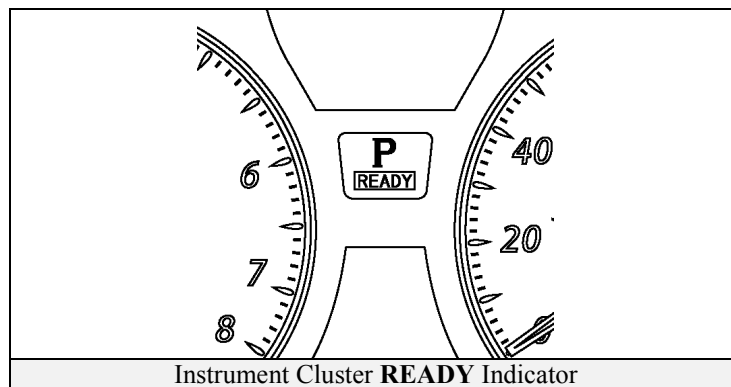
Once the **READY** indicator is illuminated in the instrument cluster, the vehicle may be driven. However, the gasoline engine does not idle like a typical automobile and will start and stop automatically. It is important to recognize and understand the **READY** indicator provided in the instrument cluster. When illuminated, it informs the driver that the vehicle is on and operational even though the gasoline engine may be off and the engine compartment is silent.

### Vehicle Operation

- With the LS600h/LS600hL, the gasoline engine may stop and start at any time while the **READY** indicator is on.
- Never assume that the vehicle is shut off just because the engine is off. Always look for the **READY** indicator status. The vehicle is shut off when the **READY** indicator is off.

The vehicle may be powered by:

1. The electric motor only.
2. The gasoline engine only.
3. A combination of both the electric motor and the gasoline engine.



## Hybrid Vehicle (HV) Battery Pack and Auxiliary Battery

The LS600h/LS600hL features a high voltage Hybrid Vehicle (HV) battery pack that contains sealed Nickel Metal Hydride (NiMH) battery modules.

### HV Battery Pack

- The HV battery pack is enclosed in a metal case and is securely mounted in the trunk area behind the rear seat. The metal case is isolated from high voltage and concealed by fabric covers.
- The HV battery pack consists of 20 low voltage (14.4 Volt) NiMH battery modules connected in series to produce approximately 288 Volts. Each NiMH battery module is non-spillable and sealed in a metal case.
- The electrolyte used in the NiMH battery modules is an alkaline mixture of potassium and sodium hydroxide. The electrolyte is absorbed into the battery cell plates and will not normally leak, even in a collision.
- In the unlikely event that the battery pack is overcharged, the modules vent gases directly outside the vehicle through a vent hose.

HV Battery Pack	
Battery pack voltage	288 V
Number of NiMH battery modules in the pack	20
NiMH battery module voltage	14.4 V
NiMH battery module dimensions	1 x 21 x 3.3 in (18 x 542 x 86 mm)
NiMH module weight	4.8 lbs (2.2 kg)
NiMH battery pack dimensions	20 x 33 x 10 in (515 x 842 x 257 mm)
NiMH battery pack weight	148 lbs (67 kg)

### Components Powered by the HV Battery Pack

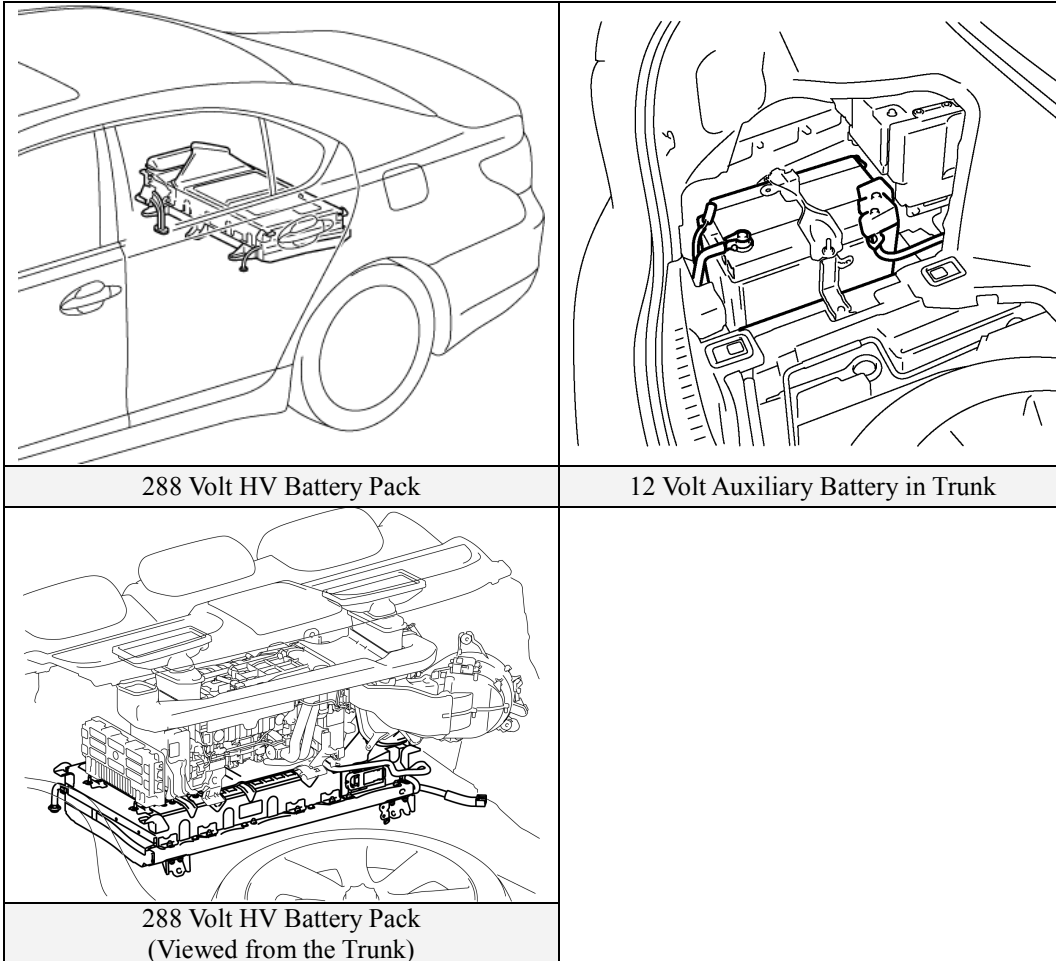
- Electric Motor
- Power Control Unit
- A/C Compressor
- DC-DC Converter for 12 Volt Auxiliary Battery
- DC-DC Converter for EPS and Active Stabilizer Suspension System
- Power Cables
- Electric Generator

HV Battery Pack Recycling

- The HV battery pack is recyclable. Contact your Lexus Distributor as mentioned on HV battery Caution Label (see page 36) or the nearest Lexus dealer.

Auxiliary Battery

- The LS600h/LS600hL also contains a lead-acid 12 Volt battery. This 12 Volt auxiliary battery powers the vehicle electrical system similar to a conventional vehicle. As with other conventional vehicles, the auxiliary battery is grounded to the metal chassis of the vehicle.
- The auxiliary battery is located in the trunk area.



## High Voltage Safety

The HV battery pack powers the high-voltage electrical system with DC electricity. Positive and negative orange colored high voltage power cables are routed from the battery pack, under the vehicle floor pan, along the propeller shaft and transmission tunnel to the power control unit. The power control unit contains a circuit that boosts the HV battery voltage from 288 to 650 Volts DC. The power control unit creates 3-phase AC to power the motor and generator located in the transmission. Power cables are routed from the power control unit to each high-voltage motor (electric motor, electric generator, and A/C compressor). The following systems are intended to help keep occupants in the vehicle and emergency responders safe from high voltage electricity:


### High Voltage Safety System

- A high voltage fuse ❶\* provides short circuit protection in the HV battery pack.
- Positive and negative high voltage power cables ❷\* connected to the HV battery pack are controlled by 12 Volt normally open relays ❸\*. When the vehicle is shut off, the relays stop electricity flow from leaving the HV battery pack.



#### **WARNING:**

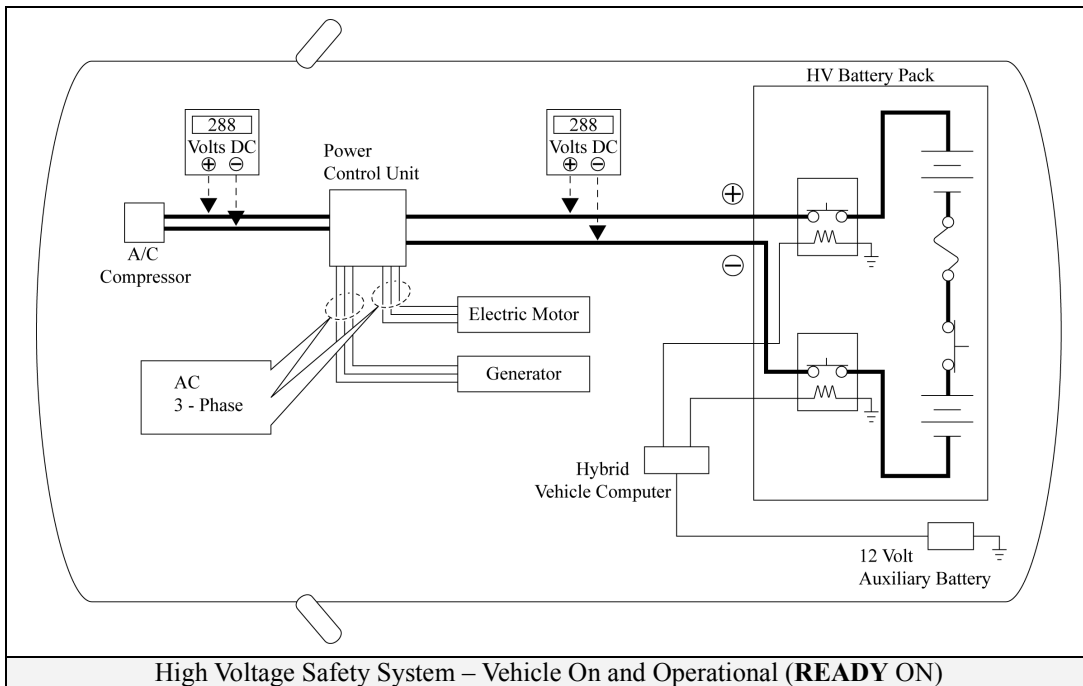
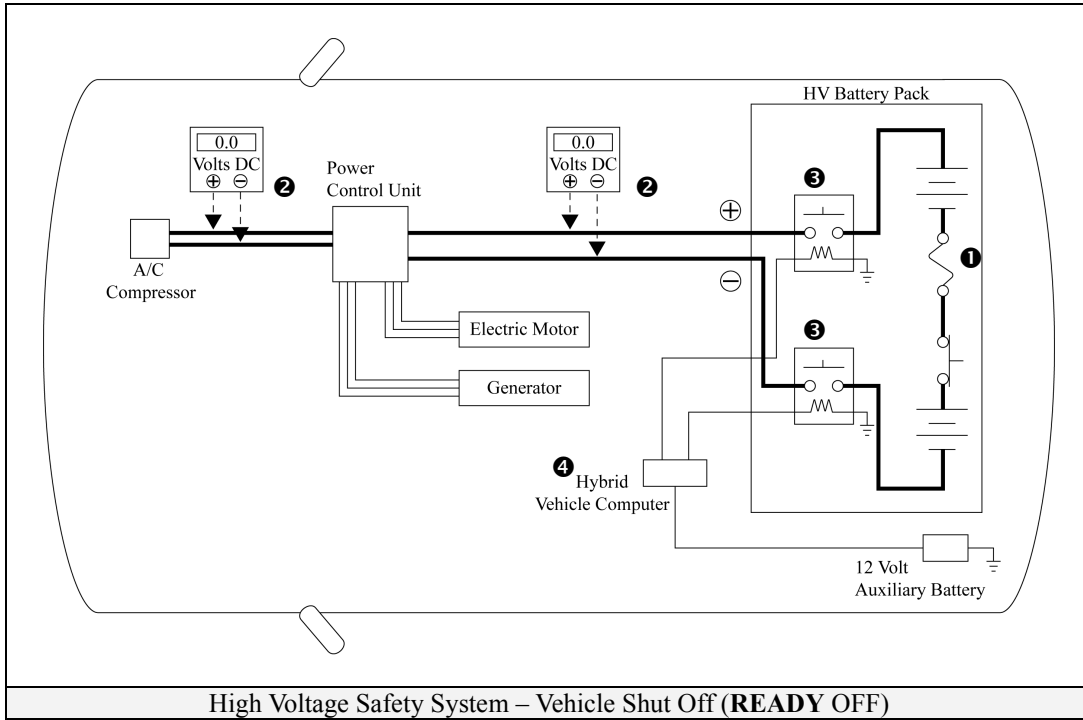
- ***The high voltage system may remain powered for up to 10 minutes after the vehicle is shut off or disabled. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting, or opening any orange high voltage power cable or high voltage component.***

- Both positive and negative power cables ❷\* are insulated from the metal chassis, so there is no possibility of electric shock when touching the metal chassis.
- 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 hybrid vehicle computer ❹\* will illuminate the master warning light  in the instrument cluster and indicate “CHECK HYBRID SYSTEM” on the multi-information display.
- The HV battery pack relays will automatically open to stop electricity flow in a collision sufficient to activate the SRS.

\*Numbers apply to the illustration on the following page.

### Service Plug Grip

- The high-voltage circuit is cut by removing the service plug grip (see page 15).





## Precaution to be observed when dismantling the vehicle



### **WARNING:**

- ***The high voltage system may remain powered for up to 10 minutes after the vehicle is shut off or disabled. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting, or opening any orange high voltage power cable or high voltage component.***

### Necessary Items

- Protective clothing such as insulated gloves (electrically insulated), rubber gloves, safety goggles, and safety shoes.
- Insulating tape such as electrical tape that has a suitable electrical insulation rating.
- Before wearing insulated gloves, make sure that they are not cracked, ruptured, torn, or damaged in any way. Do not wear wet insulated gloves.
- An electrical tester that is capable of measuring DC 750 Volts or more.

## Spills

The LS600h/LS600hL contains the same common automotive fluids used in other non-hybrid Lexus vehicles, with the exception of NiMH electrolyte used in the HV battery pack. The NiMH battery electrolyte is a caustic alkaline (pH 13.5) that is damaging to human tissues. The electrolyte, however, is absorbed in the cell plates and will not normally spill or leak out even if a battery module is cracked. A catastrophic crash that would breach both the metal battery pack case and the battery modules would be a rare occurrence.

A caustic alkaline is at the opposite end of the pH scale from a strong acid. A safe (neutral) substance is approximately in the middle of this scale. Adding a weak acidic mixture, such as a dilute boric acid solution or vinegar, to the caustic alkaline electrolyte will cause the electrolyte to be neutralized. This is similar but opposite to the use of baking soda to neutralize a lead-acid battery electrolyte spill.

A Lexus Material Safety Data Sheets (MSDS) is attached to this document.

- Handle NiMH electrolyte spills using the following Personal Protective Equipment (PPE):
  - Splash shield or safety goggles. A fold down face shield is not acceptable for acid or electrolyte spills.
  - Rubber, latex or nitrile gloves.
  - Apron suitable for alkaline.
  - Rubber boots.
- Neutralize NiMH electrolyte.
  - Use a boric acid solution or vinegar.
  - Boric acid solution - 800 grams boric acid to 20 liters water or 5.5 ounces boric acid to 1 gallon of water.

## Dismantling a vehicle

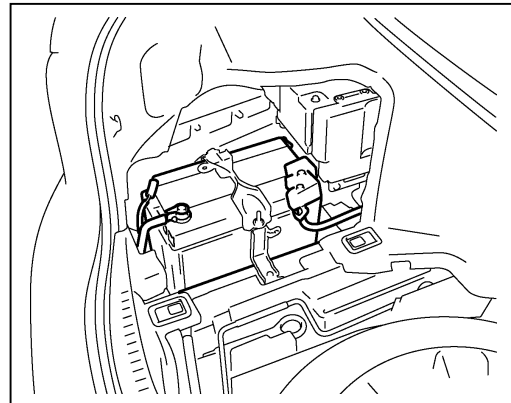
The following 2 pages contain general instructions for use when working on an LS600h/LS600hL. Read these instructions before proceeding to the HV battery removal instructions on page 18.



### **WARNING:**

- **The high voltage system may remain powered for up to 10 minutes after the vehicle is shut off or disabled. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting, or opening any orange high voltage power cable or any high voltage component.**

1. Shut off the ignition (**READY** indicator is off). Then disconnect the cable from the auxiliary battery negative (-) terminal.

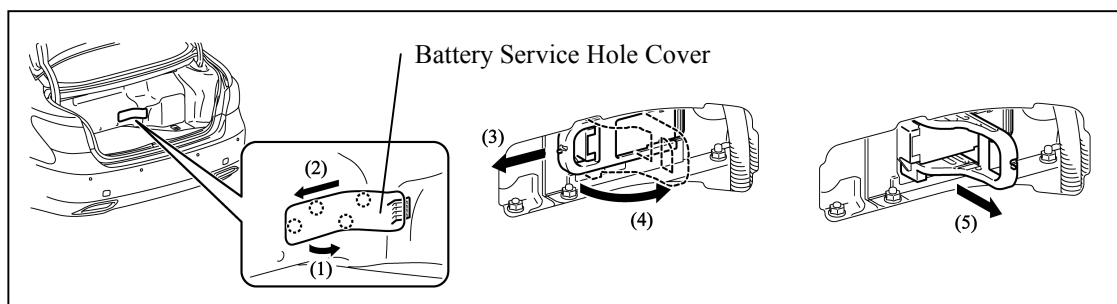


2. Remove the service plug grip.
  - (1) Pull the edge of the battery service hole cover outward.
  - (2) Slide the cover to the left to remove it.

### **Caution:**

**Wear insulated gloves for the following 4 steps.**

- (3) Slide the handle of the service plug grip to the left.
- (4) Raise the service plug grip.
- (5) Remove the service plug grip.
- (6) Apply insulating tape to the socket of the service plug grip to insulate it.

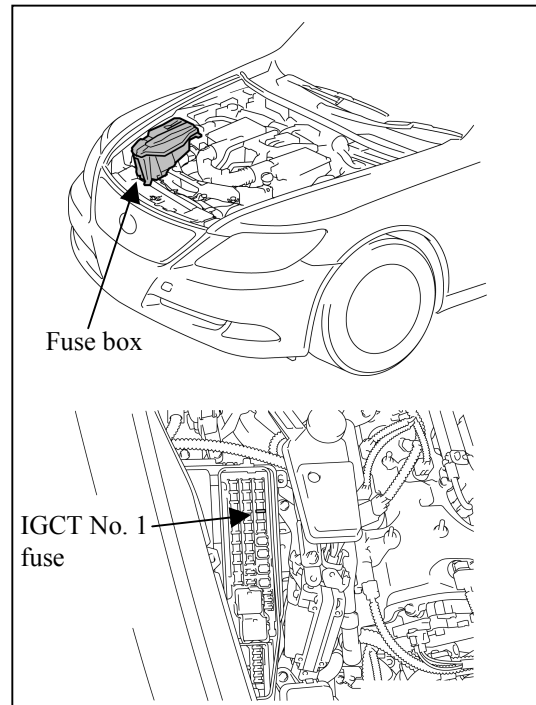


3. Carry the removed service plug grip in your pocket to prevent other staff from accidentally reinstalling it while you are dismantling the vehicle.
4. Make other staff aware that a high-voltage system is being dismantled by using the following sign: CAUTION: HIGH-VOLTAGE. DO NOT TOUCH (see page 17).
5. If the service plug grip cannot be removed due to damage to the rear portion of the vehicle, remove the IGCT No. 1 fuse (25A).

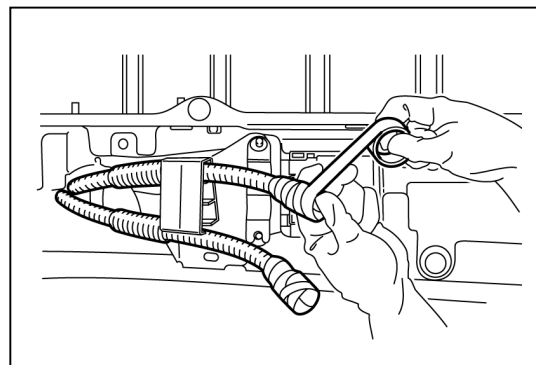
**Caution:**

**This operation shuts off the HV system. Be sure to wear insulated gloves because high voltage is not shut off inside the HV battery.**

**When it is possible to remove the service plug grip, remove it and continue the procedure.**



6. After disconnecting or exposing a high-voltage connector or terminal, insulate it immediately using insulating tape. Before touching a bare high-voltage terminal, wear insulated gloves.
7. Check the HV battery and nearby area for leakage. If you find any liquid, it may be strong alkaline electrolyte. Wear rubber gloves and goggles and neutralize the liquid using a saturated boric acid solution or vinegar. Then wipe up the liquid using waste rags etc.
8. If the electrolyte comes into contact with your skin, wash the skin immediately using a saturated boric acid solution or a large amount of water. If the electrolyte adheres to any article of clothing, take the clothing off immediately.
9. If the electrolyte comes into contact with your eye(s), call out loudly for help. Do not rub your eye(s). Instead, wash the eye(s) with a dilute boric acid solution or a large amount of water and seek medical care.
10. With the exception of HV battery, remove parts by following procedures which are similar to conventional Lexus vehicles. For the removal of HV battery, refer to the following pages.



Person in charge: \_\_\_\_\_

**CAUTION:**  
**HIGH-VOLTAGE.**  
**DO NOT TOUCH.**

**CAUTION:**  
**HIGH-VOLTAGE.**  
**DO NOT TOUCH.**

Person in charge: \_\_\_\_\_

When performing work on the HV system, fold this sign and put it on the roof of the vehicle.

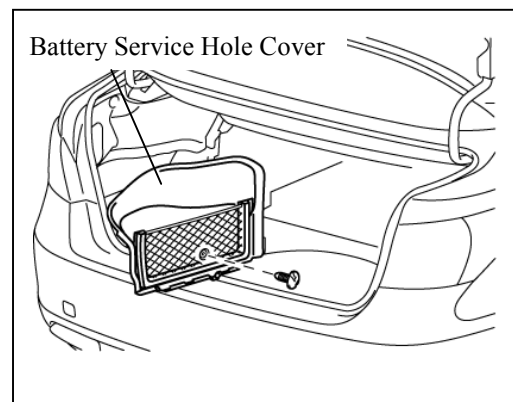
## Removal of HV battery



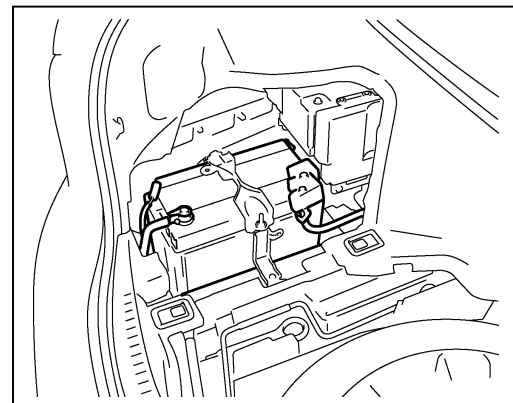
### **WARNING:**

- **Be sure to wear insulated gloves when handling high-voltage parts.**
- **Even if the vehicle is shut off and the relays are off, be sure to remove the service plug grip before performing any further work.**
- **Power remains in the high voltage electrical system for 10 minutes even after the HV battery pack is shut off because the circuit has a condenser that stores power.**
- **Make sure that the tester reading is 0 V before touching any high-voltage terminals which are not insulated.**
- **The SRS may remain powered for up to 90 seconds after the vehicle is shut off or disabled. To prevent serious injury or death from unintentional SRS deployment, avoid cutting the SRS components.**

1. Shut off the ignition (**READY** indicator is off).
2. Remove the battery service hole cover.



3. Disconnect the cable from the auxiliary battery negative (-) terminal.
4. Disconnect the cable from the auxiliary battery positive (+) terminal.

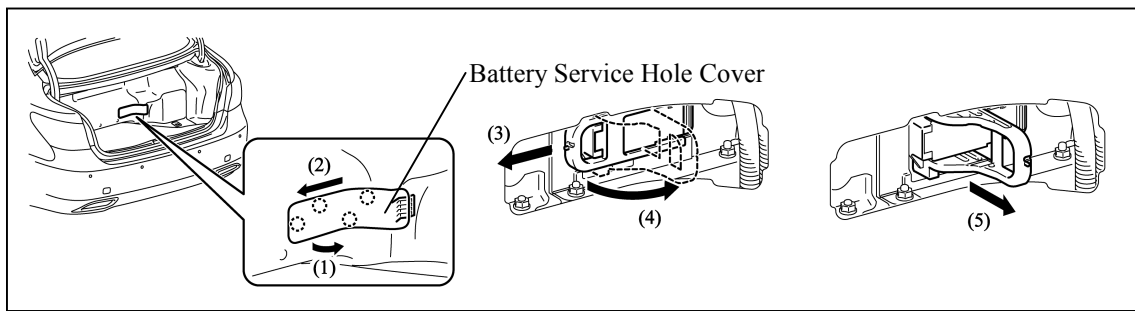
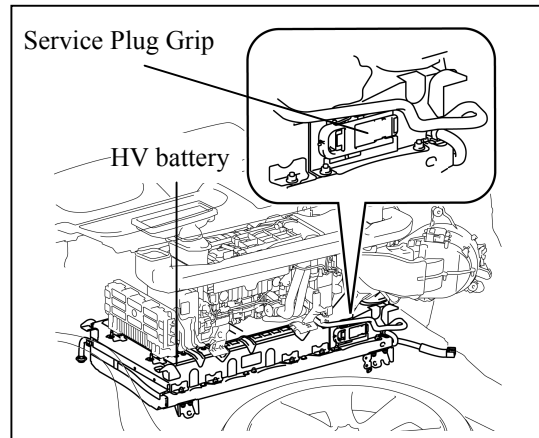


5. Remove the 12 volt auxiliary battery.

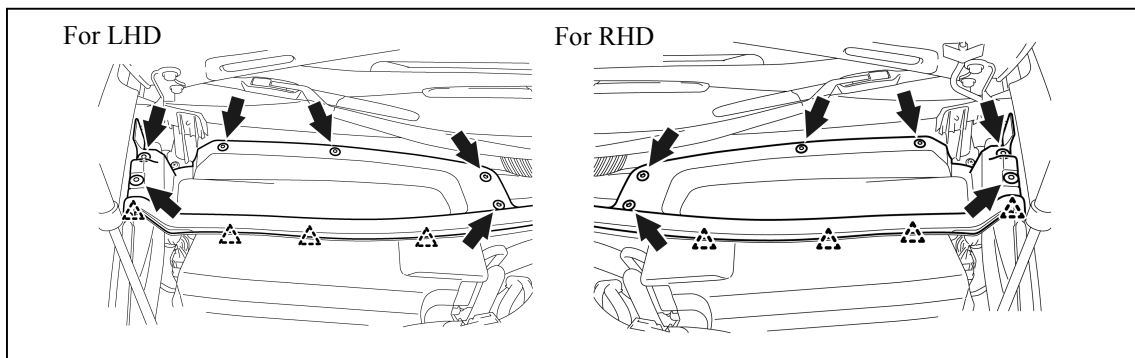
6. Remove the service plug grip.
  - (1) Pull the edge of the battery service hole cover outward.
  - (2) Slide the cover to the left to remove it.

**Caution:**  
**Wear insulated gloves for the following 4 steps.**

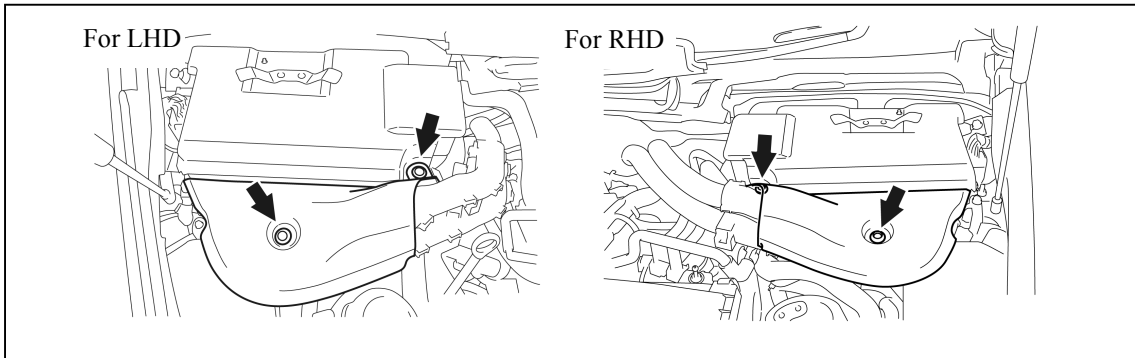
- (3) Slide the handle of the service plug grip to the left.
- (4) Raise the service plug grip as shown in the illustration below.
- (5) Remove the service plug grip.
- (6) Apply insulating tape to the socket of the service plug grip to insulate it.



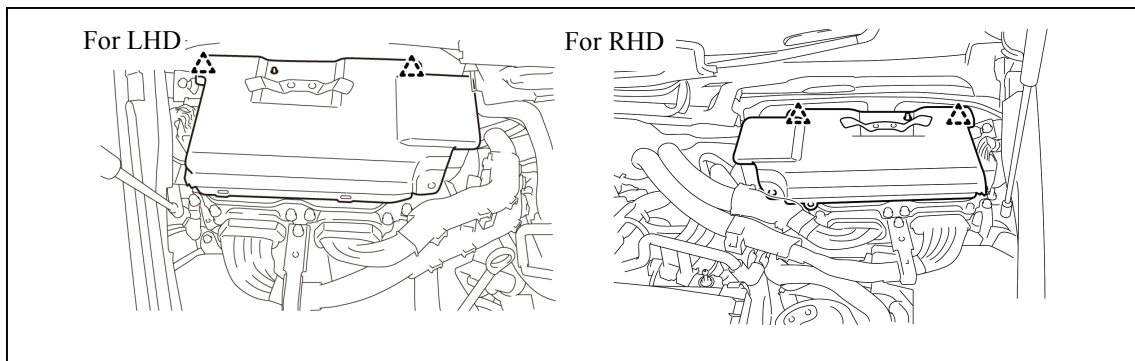
7. Remove the cowl top ventilator louver.
  - (1) Remove the 4 clips and hood to cowl top seal.
  - (2) Remove the 6 clips and cowl top ventilator louver.



8. Remove the 2 clips and motor cable cover.



9. Remove the 2 clips and inverter cover assembly.



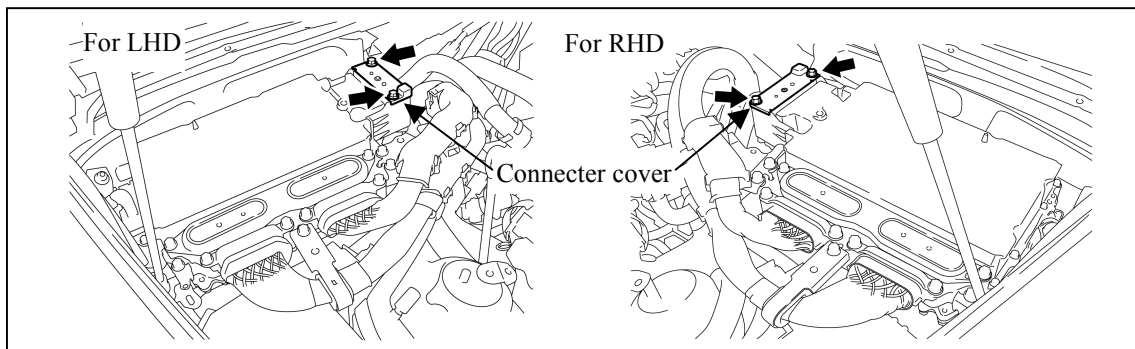
10. Remove the 2 bolts and connector cover assembly 10 minutes or more after removal of the service plug grip.

**Caution:**

**Wear insulated gloves.**

**Notice:**

Do not touch the high voltage connectors or terminals for 10 minutes after the service plug grip is removed.





11. Check the voltage at the terminals in the inspection point in the power control unit.

**Caution:**

**Wear insulated gloves.**

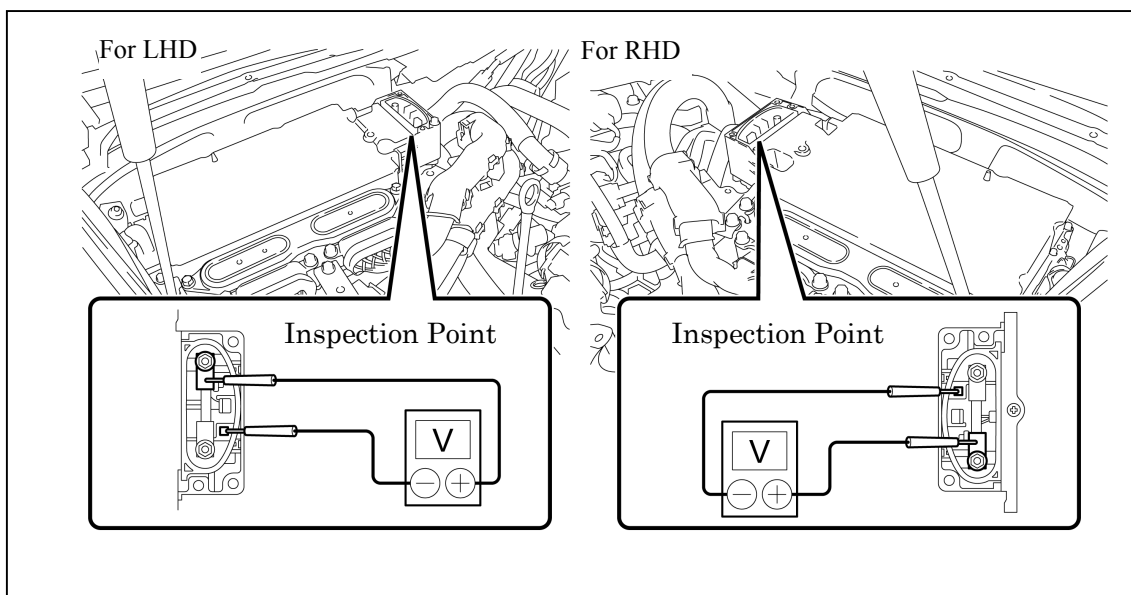
**To prevent serious injury or death, do not proceed with dismantling of the HV system until the voltage at the terminals in the inspection point is 0 V.**

**Standard voltage: 0 V**

**Hint:**

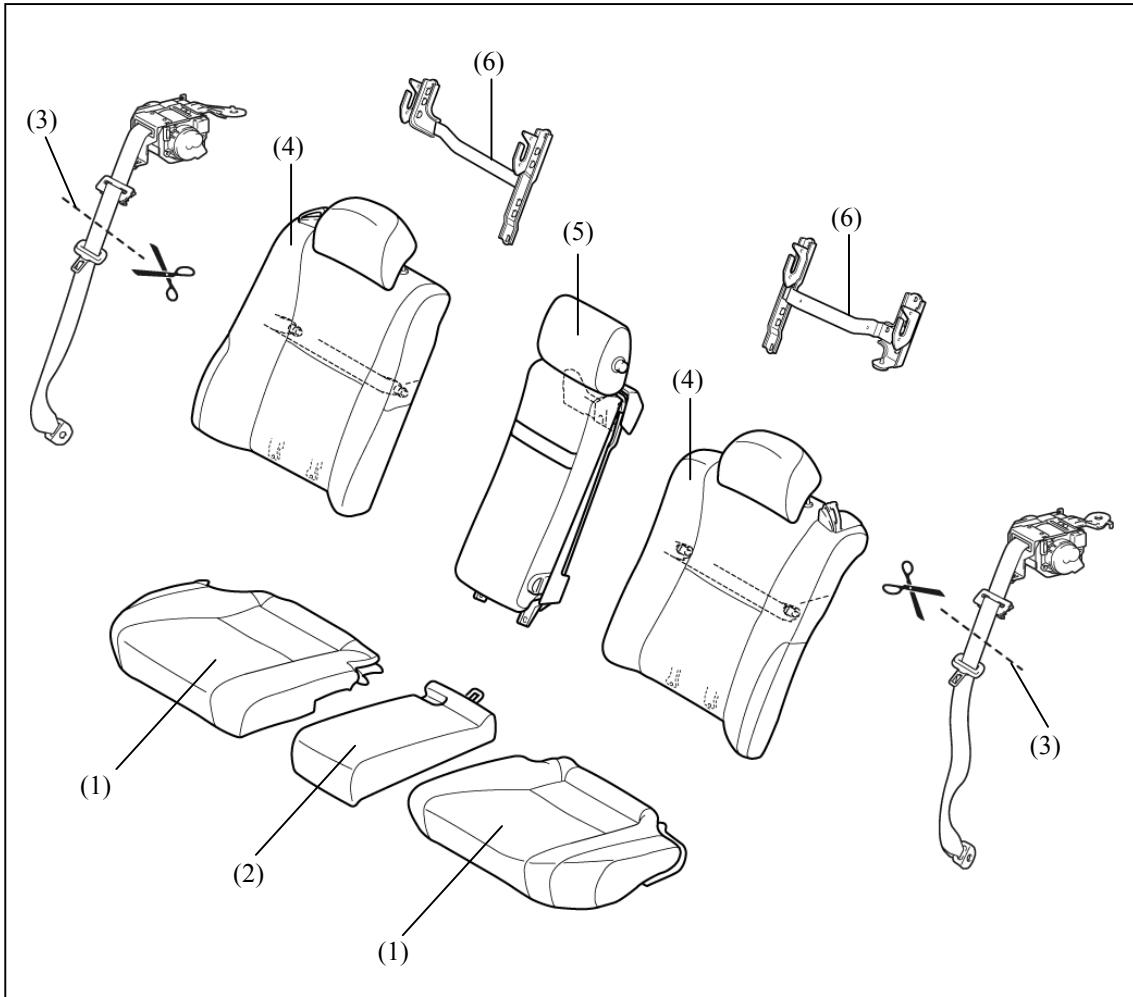
Set the tester to DC 750 Volts measure the voltage.

This inspection is performed to verify that it is safe to remove the HV battery.



12. Remove the rear seat assembly (Power Seat Type).

- (1) Remove the seat cushion assemblies LH and RH.
- (2) Remove the center seat cushion assembly.
- (3) Cut the seat belts LH and RH.
- (4) Remove the rear seatback assemblies LH and RH.
- (5) Remove the center seatback assembly.
- (6) Remove the rear seatback adjuster assemblies LH and RH.



**Caution:**

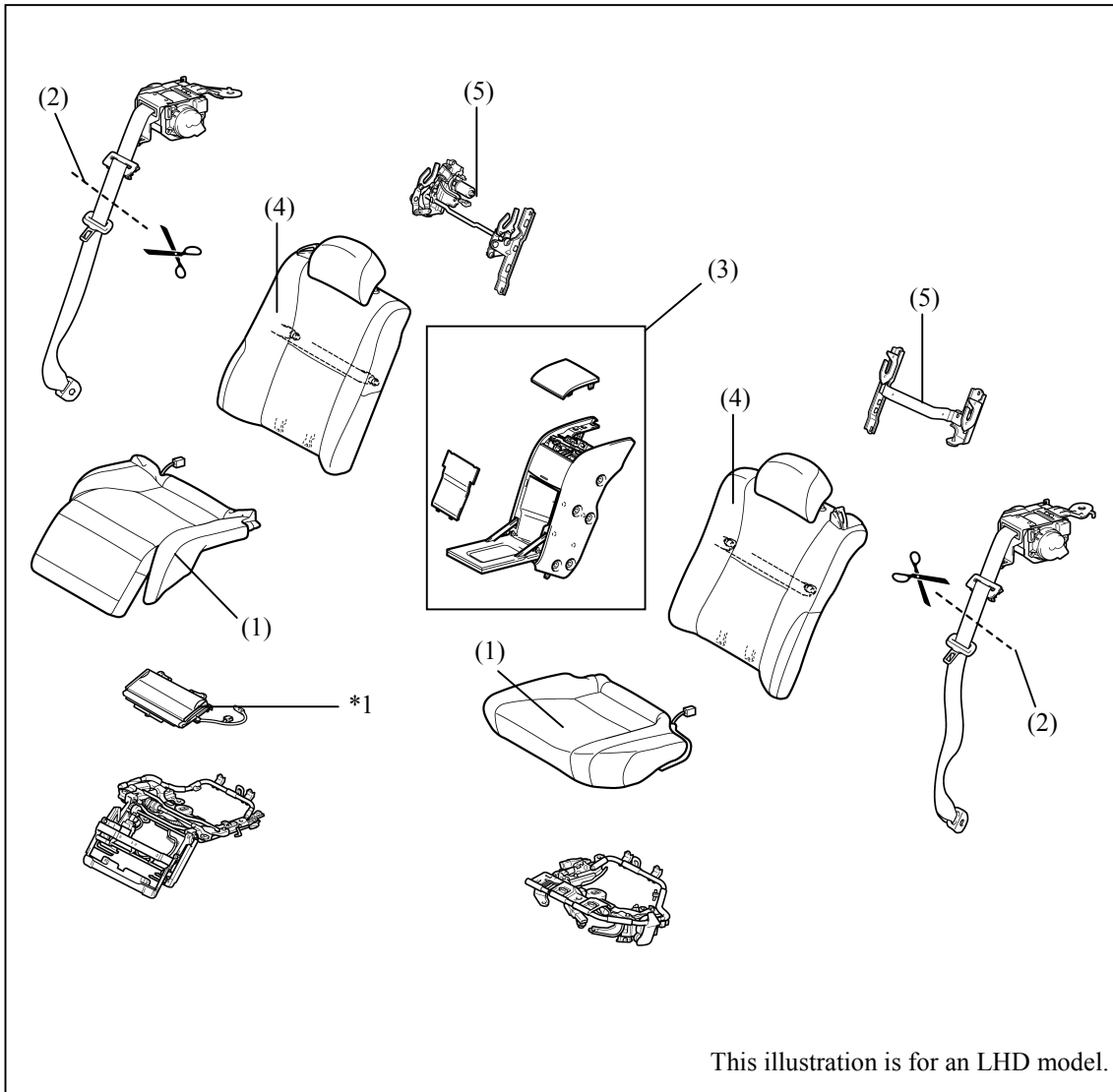
**Do not cut wiring or wire harnesses when removing vehicle components.  
Always disconnect components at the connector.**

**Hint:**

When removing rear seat components, it may be necessary to unbolt or move other components in order to access connectors for components.

13. Remove the rear seat assembly (Ottoman Power Seat Type).

- (1) Remove the seat cushion assemblies LH and RH.
- (2) Cut the seat belts LH and RH.
- (3) Remove the center console box assembly.
- (4) Remove the rear seatback assemblies LH and RH.
- (5) Remove the rear seatback adjuster assemblies LH and RH.



\*1: Seat cushion airbag.

**Caution:**

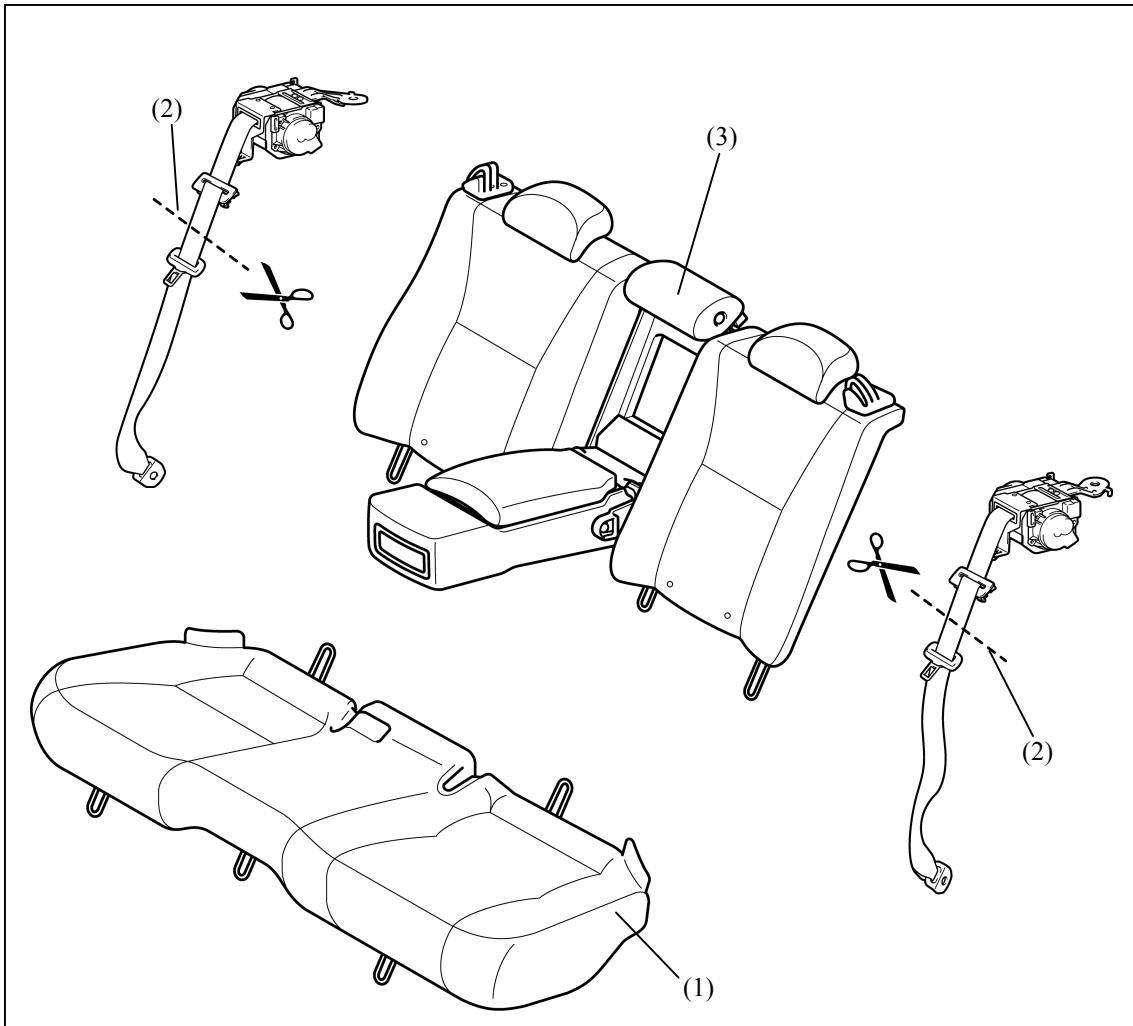
**Do not cut wiring or wire harnesses when removing vehicle components.  
Always disconnect components at the connector.**

**Hint:**

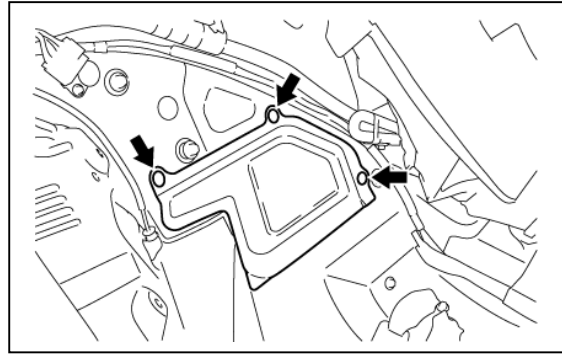
When removing rear seat components, it may be necessary to unbolt or move other components in order to access connectors for components.

14. Remove the rear seat assembly (Fixed Seat Type).

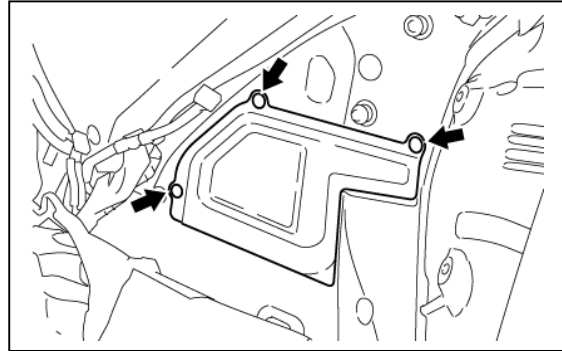
- (1) Remove the rear seat cushion assembly.
- (2) Cut the seat belts LH and RH.
- (3) Remove the rear seatback assembly.



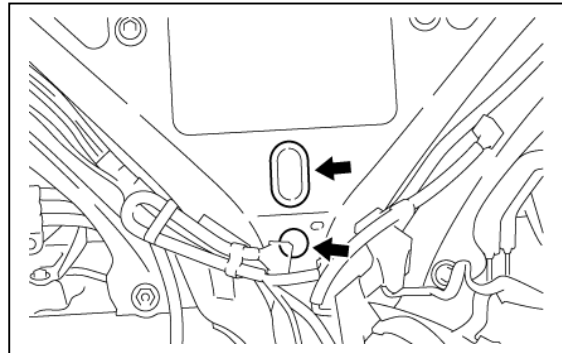
15. Remove the 3 clips and No. 1 center floor to brace extension.



16. Remove the 3 clips and No. 2 center floor to brace extension.



17. Remove the 2 hole plugs.

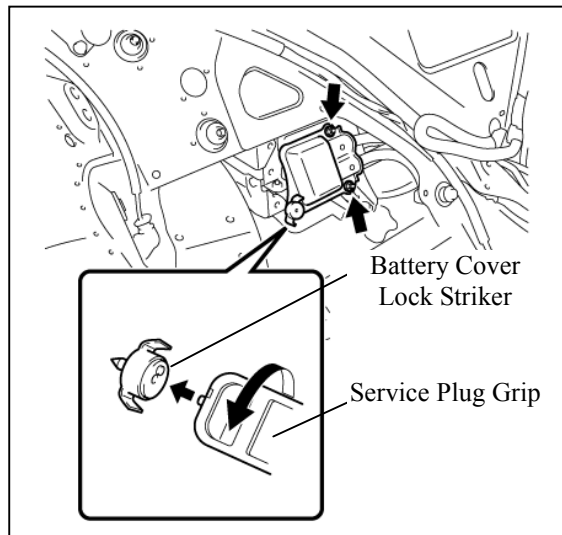


18. Remove the No. 2 HV battery shield sub-assembly.

**Caution:**

**Wear insulated gloves.**

- (1) Using the service plug grip, release the battery cover lock striker.
- (2) Remove the 2 nuts and disconnect the No. 2 HV battery shield sub-assembly from the HV battery.



19. Disconnect the frame wire.

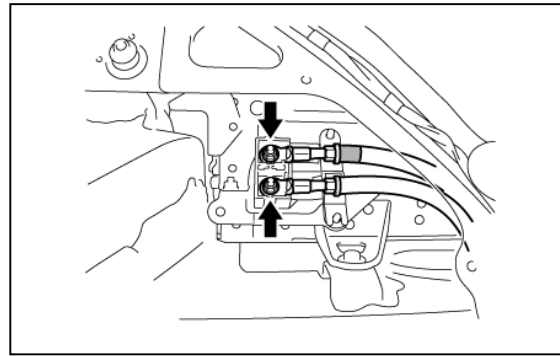
- (1) Remove the 2 nuts and disconnect the ends of the frame wire from the HV battery.

**Caution:**

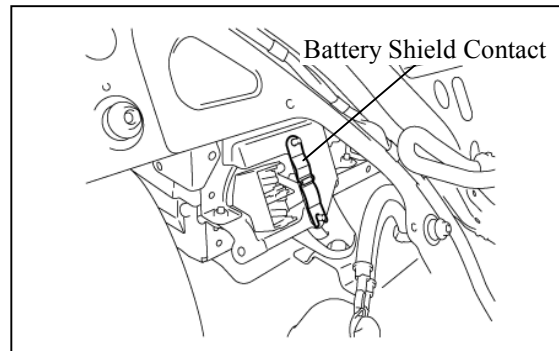
**Wear insulated gloves.**

**Notice:**

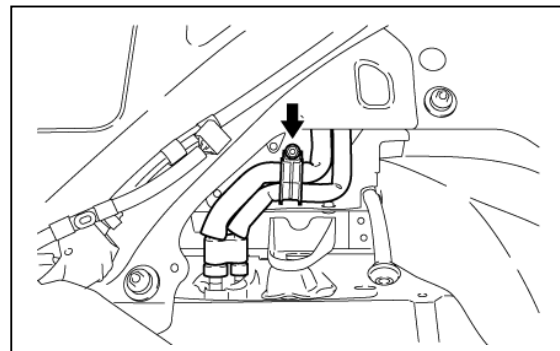
Insulate the terminals of the removed frame wire with insulating tape.



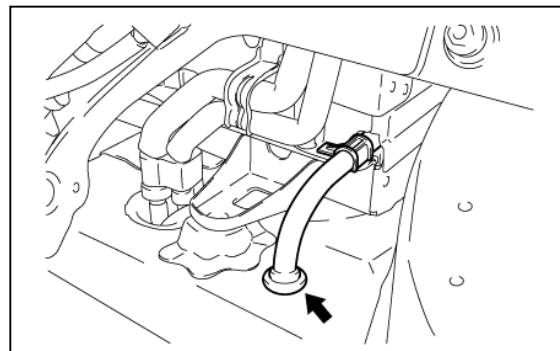
- (2) Remove the battery shield contact from the HV battery.



20. Remove the nut and remove the air conditioning tube assembly clamp.

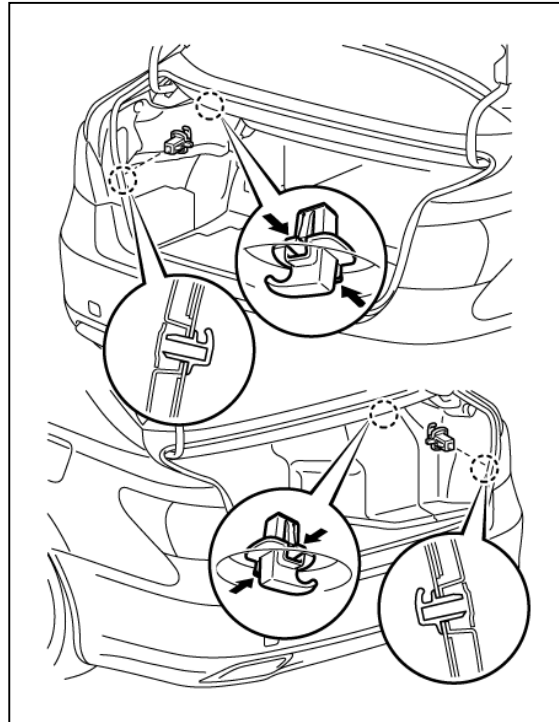


21. Remove the battery room ventilation hose.

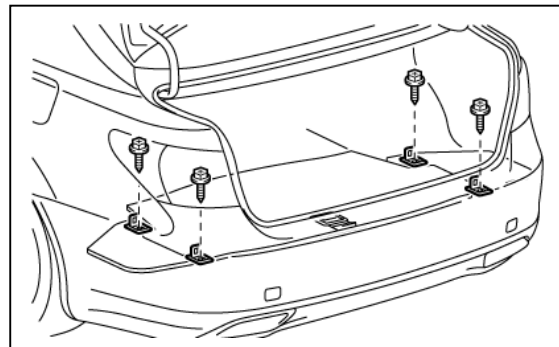


22. Remove the 2 No. 1 cooler cover clips (w/ rear air conditioning).

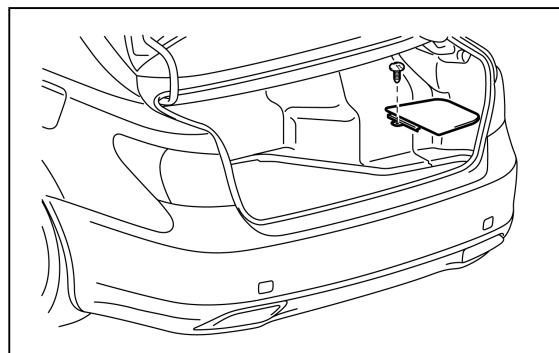
23. Remove the 4 upper rope hooks by pushing the claws in the direction of the arrows shown in the illustration.



24. Remove the 4 bolts and 4 lower rope hooks.

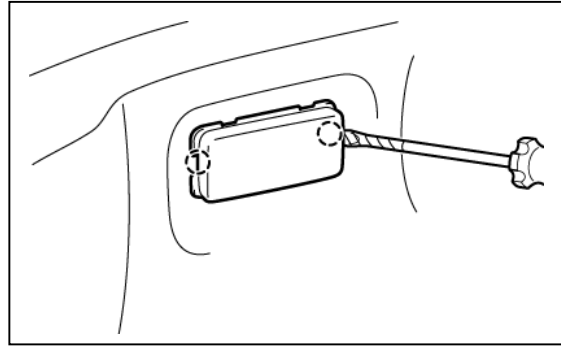


25. Remove the clip and deck trim side board.



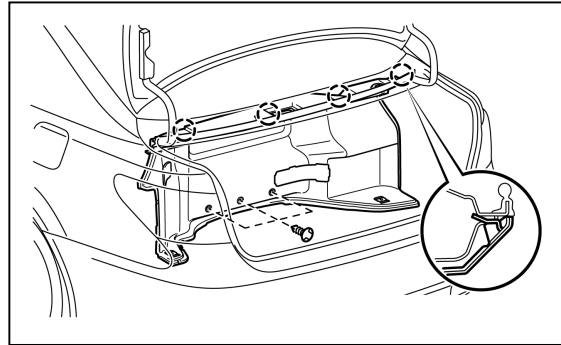
26. Remove the No. 1 luggage compartment light assembly.

- (1) Using a screwdriver, disengage the 2 claws and remove the light assembly.
- (2) Disconnect the connector.

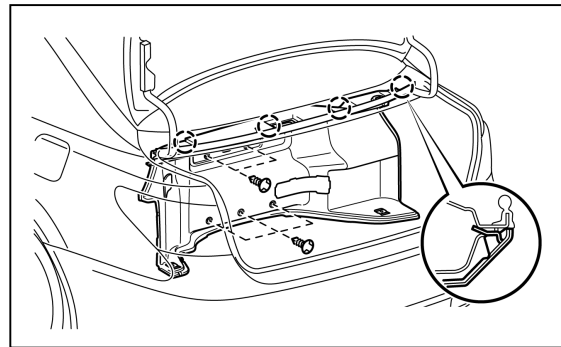


27. Remove the front luggage compartment trim cover.

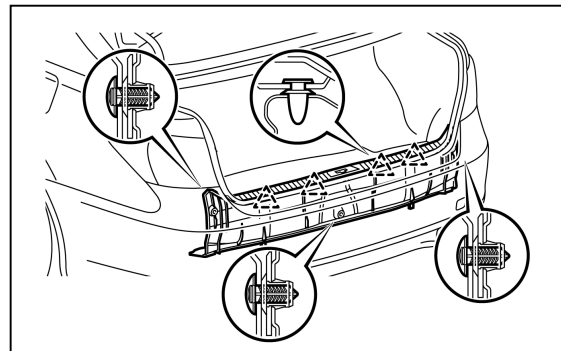
- (1) Remove the 4 claws, 3 clips and front luggage trim cover (w/o rear air conditioning).



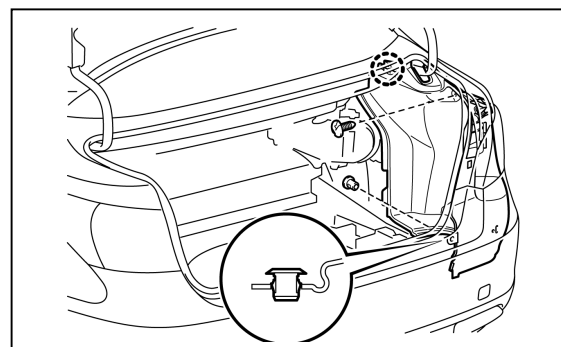
- (2) Remove the 4 claws, remove the 5 clips and front luggage trim cover (w/ rear air conditioning).



28. Remove the 3 clips, detach the 4 clips and finish panel.

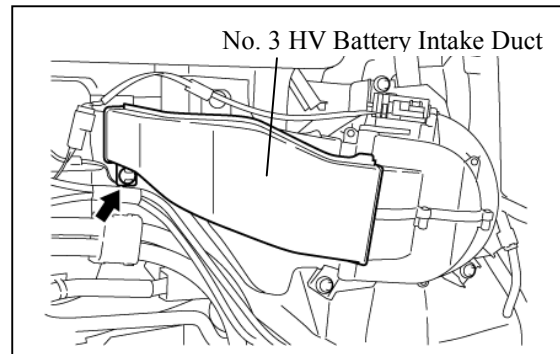


29. Remove the 2 clips; detach the claw and luggage compartment trim cover.

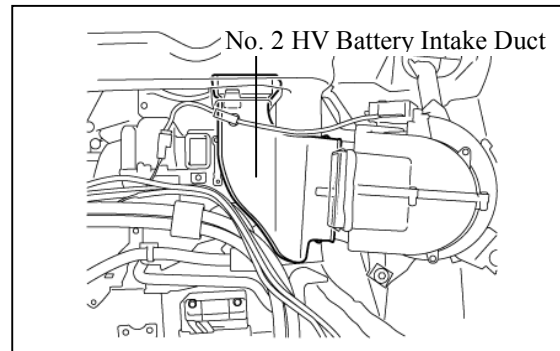




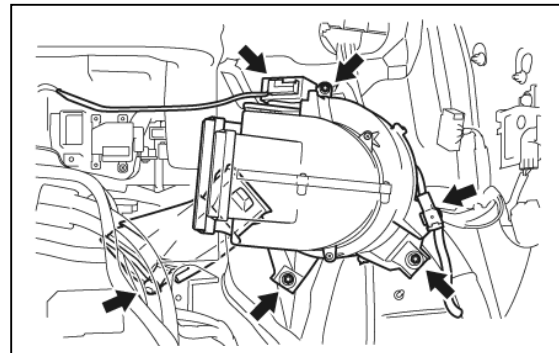
30. Remove the clip and No. 3 HV battery intake duct.



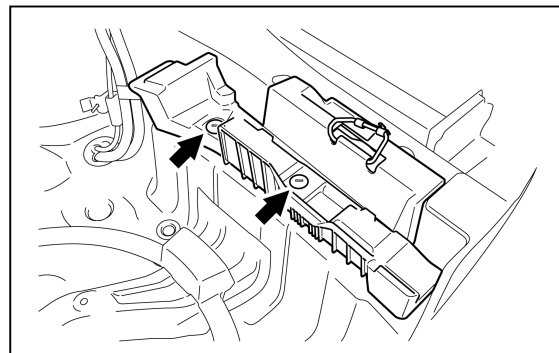
31. Remove the No. 2 HV battery intake duct.



32. Disconnect the 2 connectors and remove the 3 nuts, clip and battery cooling blower assembly.



33. Remove the 2 clips and spare wheel guard sub-assembly.

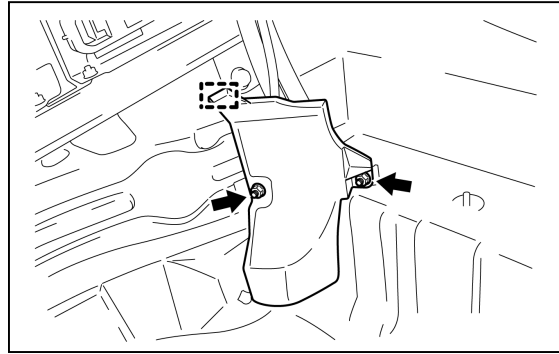


34. Moving the HV battery.

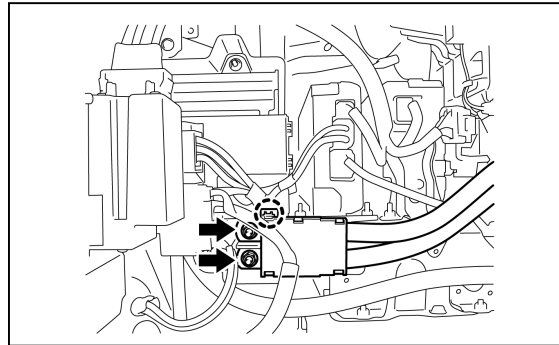
**Caution:**

**Wear insulated gloves.**

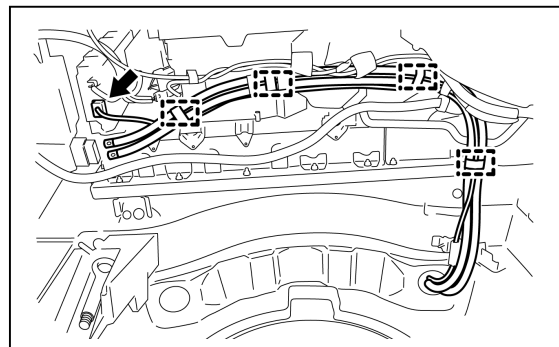
- (1) Remove the 2 nuts, clamp and wire harness protector.



- (2) Release the claw and remove the 2 nuts and separate the frame wire from the luggage room junction block.



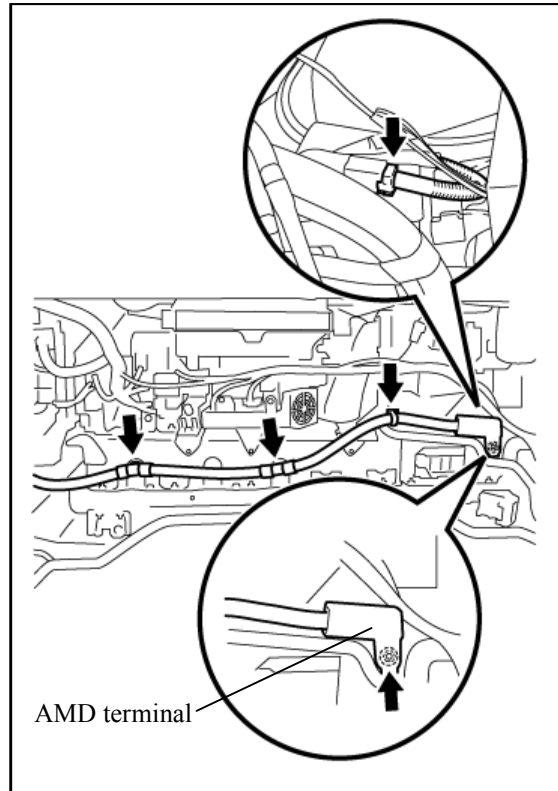
- (3) Disconnect the connector, disengage the 4 clamps and move the frame wire.



- (4) Disconnect the connector and disengage the 3 clamps.
- (5) Remove the nut and disconnect the AMD terminal.

**Notice:**

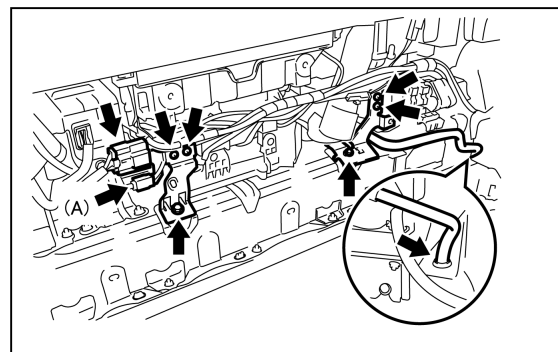
Insulate the terminal of the removed AMD wire with insulating tape to prevent a short to body ground.



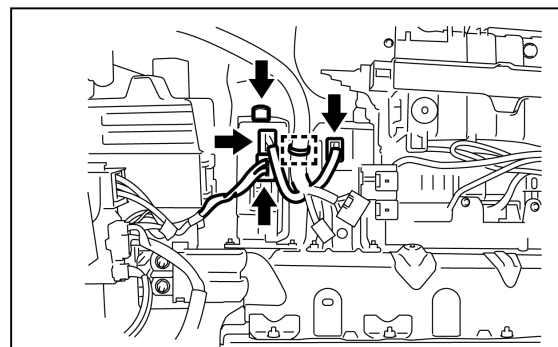
- (6) Disconnect the connector clamp.
- (7) Remove the 4 screws, 2 bolts and 2 rear air conditioning brackets.
- (8) Pull out the rear air conditioning drain hose.

**Notice:**

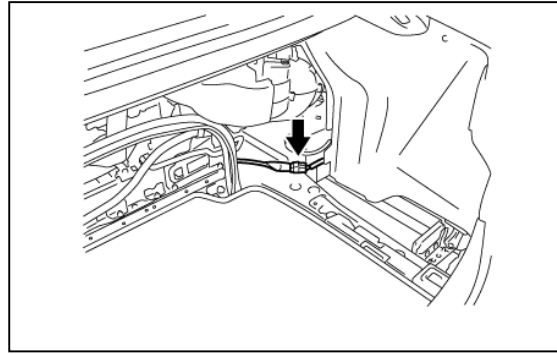
Do not allow water remaining in the drain hose to spill on the HV battery.



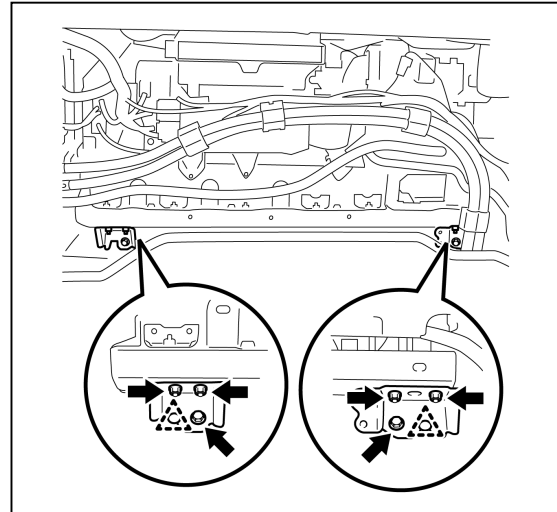
- (9) Disconnect the 4 connectors, remove the clamp and then disconnect the wire harness.



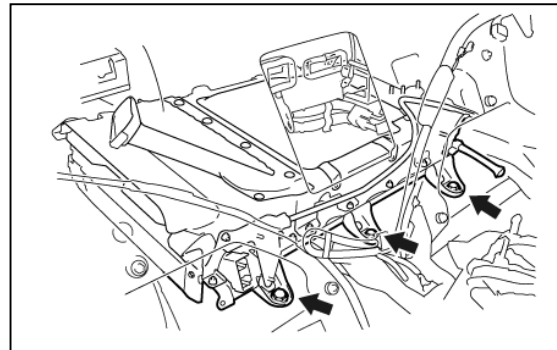
(10) Disconnect the battery pack wire connector.



(11) Remove the 2 clips, 4 nuts, 2 bolts and 2 HV battery brackets.



(12) Remove the 3 bolts for the front part of the HV battery from the cabin side.



(13) Install the luggage compartment floor mat upside down.

(14) Pull out the HV battery onto the luggage compartment floor mat.

**Notice:**

When pulling out the HV battery, 2 people are needed. One should work from the luggage compartment side and the other from the cabin side.

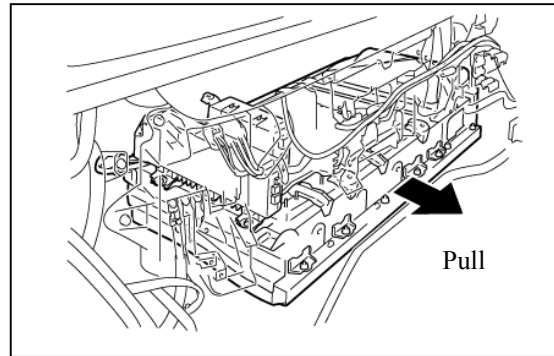
Do not allow water in the rear air conditioning drain hose to spill out.

When pulling out the HV battery, do not allow the wire harnesses and the HV battery case to interfere with the vehicle body.

When pulling out the HV battery, be careful that the heat insulator on top of the HV battery does not get caught on parts such as the rear air conditioning unit.

**Hint:**

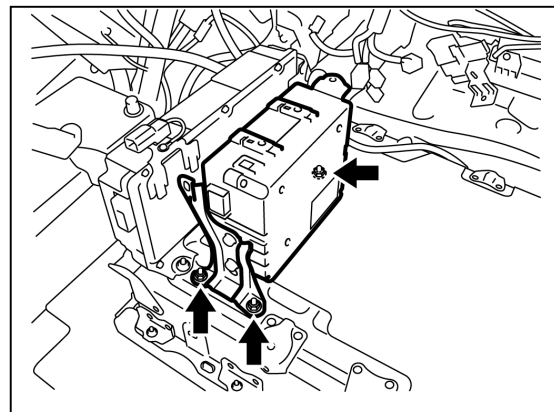
When pulling out the HV battery, moving the HV battery toward the left side of the vehicle will make this work easier.



35. Remove the 3 bolts and brake control power supply assembly.

**Caution:**

**Wear insulated gloves.**

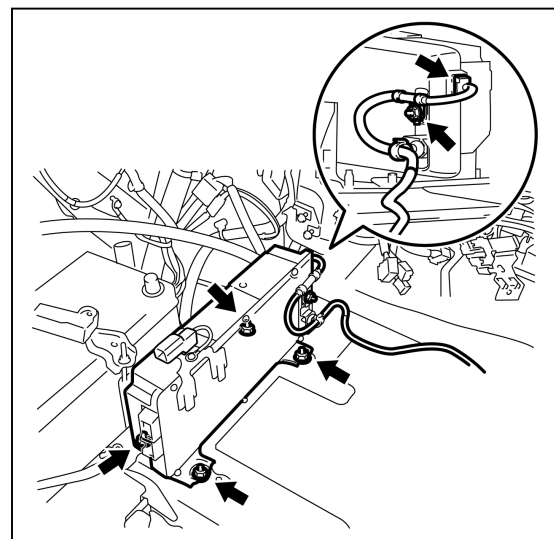


36. Remove the power steering converter assembly.

**Caution:**

**Wear insulated gloves.**

- (1) Disconnect the connector, disengage the clamp, remove the nut and move the power steering converter wire.
- (2) Remove the 4 bolts and power steering converter assembly from the HV battery.

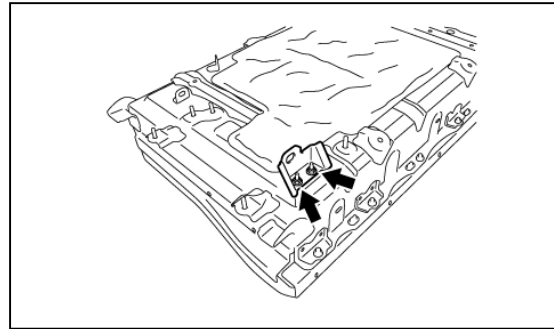


37. Remove the HV battery.

**Caution:**

**Wear insulated gloves.**

- (1) Install the HV battery bracket LH to the position shown in the illustration.

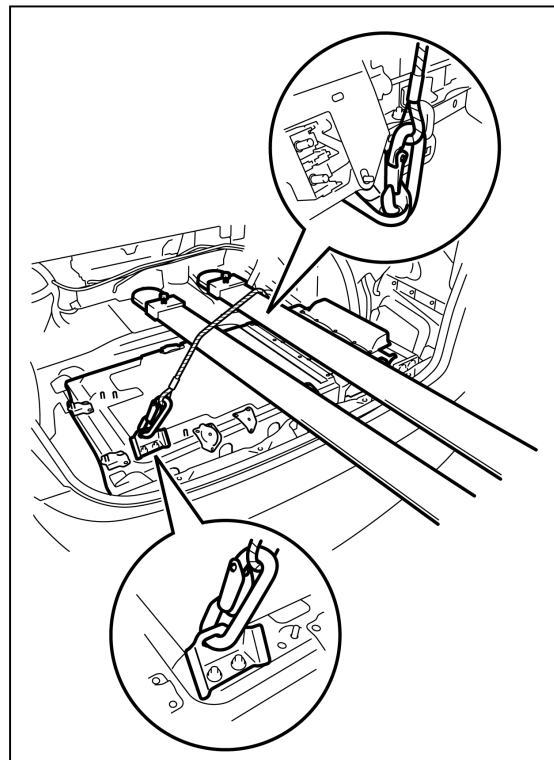


- (2) Using an engine sling device, remove the HV battery from vehicle.

**Notice:**

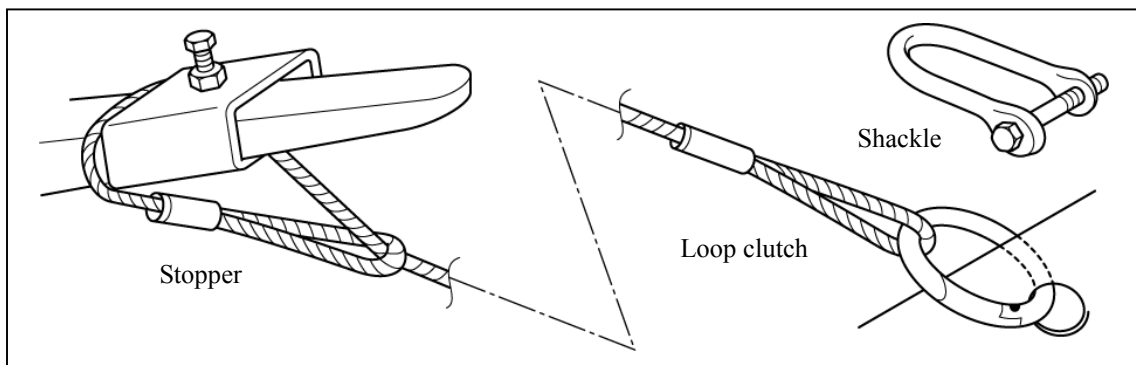
Use cardboard or other similar material to protect the HV battery and vehicle body from damage.

If it is difficult to install the cable to the bracket holes, use a suitable adaptor such as a rope to install the cable.



**Caution:**

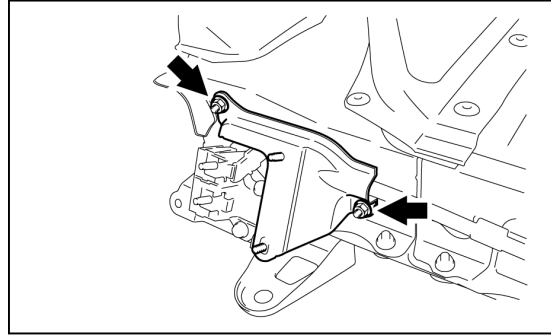
**Set a stopper on the end of the fork to prevent the battery unit from sliding off the end of the fork.**



38. Remove the 2 nuts and No. 1 HV battery shield sub-assembly from the upper HV battery cover.

**Caution:**

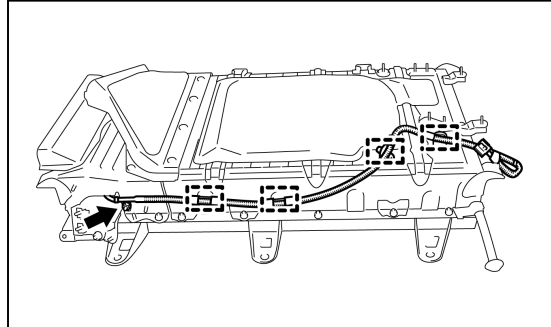
**Wear insulated gloves.**



39. Remove the nut, disengage the 4 clamps and disconnect the power steering converter wire from the HV battery.

**Caution:**

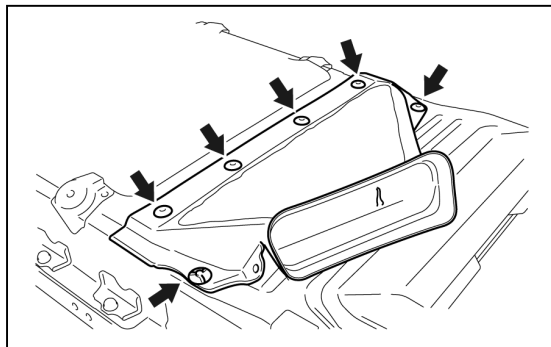
**Wear insulated gloves.**



40. Remove the 6 clips and No. 1 HV battery cover intake duct from the upper HV battery cover.

**Caution:**

**Wear insulated gloves.**










41. The HV battery pack is recyclable. Contact your Lexus distributor (if included on the HV battery caution label) or contact the nearest Lexus dealer (see the next 2 pages for samples of the HV battery caution label).

**Caution:**






**After removing the HV battery, do not reinstall the service plug grip to the HV battery.**

## HV Battery Caution Label

### 1. For U.S.A.








<b>⚠ DANGER</b>									
<b>High Voltage Inside / Alkaline Electrolyte</b>									
<p>To avoid injuries, burns or electric shocks:</p> <ul style="list-style-type: none"> <li>• Never disassemble this battery unit or remove its covers. <ul style="list-style-type: none"> <li>-Service by Qualified Technician. -</li> </ul> </li> <li>• Avoid contact alkaline electrolyte with eyes, skin or clothes. In event of accident, flush with water and get medical help immediately.</li> <li>• Keep children away from this unit.</li> <li>• Do not puncture or impact on this unit when operating forklift, or expose to open flame or incinerate, or expose to liquids when storing this unit, as excessive heat may generate fire and electrolyte may leak out.</li> </ul>									
<b>To the Qualified EV Technicians:</b>									
Be sure to read the Repair Manual when servicing or replacing the battery.									
<b>HV Battery Recycling Information</b>									
<ul style="list-style-type: none"> <li>• Please transport this battery in accordance with all applicable laws.</li> <li>• Be sure to consult your dealer or the following address for replacing and disposing of this battery.</li> </ul>									
Residents in U. S. A.			Residents in PUERTO RICO						
<ul style="list-style-type: none"> <li>◆ TOYOTA MOTOR SALES U. S. A. INC.</li> <li>TORRANCE CAL. 90501</li> <li>Phone: 1-800-331-4331</li> </ul>			<ul style="list-style-type: none"> <li>◆ SERVCO PACIFIC INC.</li> <li>HONOLULU HAWAII 96813</li> <li>Phone: 808-839-2273</li> </ul>			<ul style="list-style-type: none"> <li>◆ TOYOTA DE PUERTO RICO</li> <li>HATO REY. PUERTO RICO</li> <li>Phone: 787-751-1000</li> </ul>			<b>B</b>

### 2. For CANADA

<b>⚠ DANGER</b>								
<b>High Voltage Inside / Alkaline Electrolyte</b>								
<b>Haute tension à l' intérieur / Electrolyte alcalin</b>								
<p>To avoid injuries, burns or electric shocks:</p> <ul style="list-style-type: none"> <li>• Never disassemble this battery unit or remove its covers. <ul style="list-style-type: none"> <li>-Service by Qualified Technician. -</li> </ul> </li> <li>• Avoid contact alkaline electrolyte with eyes, skin or clothes. In event of accident, flush with water and get medical help immediately.</li> <li>• Keep children away from this unit.</li> <li>• Do not puncture or impact on this unit when operating forklift, or expose to open flame or incinerate, or expose to liquids when storing this unit, as excessive heat may generate fire and electrolyte may leak out.</li> </ul>								
<p>Afin d' éviter des blessures et brûlures et tout chocs électriques:</p> <ul style="list-style-type: none"> <li>• Ne jamais démonter cet ensemble batterie ni enlever ses couvercles. <ul style="list-style-type: none"> <li>-Confier l' entretien à un technicien qualifié. -</li> </ul> </li> <li>• Eviter tout contact de l' electrolyte alcalin avec les yeux la peau ou les vêtements. En cas d' accident, rincer à l' eau et contacter un médecin immédiatement.</li> <li>• Garder cet ensemble hors de portée des enfants.</li> <li>• Ne pas percer cet ensemble et ne pas lui faire subir d' impact lors de l' utilisation du chariot élévateur. Ne pas l' exposer à une flamme vive ni l' incinérer. Ne pas l' exposer à un liquide lors du stockage. Une chaleur excessive pourrait provoquer un incendie et l' electrolyte pourrait fuir.</li> </ul>								
<b>To the Qualified EV Technicians:</b>								
<b>A l' attention des techniciens spécialistes en véhicules électriques:</b>								
Be sure to read the Repair Manual when servicing or replacing the battery. Veiller à lire le manuel de réparation lors de l' entretien ou du remplacement de la batterie.								
<b>HV Battery Recycling Information</b>								
<b>Information sur le recyclage de batterie de véhicule hybride</b>								
<ul style="list-style-type: none"> <li>• Please transport this battery in accordance with all applicable laws.</li> <li>• Be sure to consult your dealer or the following address for replacing and disposing of this battery.</li> </ul>								
<ul style="list-style-type: none"> <li>• Prière de transporter cette batterie conformément à toutes les lois applicables.</li> <li>• Pour le remplacement et la mise au reout de cette batterie, veiller à consulter un votre concessionnaire ou se renseigner à adresse suivante.</li> </ul>								
<p>TOYOTA CANADA INC. ONE TOYOTA PLACE SCARROROLGH ONTARIO M1H 1H9</p> <p>Phone: 1-888-TOYOTA-8 (1-888-869-6828) URL: www.toyota.ca</p>								<b>C</b>



3. For EUROPE and others

<b>⚠ DANGER</b>		      
<b>High Voltage Inside / Alkaline Electrolyte</b> <b>Haute tension à l'intérieur / Electrolyte alcalin</b>		
To avoid injuries, burns or electric shocks: ● Never disassemble this battery unit or remove its covers. -Service by Qualified Technician. - ● Avoid contact alkaline electrolyte with eyes, skin or clothes. In event of accident, flush with water and get medical help immediately. ● Keep children away from this unit. ● Do not puncture or impact on this unit when operating forklift, or expose to open flame or incinerate, or expose to liquids when storing this unit, as excessive heat may generate fire and electrolyte may leak out.		
Afin d'éviter des blessures et brûlures et tout chocs électriques: ● Ne jamais démonter cet ensemble batterie ni enlever ses couvercles. -Confier l'entretien à un technicien qualifié. - ● Éviter tout contact de l'électrolyte alcalin avec les yeux la peau ou les vêtements. En cas d'accident, rincer à l'eau et contacter un médecin immédiatement. ● Garder cet ensemble hors de portée des enfants. ● Ne pas percer cet ensemble et ne pas lui faire subir d'impact lors de l'utilisation du chariot élévateur. Ne pas l'exposer à une flamme vive ni l'incinérer. Ne pas l'exposer à un liquide lors du stockage. Une chaleur excessive pourrait provoquer un incendie et l'électrolyte pourrait fuir.		
To the Qualified EV Technicians: A l'attention des techniciens spécialistes en véhicules électriques:		
Be sure to read the Repair Manual when servicing or replacing the battery. Veiller à lire le manuel de réparation lors de l'entretien ou du remplacement de la batterie.		
<b>HV Battery Recycling Information</b> <b>Information sur le recyclage de batterie de véhicule hybride</b>		
● Please transport this battery in accordance with all applicable laws. ● Be sure to consult your dealer or your national distributor as mentioned in your Dealer Guide-Book for replacing and disposing of this battery. ● Prière de transporter cette batterie conformément à toutes les lois applicables. ● Pour le remplacement et la disposition de cette batterie, se rassurer de consulter un votre concessionnaire ou distributeur national comme mentionnées dans le guide des concessionnaires.		
		<b>D</b>

4. For China

<b>⚠ 危险</b>		      
<b>内部高压 / 碱性电解液</b>		
为避免伤害，烧伤或电击： ● 绝不要解体蓄电池单元或拆下蓄电池盖。车内装配有Ni-MH电池。 由经过资格认证的技师维修 ● 避免眼睛，皮肤或衣服接触碱性电解液，发生意外接触时，用水冲洗并立即治疗。使儿童远离蓄电池单元。 ● 操作叉车时，不要刺穿或碰撞此单元。也不要将其暴露在明火下或焚烧。存储此单元时不要使其受潮。 ● 因为过多的热量会造成起火和电解液泄漏。		
对于有资格认证的HV技师： 维护或更换蓄电池前请务必阅读维修手册。		
<b>混合动力电池回收信息</b> 请严格遵守当地规定对这种电池进行运输。		
更换和报废这种电池的时候，请一定向经销店指南中的经销店或者 TASS 进行相关事项的咨询。		<b>E</b>