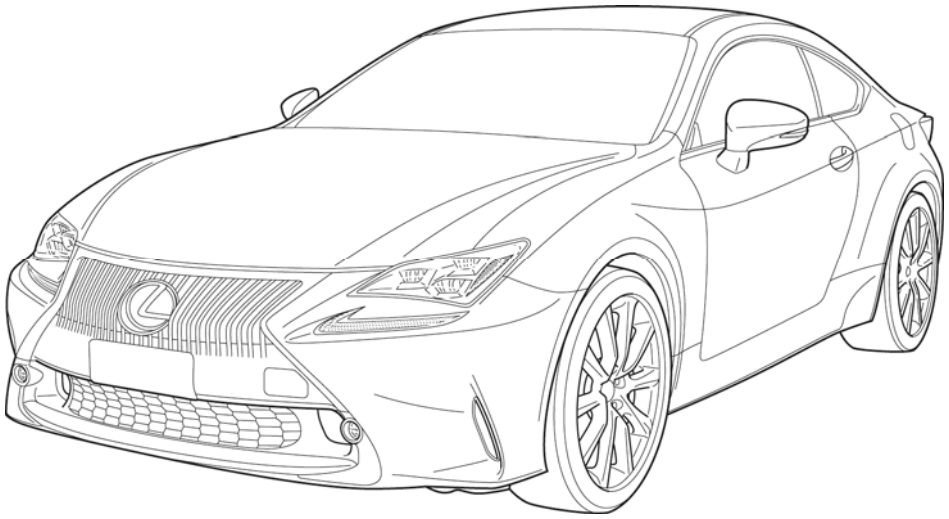
RC300h

Gasoline-Electric

Lexus Hybrid Drive

HYBRID VEHICLE DISMANTLING MANUAL



AVC10 Series

Foreword

This guide was developed to educate and assist dismantlers in the safe handling of Lexus RC300h gasoline-electric hybrid vehicles. RC300h 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 RC300h, as they may not be familiar to dismantlers.

High voltage electricity powers the A/C compressor, electric motors, generator, and inverter/converter. All other conventional automotive electrical devices such as the head lights, radio, and gauges are powered from a separate 12 Volt auxiliary battery. Numerous safeguards have been designed into the RC300h to help ensure the high voltage, approximately 230.4 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 RC300h identification.
- Major hybrid component locations and descriptions.

By following the information in this guide, dismantlers will be able to handle RC300h hybrid-electric vehicles as safely as the dismantling of a conventional gasoline engine automobile.

Table of Contents

About the RC300h

The RC300h 2-door coupe joins the hybrid model for Lexus Hybrid Drive means that the vehicle contains a gasoline engine and 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 RC300h 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 RC300h operates in various driving modes.

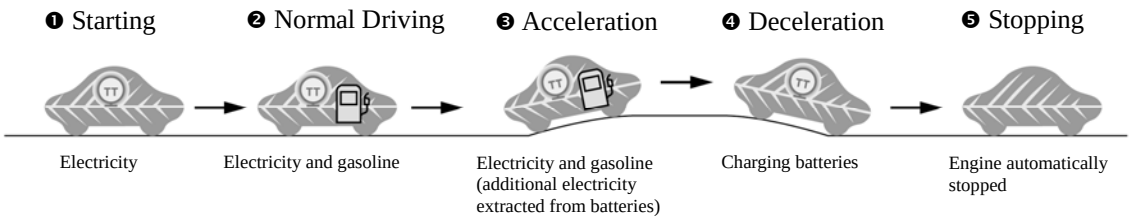
❶ During light acceleration at low speeds, the vehicle is powered by the electric motor. The gasoline engine is shut off.

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 and to drive the motor.

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 rear 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.



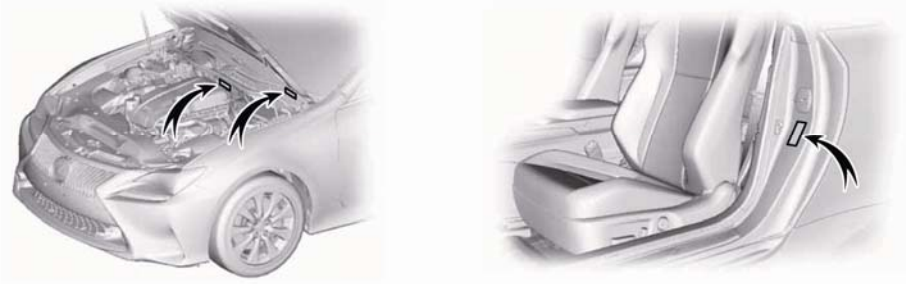
RC300h Identification

In appearance, the 2015 model year RC300h is nearly identical to the conventional, non-hybrid Lexus RC350/300/200t. The RC300h is a 2-door coupe. Exterior, interior, and engine compartment illustrations are provided to assist in identification.

The alphanumeric 15 character Vehicle Identification Number (VIN) is provided in the left side windshield cowl, engine compartment cowl and on the left side B pillar.

Example VIN: JTHHH5BC5000101

An RC300h is identified by the first 8 alphanumeric characters **JTHHH5BC**.



Left Side Windshield Cowl, Engine Compartment Cowl and Left Side B Pillar

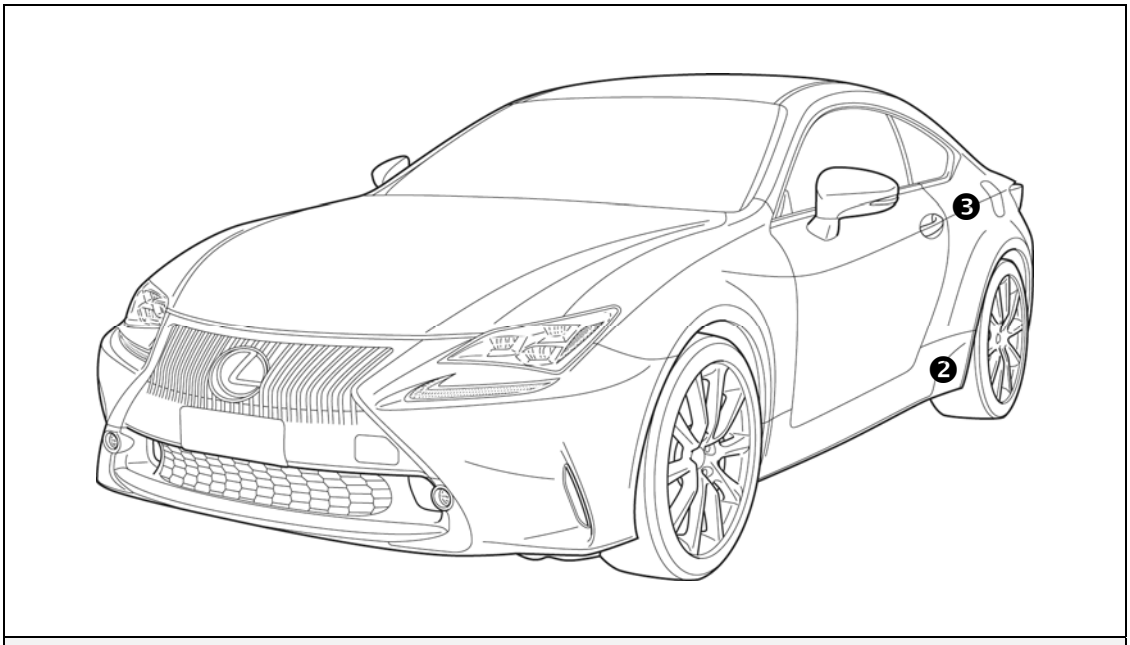
RC300h Identification (Continued)

Exterior

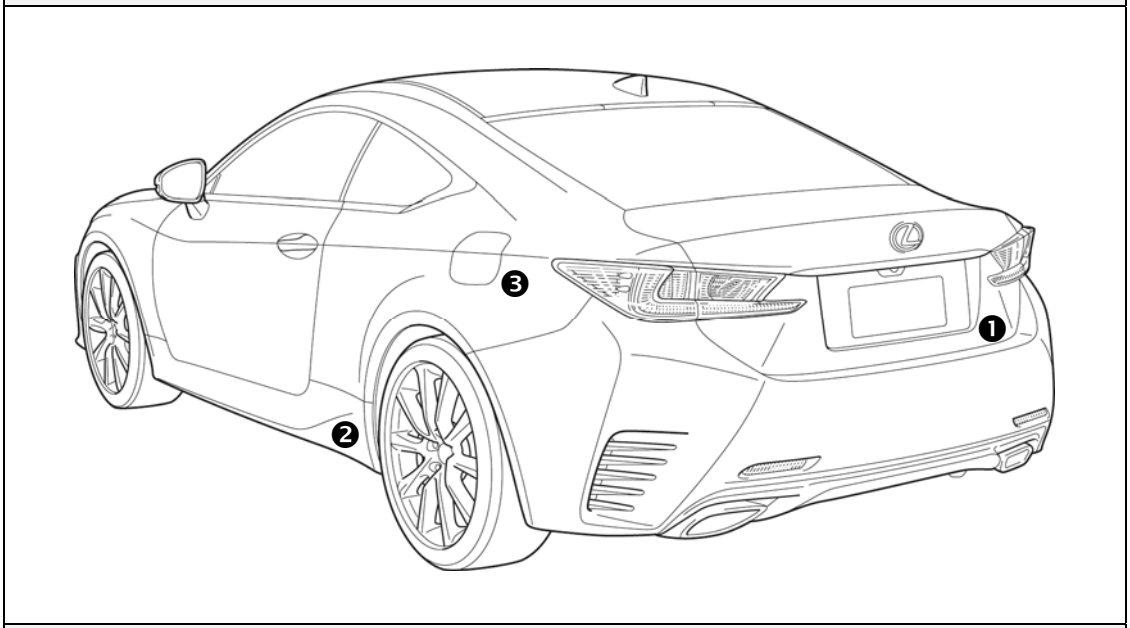
❶ RC300h logo on the luggage compartment door.

❷ HYBRID logos on the rocker molding.

❸ Gasoline fuel filler door located on the left side rear quarter panel.



Exterior Front and Left Side View



Exterior Rear and Left Side View

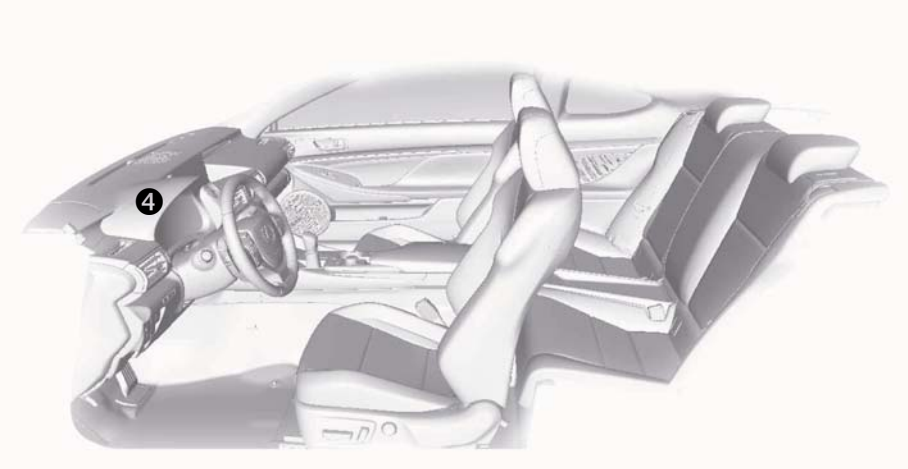
RC300h Identification (Continued)

Interior

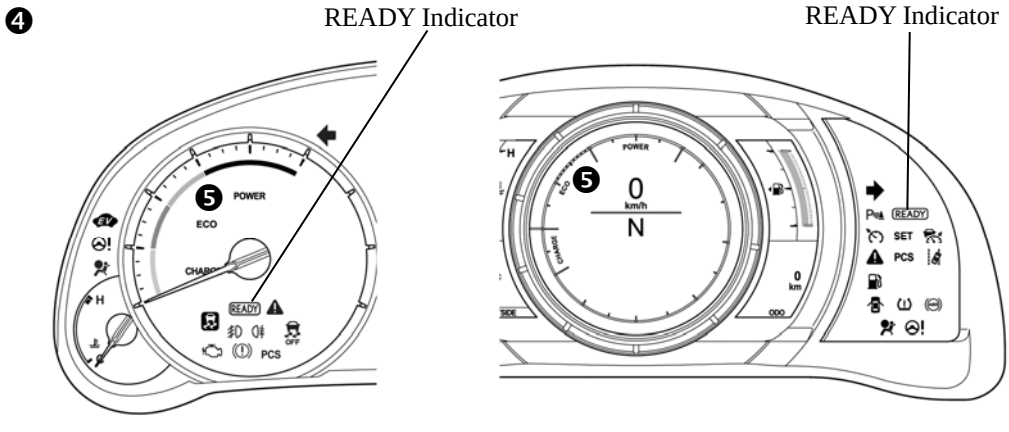
❹ The instrument cluster (hybrid system indicator, **READY** indicator and warning lights) located in the dash behind the steering wheel, is different than the one on the conventional, non-hybrid RC350/300/200t.

❺ A switchable gauge in the combination meter showing either a hybrid system indicator or a tachometer depending on driving mode.

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



Interior View



for Optitron Meter **for TFT LCD Meter**

Combination Meter View

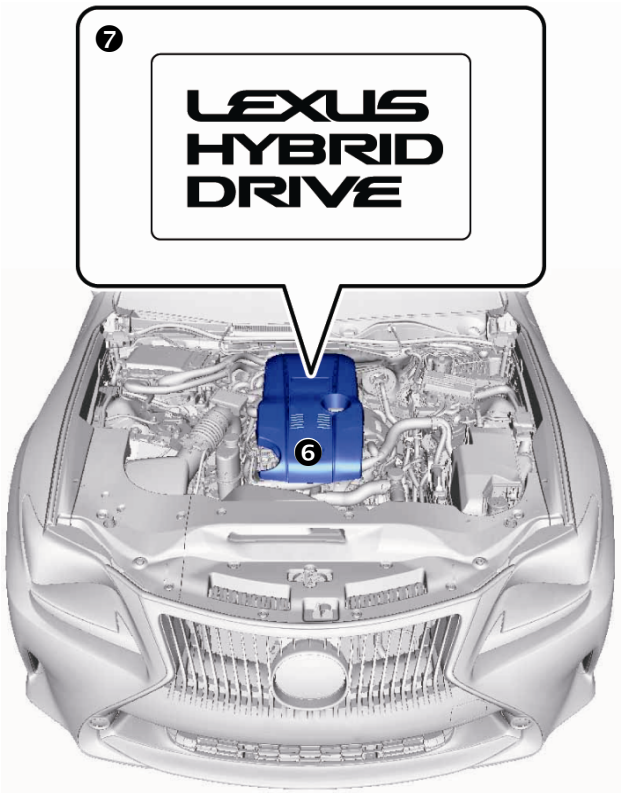
RC300h Identification (Continued)

Engine Compartment

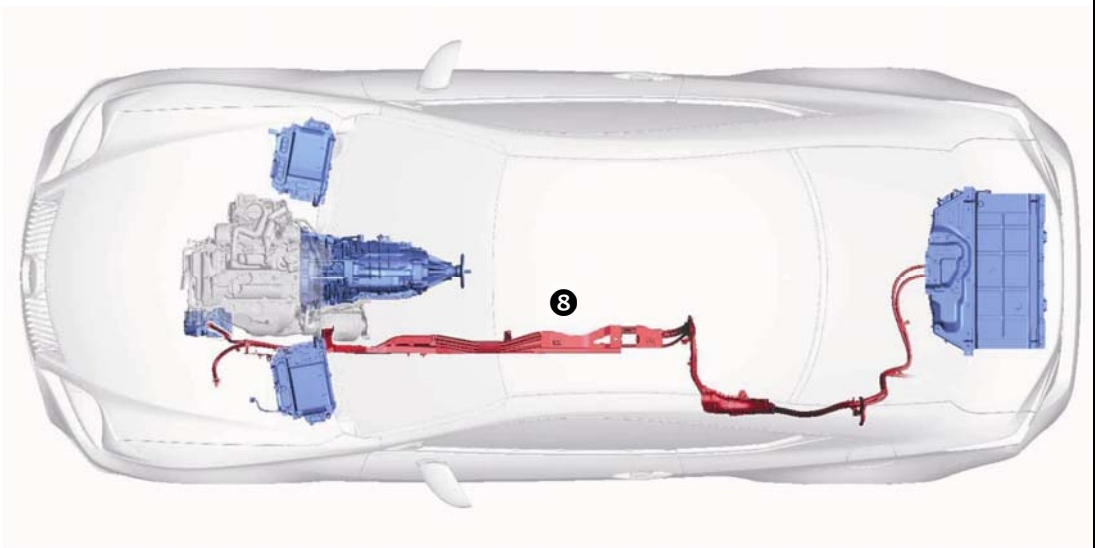
❻ 2.5-liter aluminum alloy gasoline engine.

❼ Logo on the engine cover.

❽ Orange colored high voltage power cables.



Engine Compartment View



Power Cables

Hybrid Component Locations & Descriptions

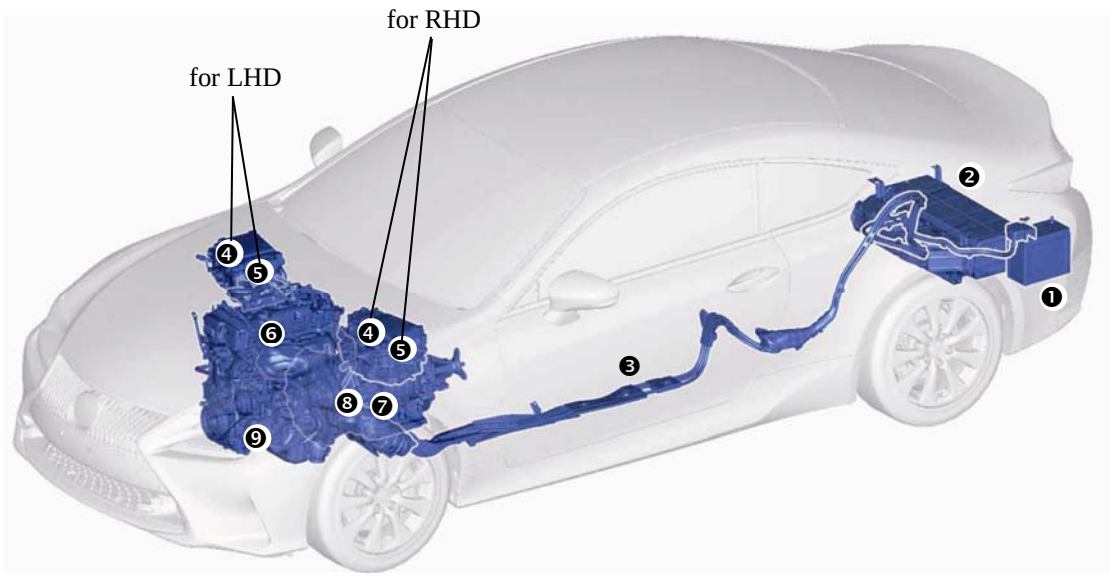
Component		Description
12 Volt Auxiliary Battery ❶		Supplies electricity to the electrical components.
Hybrid Vehicle (HV) Battery Pack ❷		• Supplies electrical power to generator (MG1) and motor (MG2) in accordance with the driving conditions of the vehicle. • Recharged by generator (MG1) and motor (MG2) in accordance with the SOC and the driving conditions of the vehicle.
Power Cables ❸		Connects the HV battery, inverter with converter assembly, hybrid vehicle transmission assembly and compressor with motor assembly.
Inverter/ Converter ❹	DC-DC Converter ❺ for 12 Volt Auxiliary Battery	Steps down the HV battery nominal voltage of DC 230.4 V to approximately DC 14 V in order to supply electricity to the electrical components, as well as to recharge the auxiliary battery.
	Motor Generator ECU	Controls the inverter and boost converter in accordance with the signals received from the hybrid vehicle control ECU assembly , thus operating generator (MG1) and motor (MG2) as either a generator or motor.
	Boost Converter	Boosts the HV battery nominal voltage of DC 230.4 V up to a maximum voltage of DC 650 V and vice versa (steps down DC 650 V to DC 230.4 V).
	Inverter	Converts the direct current from the boost converter into alternating current for generator (MG1) and motor (MG2), and vice versa (from AC to DC).
Gasoline Engine ❻		The 2AR-FSE engine is a high-expansion ratio Atkinson cycle engine which is compatible with the hybrid system and which generates drive force for driving and energy for electricity generation.
Electric Motor ❼		• Motor (MG2), which is driven by electrical power from generator (MG1) and the HV battery, generates motive force for the drive wheels. • During braking, or when the accelerator pedal is not depressed, it generates high-voltage electricity to recharge the HV battery.
Electric Generator ❽		Generator (MG1), which is driven by the engine, generates high-voltage electricity in order to operate motor (MG2) and charge the HV battery. Also, it functions as a starter to start the engine.
A/C Compressor (with inverter) ❾		Is driven at a speed calculated by the air conditioning amplifier assembly, receives drive requests from the hybrid vehicle control ECU and takes in, compresses and discharges refrigerant.
Fuel Tank and Fuel Line ❿		The fuel tank provides gasoline via a fuel line to the engine. The fuel line is routed along the left side and center tunnel under the floor pan.

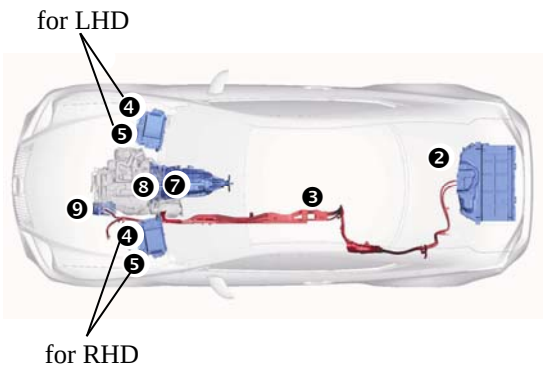
*Numbers in the component column apply to the illustrations on the following page.

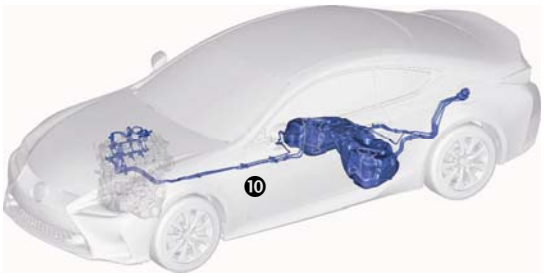
Hybrid Component Locations & Descriptions (Continued)

Specifications

Gasoline Engine:	133 kW, 2.5-liter Aluminum Alloy Engine
Electric Motor:	162 kW, Permanent Magnet Motor (for Hong Kong)
	164 kW, Permanent Magnet Motor (except Hong Kong)
Transmission:	Automatic Only
HV Battery:	230.4 Volt Sealed NiMH-Battery
Curb Weight:	1,725 to 1,775 kg / 3,803 to 3,913 lbs (for Europe)
	1,735 to 1,775 kg / 3,825 to 3,913 lbs (except Europe)
Fuel Tank:	66 liters /17.4 gals
Frame Material:	Steel Unibody
Body Material:	Steel Panels
Seating Capacity:	4 passenger







Lexus Hybrid Drive Operation

Once the **READY** indicator is illuminated in the combination meter, 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.

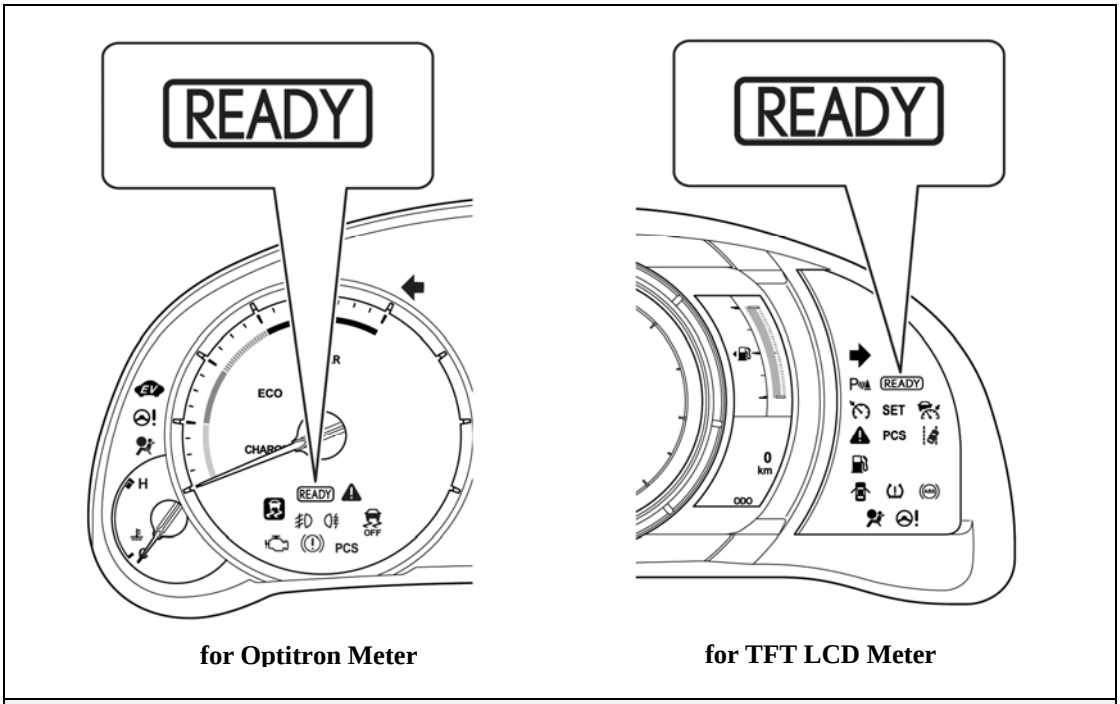
Vehicle Operation

- With the RC300h, 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. A combination of both the electric motor and the gasoline engine.



for Optitron Meter **for TFT LCD Meter**

Combination Meter **READY** Indicator

Hybrid Vehicle (HV) Battery Pack and Auxiliary Battery

The RC300h 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 rigidly mounted to the luggage compartment area. The metal case is isolated from high voltage and concealed by fabric covers in the cabin area.

- The HV battery pack consists of 32 low voltage (7.2 Volt) NiMH battery modules connected in series to produce approximately 230.4 Volts. Each NiMH battery module is non-spillable and sealed in a metal case.

- The electrolyte used in the NiMH battery module 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.

HV Battery Pack	
Battery pack voltage	230.4 V
Number of NiMH battery modules in the pack	32
NiMH battery module voltage	7.2 V

Components Powered by the HV Battery Pack

- Electric Motor
- Power Cables
- A/C Compressor
- Electric Generator
- Inverter/Converter
  - DC-DC Converter for 12 Volt Auxiliary Battery

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

HV Battery Pack Recycling

- The HV battery pack is recyclable. Contact either your Lexus Distributor as mentioned on HV battery Caution Label (see page 37) or the nearest Lexus dealer.

Auxiliary Battery

- The RC300h also contains a sealed 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 luggage compartment area. It is concealed by a fabric cover on the left side in the luggage compartment.

230.4 Volt HV Battery Pack

12 Volt Auxiliary Battery Mounted in Luggage Compartment Area (Left Side)

HV Battery Pack Mounted in Luggage Compartment 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, to the inverter/converter. The inverter/converter contains a circuit that boosts the HV battery voltage from 230.4 to 650 Volts DC. The inverter/converter creates 3-phase AC to power the motors. Power cables are routed from the inverter/converter to each high voltage motors (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:

<u>High Voltage Safety System</u>

- 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 body. High voltage electricity flows through these cables and not through the metal vehicle body. The metal vehicle body is safe to touch because it is insulated from the high voltage components.

- A ground fault monitor ❹* 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.

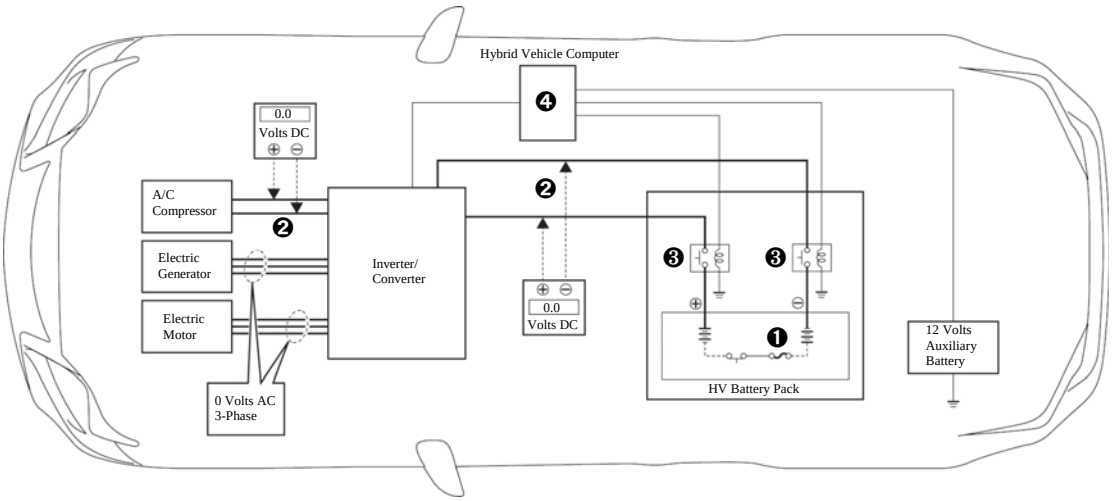
- The HV battery pack relays will automatically open to stop electricity flow in a collision sufficient to activate the SRS.

*Numbers apply to the illustration on the following page.

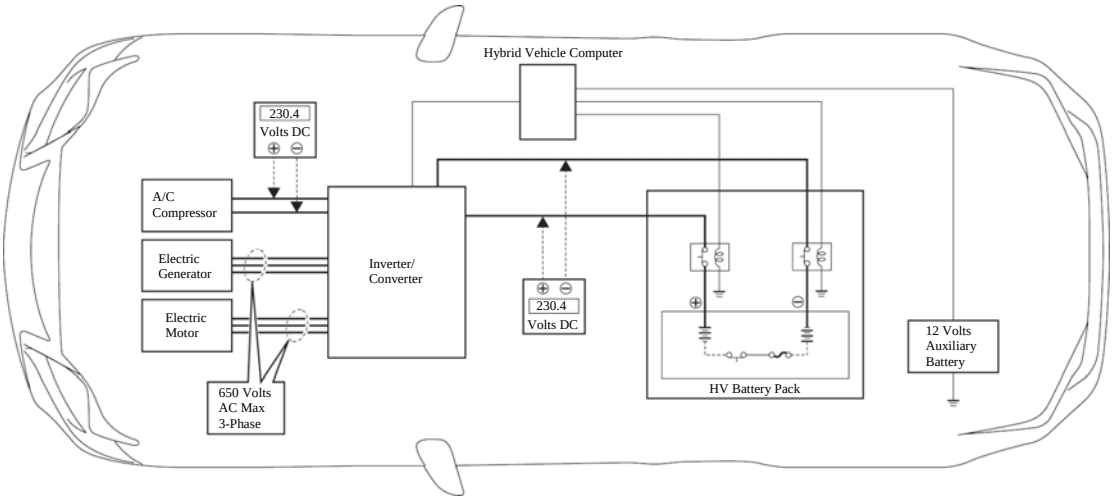
High Voltage Safety (Continued)

Service Plug Grip

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



High Voltage Safety System – Vehicle Shut Off (READY-OFF)



High Voltage Safety System – Vehicle On and Operational (READY-ON)

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 RC300h contains the same common automotive fluids used in other non-hybrid Lexus vehicles, with the exception of the 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 metal battery module is cracked. A catastrophic crash that would breach both the metal battery pack case and a metal battery module 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 Product Safety Data Sheets (PSDS) 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.

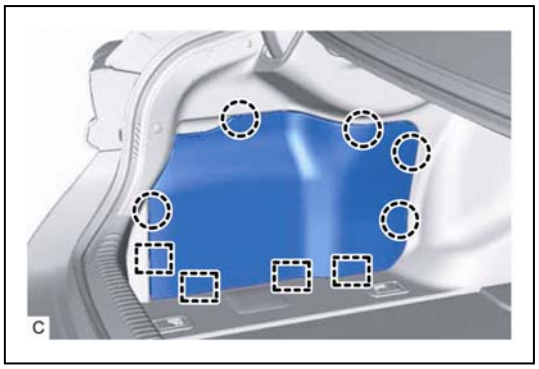
Dismantling the vehicle

The following 4 pages contain general instructions for use when working on an RC300h.
Read these instructions before proceeding to the HV battery removal instructions on page 20.

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.
   (1) Disengage the 5 claws and 4 guides to remove the luggage battery service hole cover LH.
   (2) Loosen the nut, and disconnect the cable from the negative (-) auxiliary battery terminal.



2. Remove the No. 5 HV battery shield panel.
   (1) Remove the No. 1 luggage compartment trim cover.

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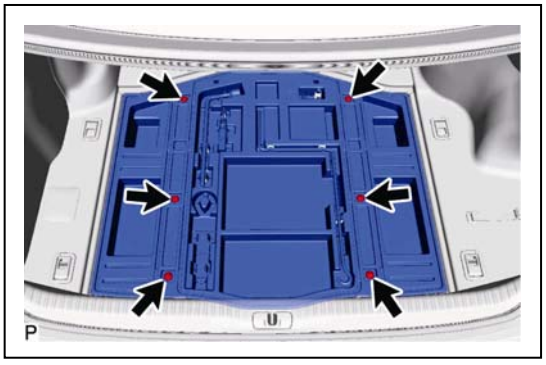
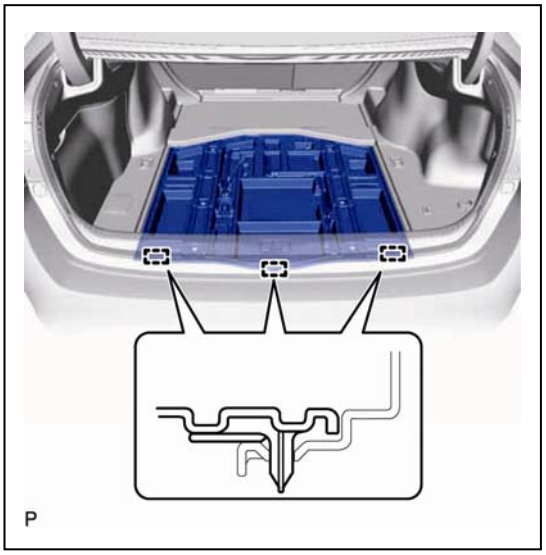
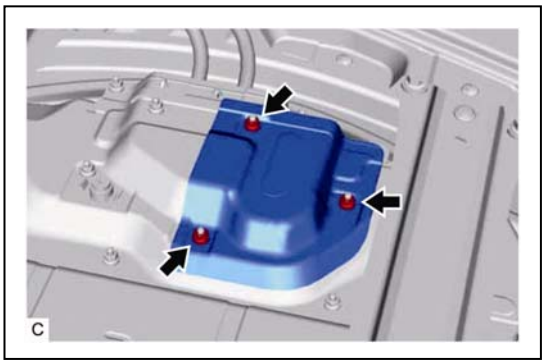
(2) Remove the 6 clips.



(3) Disengage the 3 guides and remove the luggage compartment trim box.



(4) Remove the 3 nuts and No. 5 HV battery shield panel from the HV battery.



3. Remove the service plug grip.

Caution:

- **Wear insulated gloves.**
- **Do not inspect or service the high voltage system with the service plug grip installed.**
- **To prevent electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.**
- **To prevent electric shock, make sure to wait at least 10 minutes after removing the service plug grip to fully discharge the high voltage capacitor inside the inverter with converter assembly.**
- **Keep the removed service plug grip in your pocket to prevent other technicians from accidentally reconnecting it while you are servicing the vehicle.**
- **To prevent electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.**
- **Place a "HIGH VOLTAGE WORK IN PROGRESS. DO NOT TOUCH." sign, in order to prevent other technicians from accidentally reconnecting the power while work is in progress.**

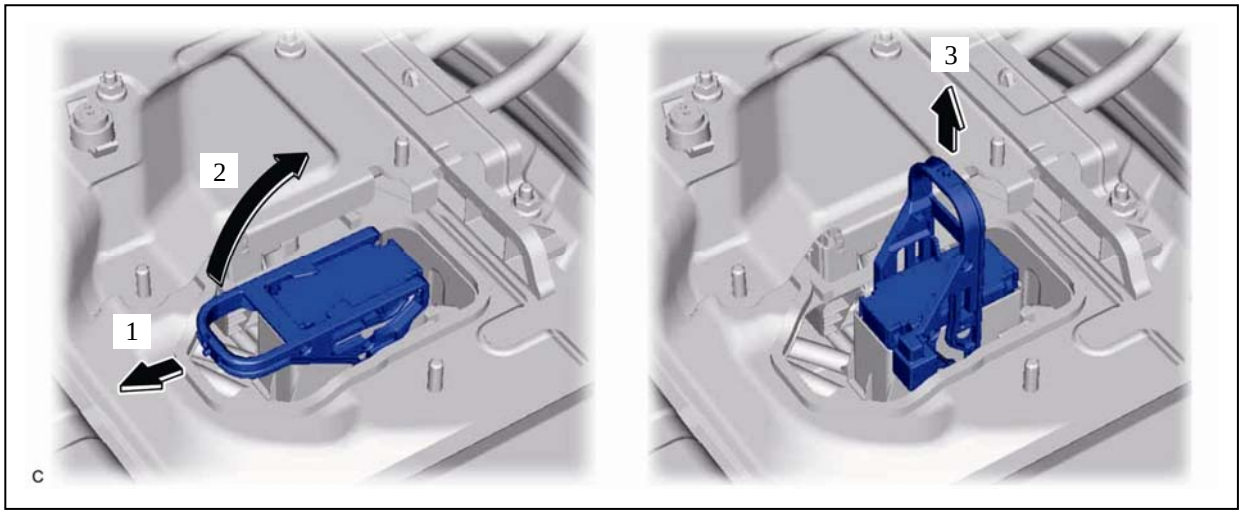
Notice:

- After removing the service plug grip, turning the power switch on (READY) may cause a malfunction. Do not turn the power switch on (READY) unless instructed by the repair manual.
- Do not touch the terminals of the service plug grip.

Hint:

Waiting for at least 10 minutes is required to discharge the high voltage capacitor inside the inverter with converter assembly.

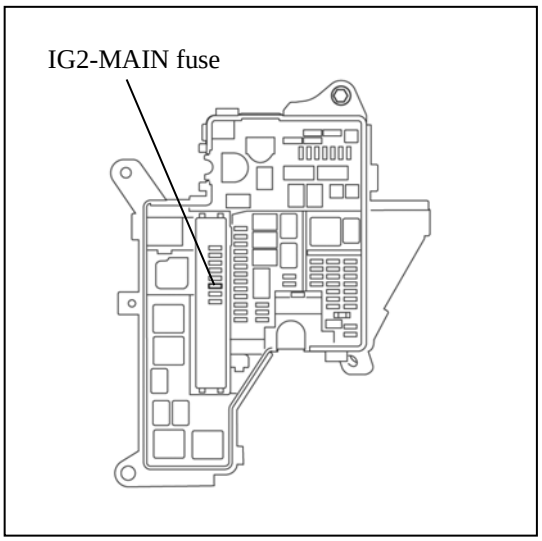
(1) Wear insulated gloves and remove the service plug grip after sliding the lever of the service plug grip as shown in the illustration.



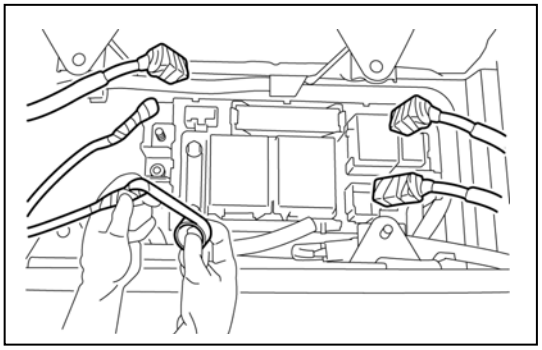
4. Carry the removed service plug grip in your pocket to prevent other staff from accidentally reinstalling it while you are dismantling the vehicle.
5. Make other staff aware that a high-voltage system is being dismantled by using the following sign: CAUTION: HIGH-VOLTAGE. DO NOT TOUCH (see page 19).
6. If the service plug grip cannot be removed due to damage to the vehicle, remove the **IG2-MAIN** fuse (20 A).

   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.



7. After disconnecting or exposing a high-voltage connector or terminal, insulate it immediately using insulating tape. Before disconnecting or touching a bare high-voltage terminal, wear insulated gloves.



8. 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.
9. 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.
10. 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.
11. With the exception of the HV battery, remove parts by following procedures which are similar to conventional Lexus vehicles. For the removal of the HV battery, refer to the following pages.

Person in charge:

DO NOT TOUCH.

HIGH-VOLTAGE.

CAUTION:

CAUTION:

HIGH-VOLTAGE.

DO NOT TOUCH.

Person in charge:

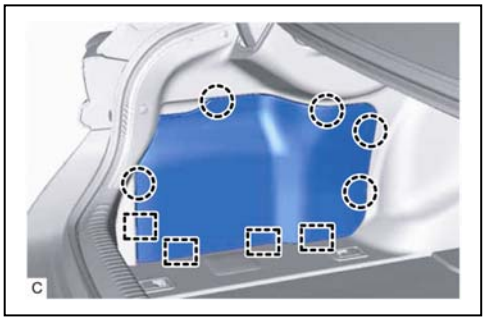
When performing work on the HV system, fold this sign and put it on the roof of the vehicle.

Removal of HV battery

WARNING:

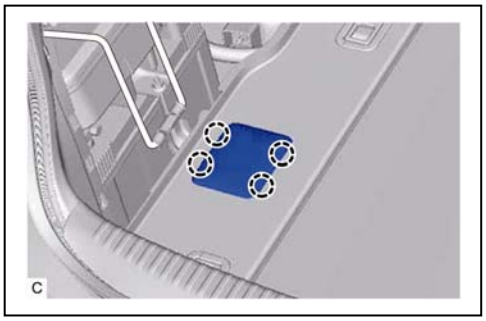
- ***Be sure to wear insulated gloves when handling high-voltage parts.***
- ***Even if the vehicle is shut off and the relays are off, be sure to remove the service plug grip before performing any further work.***
- ***Power remains in the high voltage electrical system for 10 minutes even after the 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 IGINITION (**READY** indicator is off)
2. REMOVE BATTERY SERVICE HOLE COVER LH
   (1) Disengage the 5 claws and 4 guides to remove the luggage battery service hole cover LH.



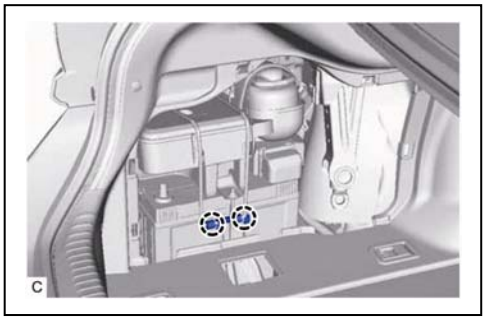
3. DISCONNECT CABLE FROM NEGATIVE AUXILIARY BATTERY TERMINAL
   (1) Loosen the nut, and disconnect the cable from the negative (-) auxiliary battery terminal.

4. REMOVE LUGGAGE TRIM SERVICE HOLE COVER
   (1) Disengage the 4 claws to remove the luggage trim service hole cover.

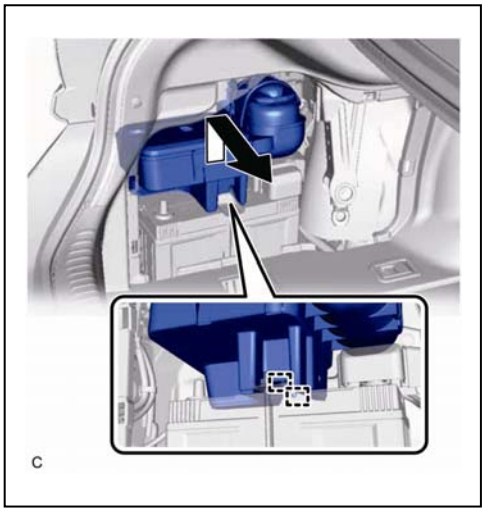


5. REMOVE TIRE REPAIR SEAL

(1) Disengage the 2 claws to disconnect the tool box band assembly.



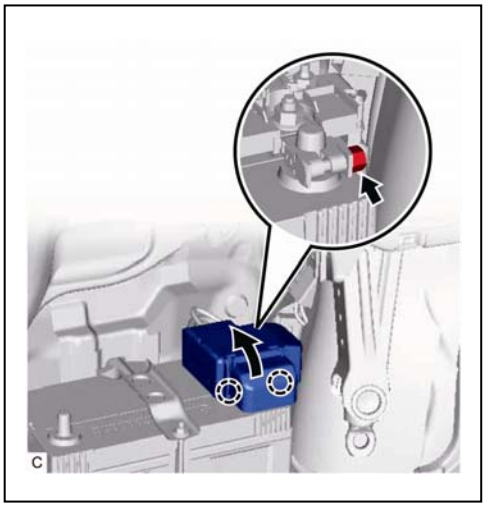
(2) Disengage the 2 guides and remove the tire repair seal from the battery clamp sub-assembly.



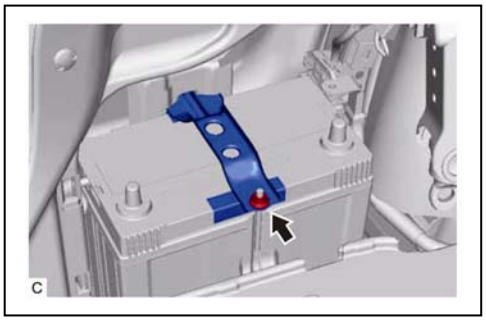
6. REMOVE AUXILIARY BATTERY

(1) Disengage the 2 claws and open the battery terminal cap.

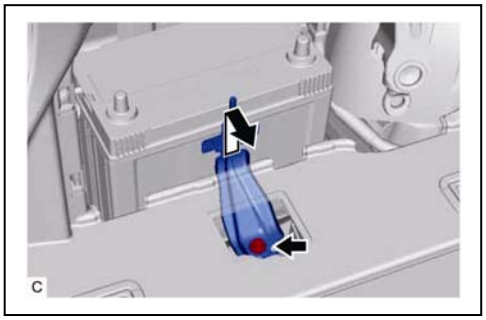
(2) Loosen the nut and disconnect the cable from the positive (+) auxiliary battery terminal.



(3) Remove the nut and battery clamp sub-assembly.

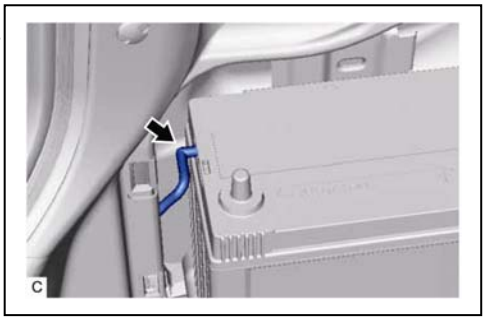


(4) Remove the bolt and battery hold down clamp sub-assembly.



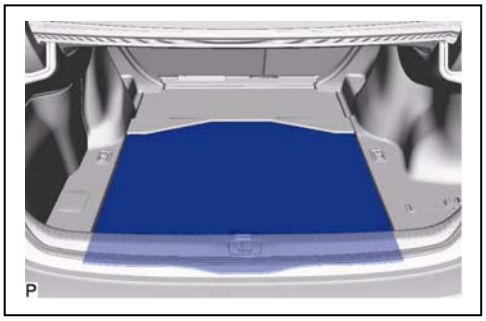
(5) Disconnect the battery hose from the auxiliary battery.

(6) Remove the auxiliary battery.



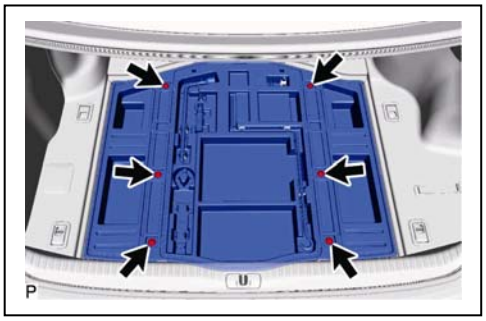
7. REMOVE NO. 1 LUGGAGE COMPARTMENT TRIM COVER

(1) Remove the No. 1 luggage compartment trim cover.

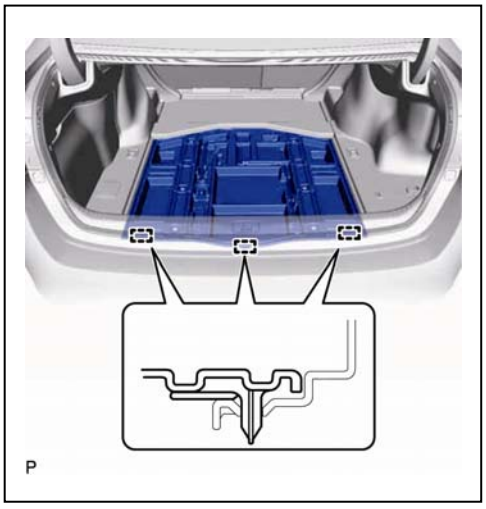


8. REMOVE LUGGAGE COMPARTMENT TRIM BOX

(1) Remove the 6 clips.

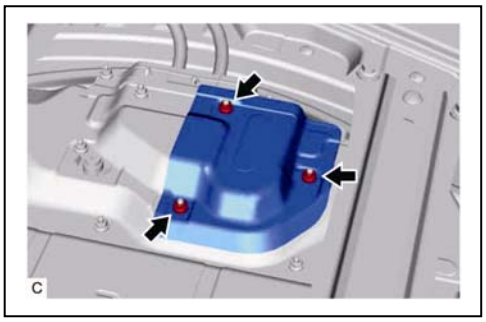


(2) Disengage the 3 guides and remove the luggage compartment trim box.



9. REMOVE NO. 5 HV BATTERY SHIELD PANEL

(1) Remove the 3 nuts and No. 5 HV battery shield panel from the HV battery.



10. REMOVE SERVICE PLUG GRIP

Caution:

- **Wear insulated gloves.**
- **Do not inspect or service the high voltage system with the service plug grip installed.**
- **To prevent electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.**
- **To prevent electric shock, make sure to wait at least 10 minutes after removing the service plug grip to fully discharge the high voltage capacitor inside the inverter with converter assembly.**
- **Keep the removed service plug grip in your pocket to prevent other technicians from accidentally reconnecting it while you are servicing the vehicle.**
- **To prevent electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.**
- **Place a "HIGH VOLTAGE WORK IN PROGRESS. DO NOT TOUCH." sign, in order to prevent other technicians from accidentally reconnecting the power while work is in progress.**

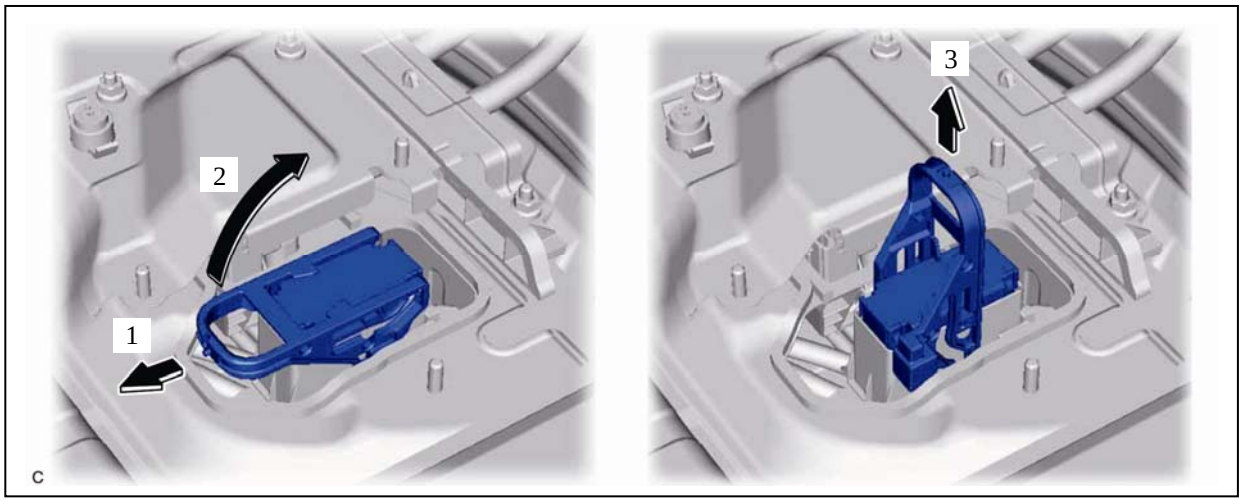
Notice:

- After removing the service plug grip, turning the power switch on (READY) may cause a malfunction. Do not turn the power switch on (READY) unless instructed by the repair manual.
- Do not touch the terminals of the service plug grip.

Hint:

Waiting for at least 10 minutes is required to discharge the high voltage capacitor inside the inverter with converter assembly.

(1) Wear insulated gloves and rotate the handle of the service plug grip and remove the service plug grip as indicated by the arrows, in the order shown in the illustration.



11. REMOVE CONNECTOR COVER ASSEMBLY

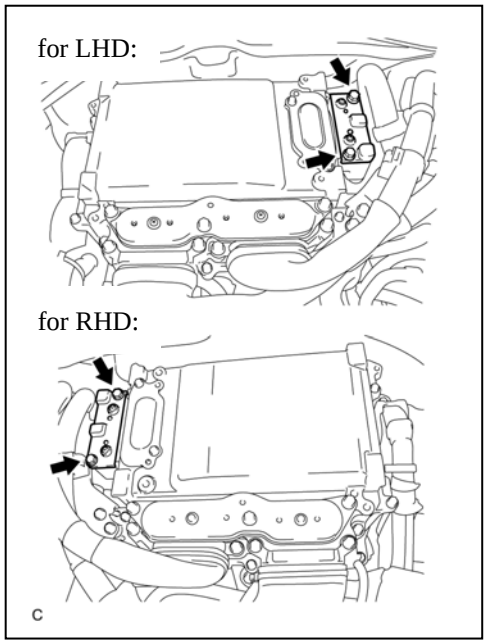
Caution:

Wear insulated gloves.

(1) Remove the 2 bolts and connector cover assembly from the inverter with converter assembly.

Notice:

Make sure to pull the connector cover assembly straight up, as a connector is connected to the bottom of the cover.



12. CHECK TERMINAL VOLTAGE

Caution:

Wear insulated gloves.

Notice:

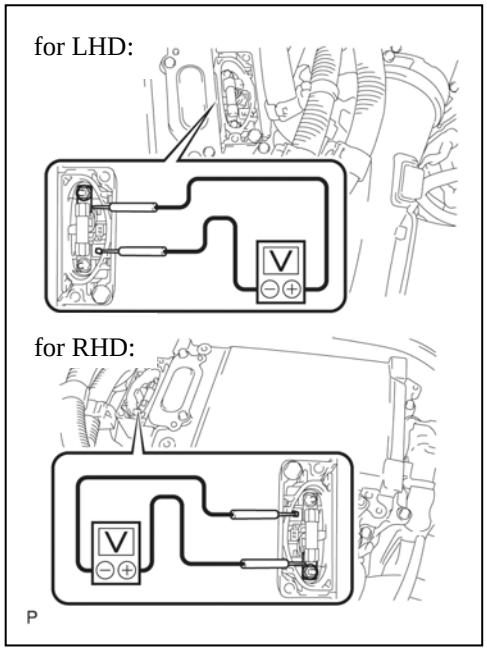
Do not allow any foreign matter or water to enter the inverter with converter assembly.

(1) Using a voltmeter, measure the voltage between the terminals of the 2 phase connectors.

Standard Voltage: 0 V

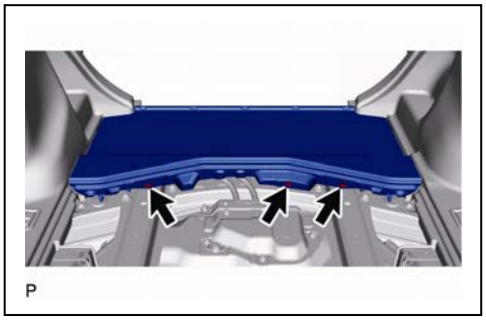
Hint:

Use a measuring range of DC 750 V or more on the voltmeter.

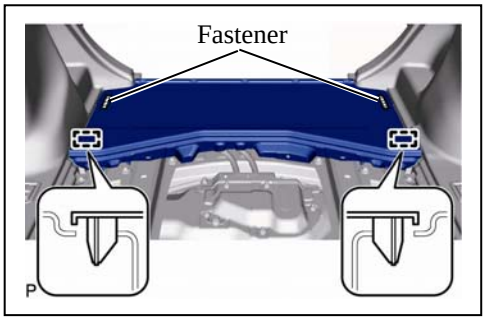


13. REMOVE FRONT LUGGAGE COMPARTMENT TRIM COVER

(1) Using a clip remover, remove the 3 clips.

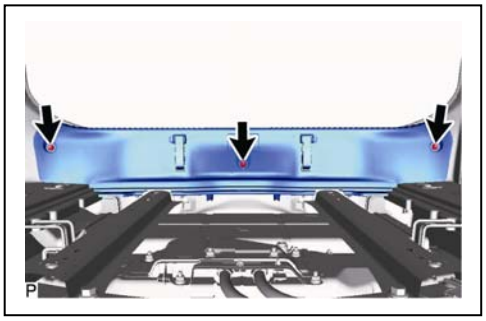


(2) Disengage the 2 fasteners and 2 guides to remove the front luggage compartment trim cover.

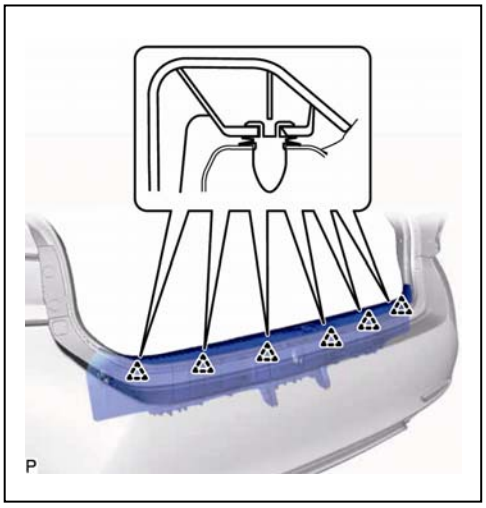


14. REMOVE REAR LUGGAGE COMPARTMENT TRIM COVER

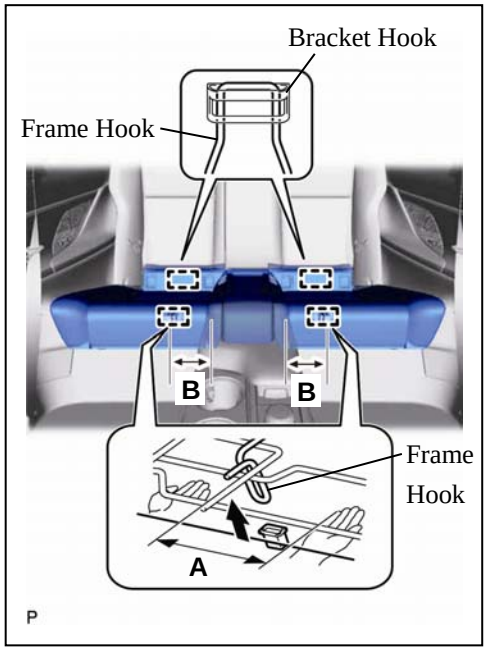
(1) Using a clip remover, remove the 3 clips.



(2) Disengage the 6 clips to remove the rear luggage compartment trim cover.



15. REMOVE REAR SEAT CUSHION ASSEMBLY



Caution:

Wear protective gloves. Sharp areas on the seat frame may injure your hands.

(1) Lift up the front edge of the rear seat cushion assembly as shown in the illustration and disengage the rear seat cushion frame hook on the front side of the rear seat cushion assembly from the rear seat cushion lock hook.

Notice:

Be sure to hold the part of the rear seat cushion assembly directly next to the rear seat cushion lock hooks when lifting it up. Lifting a different part of the rear seat cushion assembly may deform the rear seat cushion frame.

Hint:

Use the same procedure for the RH side and LH side.

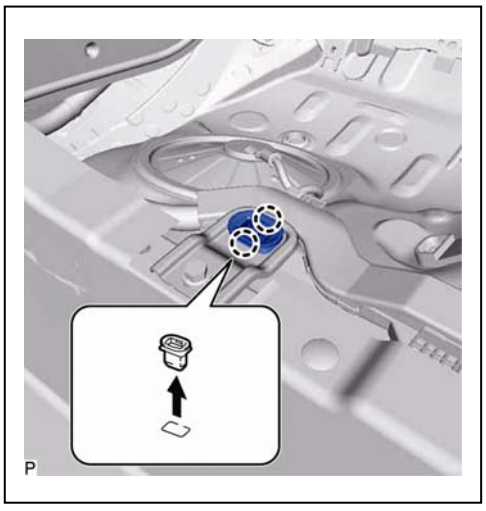
Standard Measurement:

Area	Measurement
A	100 mm (3.94 in.) or less
B	121.1 mm (4.77 in.)

(2) Disengage the 2 rear seat cushion frame hooks on the rear side of the rear seat cushion assembly from the 2 child restraint seat anchor bracket hooks.

(3) Pass the 2 rear seat inner belt assemblies through the rear seat cushion assembly and remove the rear seat cushion assembly.

16. REMOVE REAR SEAT CUSHION LOCK HOOK



(1) Disengage the 2 claws to remove the rear seat cushion lock hook as shown in the illustration.

Hint:

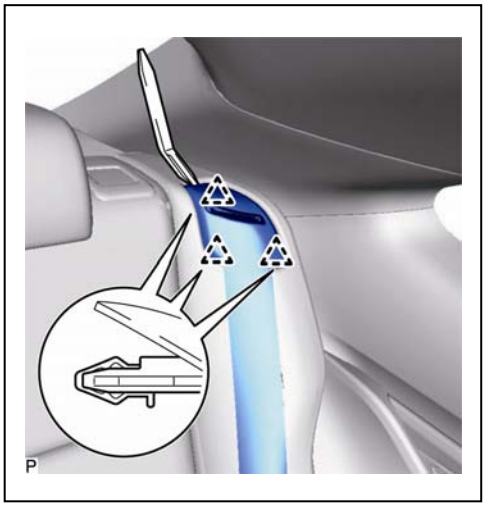
Use the same procedure for the RH side and LH side.

17. REMOVE REAR SEAT HEADREST ASSEMBLY

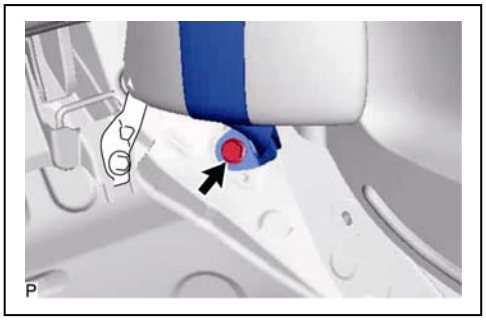
(1) Remove the 2 rear seat headrest assemblies.

18. DISCONNECT REAR SEAT 3 POINT TYPE OUTER BELT ASSEMBLY LH

(1) Using a moulding remover, disengage the 3 clips to disconnect the belt guide unit of the rear seat 3 point type outer belt assembly LH.



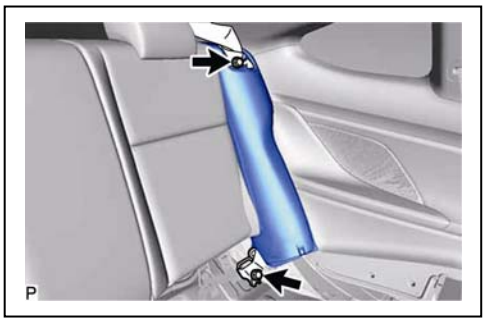
(2) Remove the bolt and disconnect the floor anchor of the rear seat 3 point type outer belt assembly.



19. REMOVE REAR SIDE SEATBACK ASSEMBLY LH

(1) Remove the 2 bolts.

(2) Pass the rear seat 3 point type outer belt assembly LH through the rear side seatback assembly LH and remove the rear side seatback assembly LH.



20. DISCONNECT REAR SEAT 3 POINT TYPE OUTER BELT ASSEMBLY RH

Hint:

Use the same procedure as for the LH side.

21. REMOVE REAR SIDE SEATBACK ASSEMBLY RH

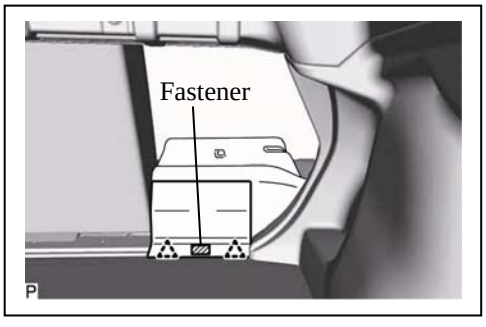
Hint:

Use the same procedure as for the LH side.

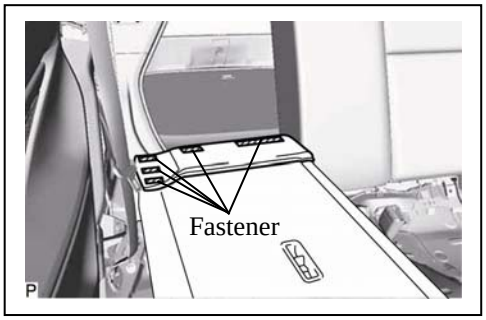
22. REMOVE REAR SEATBACK ASSEMBLY RH

(1) Fold the rear seatback assembly RH forward.

(2) Disengage the 2 clips and fastener.

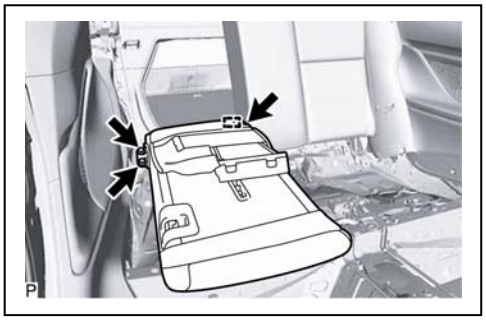


(3) Disengage the 5 fasteners.



(4) Remove the 3 bolts.

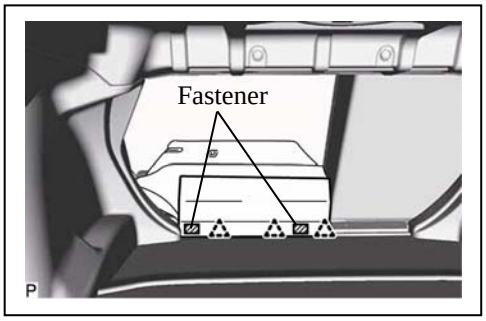
(5) Disengage the guide to remove the rear seatback assembly RH.



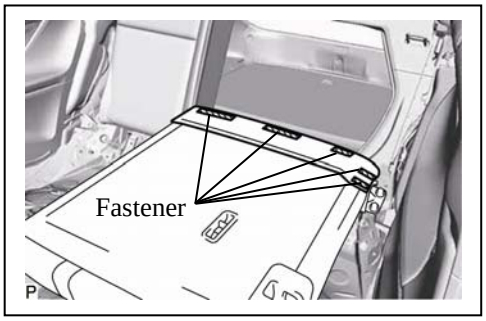
23. REMOVE REAR SEATBACK ASSEMBLY LH

(1) Fold the rear seatback assembly LH forward.

(2) Disengage the 3 clips and 2 fasteners.

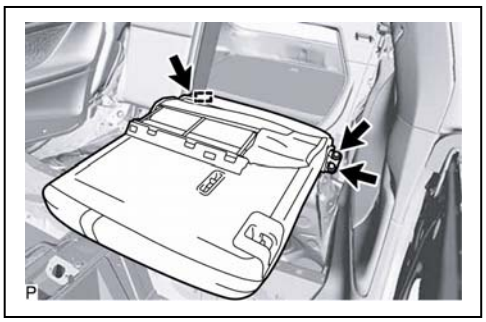


(3) Disengage the 5 fasteners.



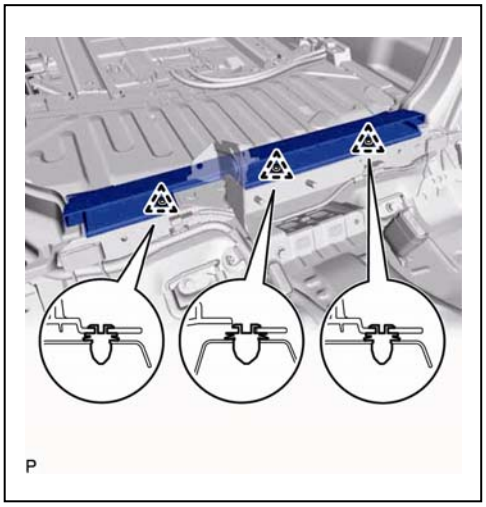
(4) Remove the 3 bolts.

(5) Disengage the guide to remove the rear seatback assembly LH.



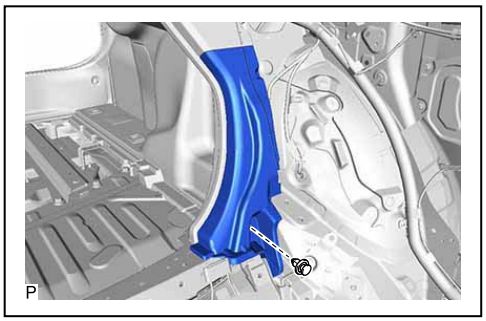
24. REMOVE REAR SEAT SUB FLOOR PANEL

(1) Disengage the 3 clips to remove the rear seat sub floor panel.



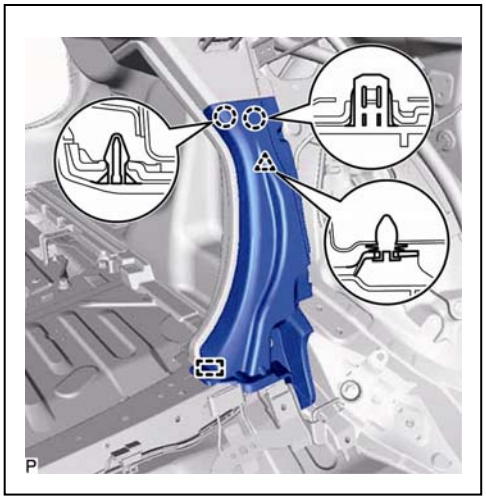
25. REMOVE NO. 2 ROOM PARTITION COVER

(1) Remove the clip.



(2) Disengage the 2 claws and clip.

(3) Disengage the guide to remove the No. 2 room partition cover.



26. REMOVE NO. 1 ROOM PARTITION COVER

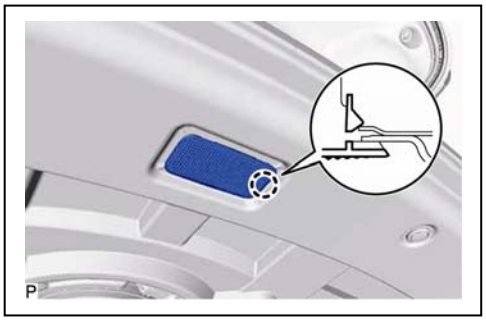
Hint:

Use the same procedure as for the No. 2 room partition cover.

27. REMOVE NO. 1 LUGGAGE COMPARTMENT LIGHT ASSEMBLY

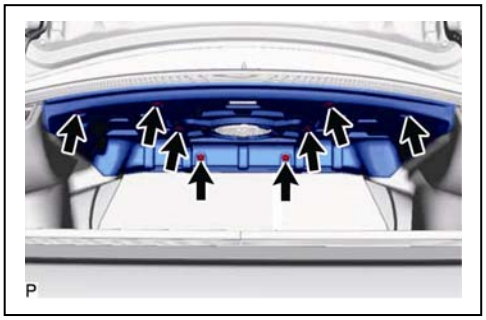
(1) Disengage the claw.

(2) Disconnect the connector to remove the No. 1 luggage compartment light assembly.

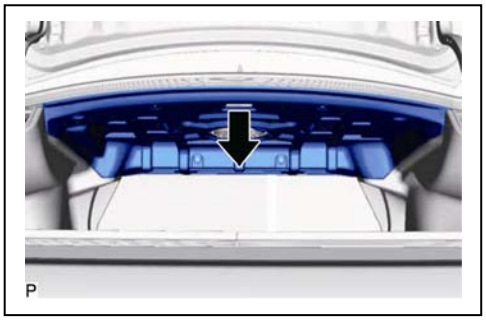


28. REMOVE FRONT UPPER LUGGAGE COMPARTMENT TRIM COVER

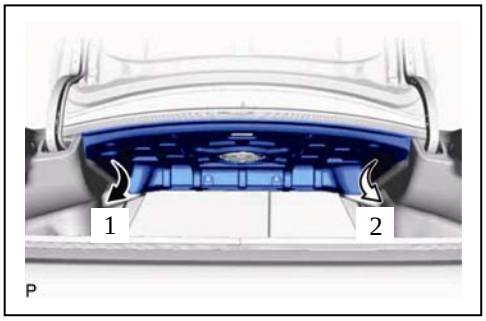
(1) Remove the 8 clips.



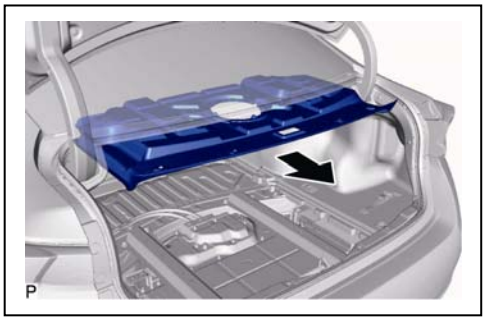
(2) Disconnect the front upper luggage compartment trim cover as shown in the illustration.



(3) Disconnect the front upper luggage compartment trim cover as indicated by the arrows, in the order shown in the illustration.

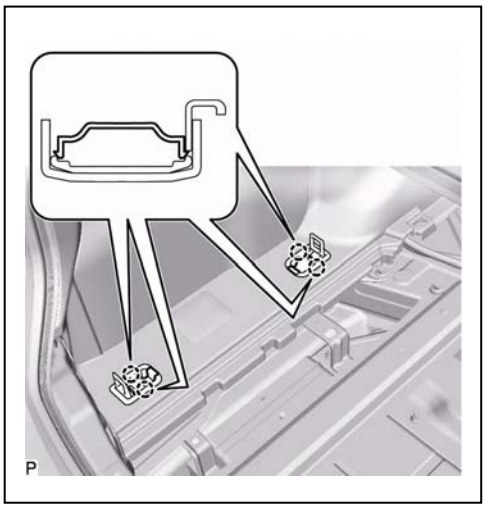


(4) Remove the front upper luggage compartment trim cover as shown in the illustration.

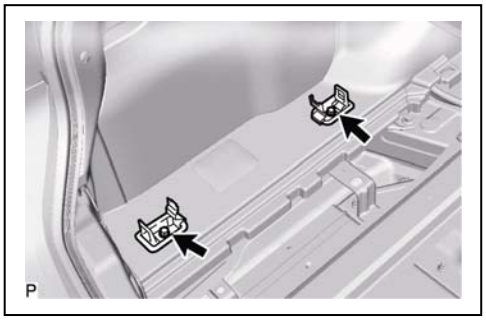


29. REMOVE ROPE HOOK ASSEMBLY (for LH Side)

(1) Disengage the 4 claws and open the 2 covers.

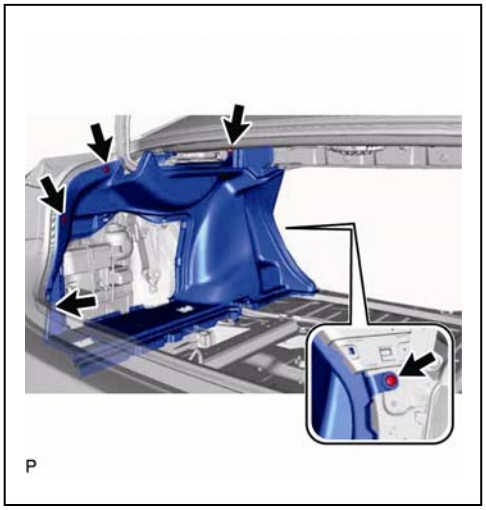


(2) Remove the 2 bolts and 2 rope hook assemblies.



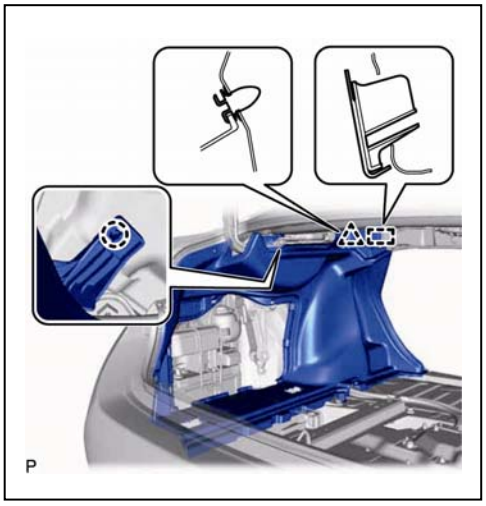
30. REMOVE LUGGAGE COMPARTMENT TRIM COVER LH (for LH Side)

(1) Using a clip remover, remove the 5 clips.



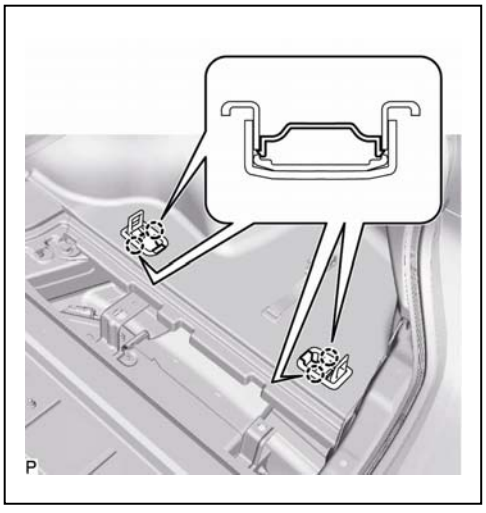
(2) Disengage the claw.

(3) Disengage the clip and guide to remove the luggage compartment trim cover LH.

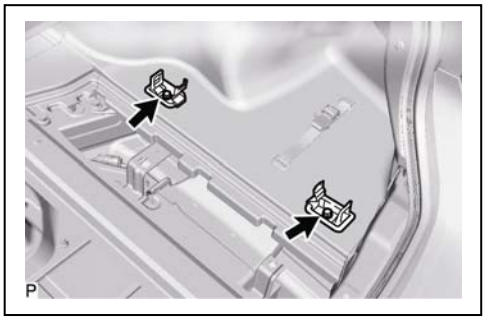


31. REMOVE ROPE HOOK ASSEMBLY (for RH Side)

(1) Disengage the 4 claws and open the 2 covers.

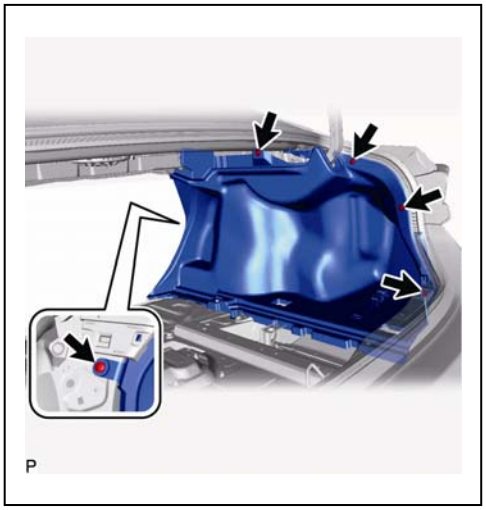


(2) Remove the 2 bolts and 2 rope hook assemblies.



32. REMOVE LUGGAGE COMPARTMENT TRIM COVER RH (for RH Side)

(1) Using a clip remover, remove the 5 clips.

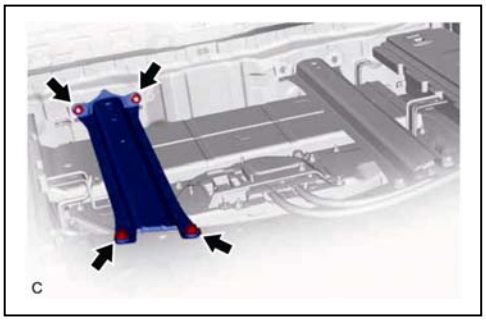


(2) Disengage the claw.

(3) Disengage the clip and guide to remove the luggage compartment trim cover RH.

33. REMOVE REAR NO. 1 FLOOR CROSSMEMBER BRACE RH

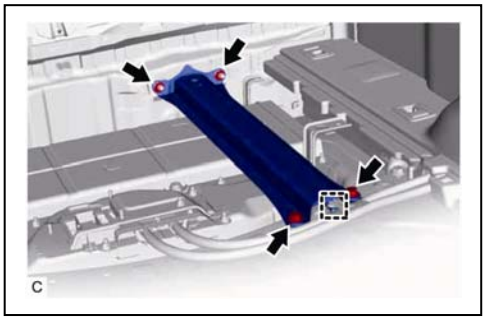
(1) Remove the 2 bolts, 2 nuts and rear No. 1 floor crossmember brace RH.



34. REMOVE REAR NO. 1 FLOOR CROSSMEMBER BRACE LH

(1) Disengage the clamp.

(2) Remove the 2 bolts, 2 nuts and rear No. 1 floor crossmember brace LH.



35. REMOVE NO. 4 HV BATTERY SHIELD PANEL

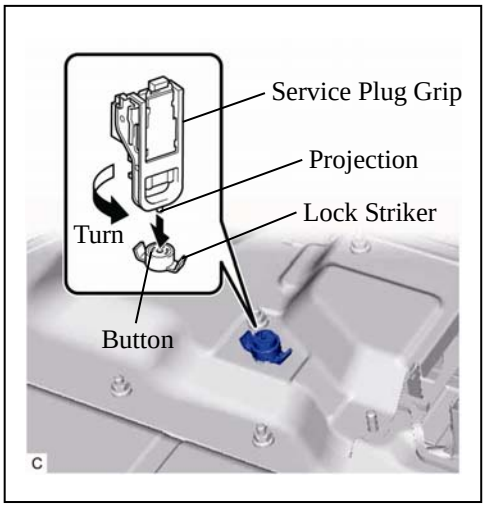
Caution:

Wear insulated gloves.

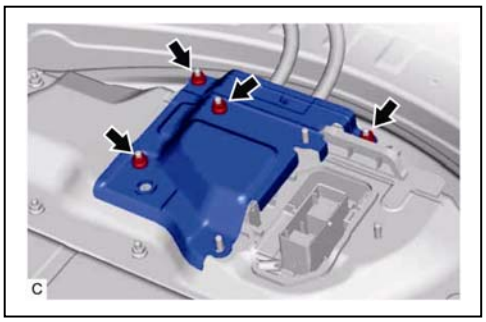
(1) Using the service plug grip, remove the battery cover lock striker from the No. 4 HV battery shield panel.

Hint:

Insert the projection of the service plug grip and turn the button of the battery cover lock striker counterclockwise to release the lock.



(2) Remove the 4 nuts and No. 4 HV battery shield panel.

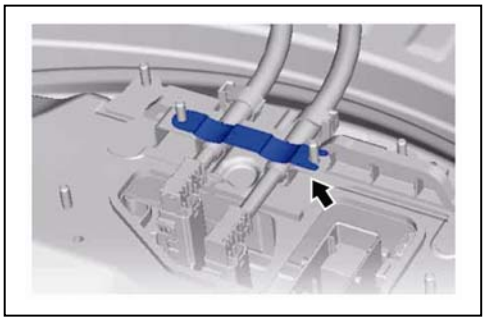


36. DISCONNECT FRAME WIRE

Caution:

Wear insulated gloves.

(1) Remove the earth terminal from the upper No. 1 hybrid battery cover sub-assembly.

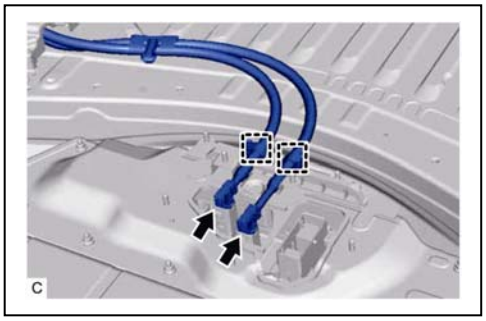


(2) Disengage the 2 clamps.

(3) Disconnect the 2 frame wire connectors from the hybrid battery terminal block.

Notice:

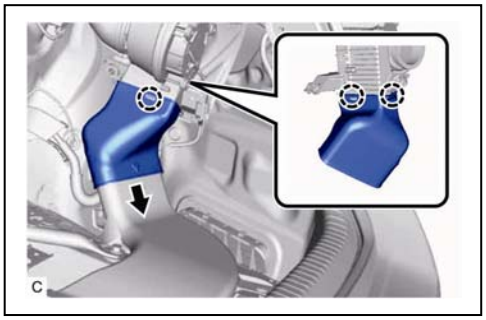
Insulate the disconnected connectors with insulating tape.



37. SEPARATE NO. 3 HYBRID BATTERY INTAKE DUCT

(1) Disengage the 3 claws.

(2) Slide the No. 3 hybrid battery intake duct as shown in the illustration to separate the No. 3 hybrid battery intake duct from the battery cooling blower assembly.

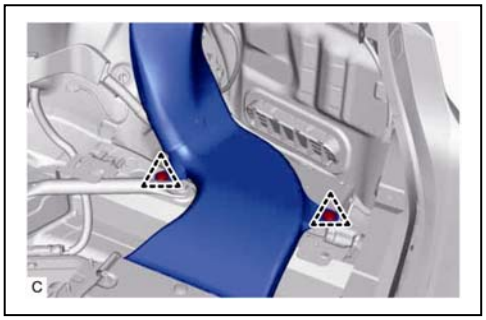


38. REMOVE NO. 4 HYBRID BATTERY INTAKE DUCT

Caution:

Wear insulated gloves.

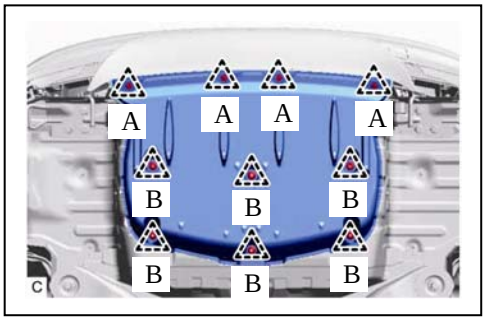
(1) Remove the 2 clips and No. 4 hybrid battery intake duct with No. 3 hybrid battery intake duct from the HV battery.



39. REMOVE NO. 1 FLOOR UNDER COVER ASSEMBLY

(1) Remove the 4 clips (A).

(2) Disengage the 6 clips (B) to remove the No. 1 floor under cover assembly.

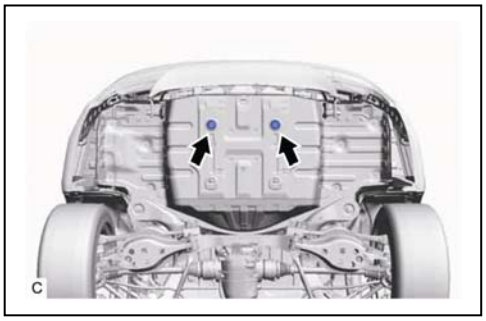


40. REMOVE HV BATTERY

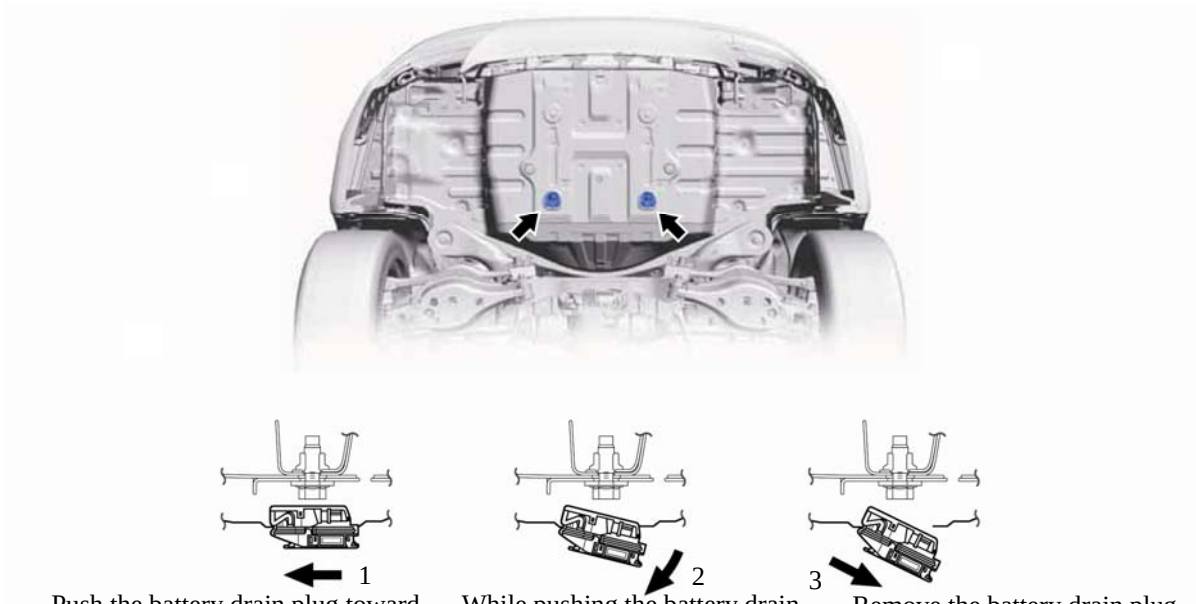
Caution:

Wear insulated gloves.

(1) Remove the 2 grommets.



(2) Remove the 2 battery drain plugs as indicated by the arrows, in the order shown in the illustration.

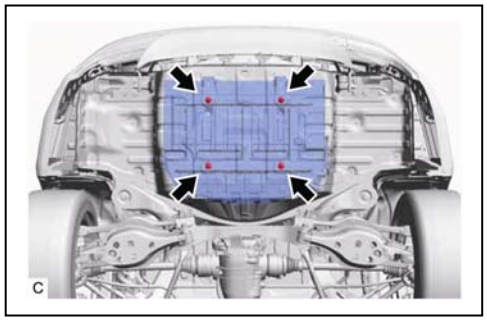


1 Push the battery drain plug toward the front of the vehicle.

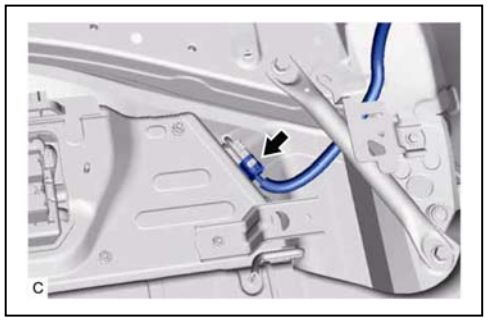
2 While pushing the battery drain plug, disengage the rear claw.

3 Remove the battery drain plug.

(3) Remove the 4 bolts.

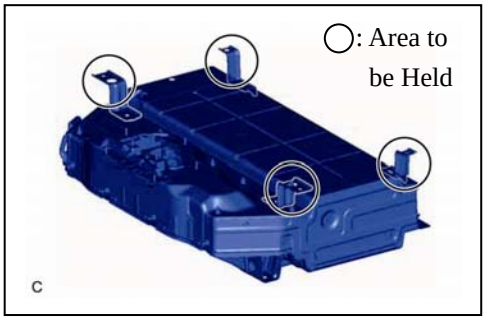


(4) Disconnect the HV battery connector.



(5) Remove the 2 bolts.

(6) Hold the areas shown in the illustration and remove the HV battery.



Notice:

- To prevent the wire harness from being caught, make sure to bundle the wire harness using insulating tape or equivalent.
- Since the HV battery is very heavy, 2 people are needed to remove the HV battery.
- When removing/ moving the HV battery, make sure not to tilt it more than 80°.
- When moving the HV battery, make sure to use an engine lifter.
- Insulate the disconnected terminals or connectors with insulating tape.
- Do not touch any high voltage wire harnesses, connectors or parts with bare hands.

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 next for sample 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