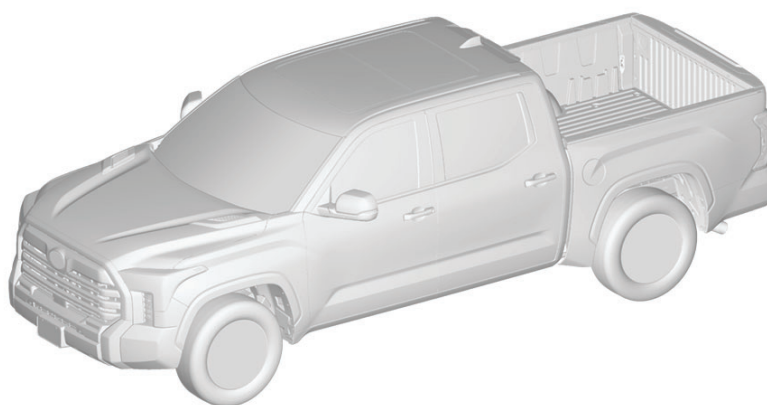




TUNDRA

*i*FORCE MAX

HYBRID VEHICLE DISMANTLING MANUAL



Foreword

This guide was developed to educate and assist dismantlers in the safe handling of Toyota TUNDRA gasoline-electric hybrid vehicles. TUNDRA dismantling procedures are similar to other non-hybrid Toyota 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 Toyota TUNDRA, as they may not be familiar to dismantlers.

High voltage electricity powers the compressor with motor assembly, motor generator, and hybrid motor control inverter assembly. All other conventional automotive electrical devices such as the head lights, radio, and gauges are powered from a separate auxiliary battery. Numerous safeguards have been designed into the TUNDRA to help ensure the high voltage, approximately 288 V, Nickel Metal Hydride (NiMH) HV battery 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:

- Toyota TUNDRA identification.
- Major hybrid component locations and descriptions.

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

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About the TUNDRA

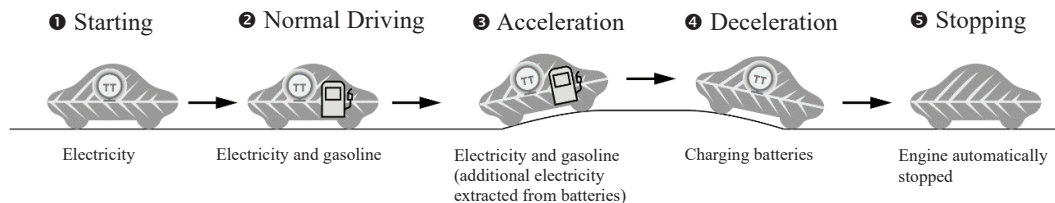
The TUNDRA 4-door pickup joins the hybrid model for Toyota. i-FORCE MAX means that the vehicle contains a gasoline engine and an electric motor for power. The two hybrid power sources are stored on board the vehicle:

1. Gasoline stored in the fuel tank for the gasoline engine.
2. Electricity stored in a high voltage HV battery 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 TUNDRA 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 TUNDRA 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 wheel 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.



TUNDRA Identification

In appearance, the TUNDRA is nearly identical to the conventional, non-hybrid Toyota TUNDRA. The TUNDRA is a 4-door pickup. Exterior, interior, and engine compartment illustrations are provided to assist in identification.

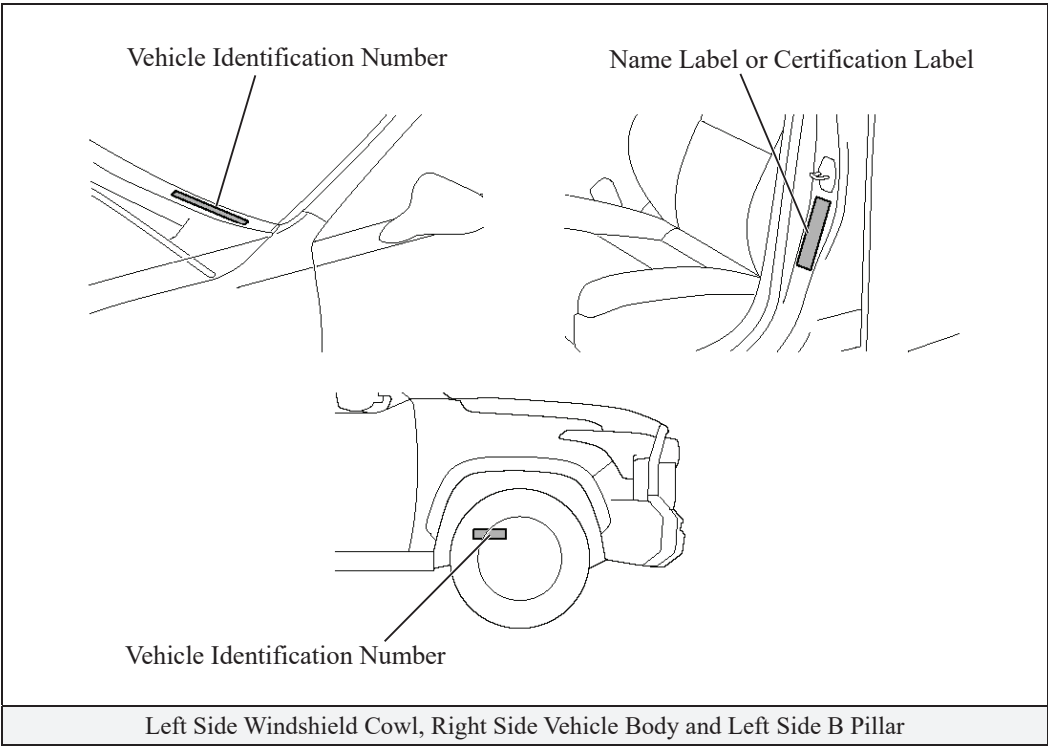
The alphanumeric 15 character Vehicle Identification Number (VIN) is provided on the left side windshield cowl, right side vehicle body and left side B pillar.

Example VIN:

5TFJC5AB 0000000
①

A TUNDRA Hybrid is identified by the 5th alphanumeric character of the VIN.

①	Engine Series	Battery Type
C	V35A-FTS	Nickel Metal Hydride (NiMH) Battery



Exterior

- ❶ *iFORCE MAX* logos on the hood panel.
- ❷ Gasoline fuel filler door located on left side rear quarter panel.



Exterior Front and Left Side View



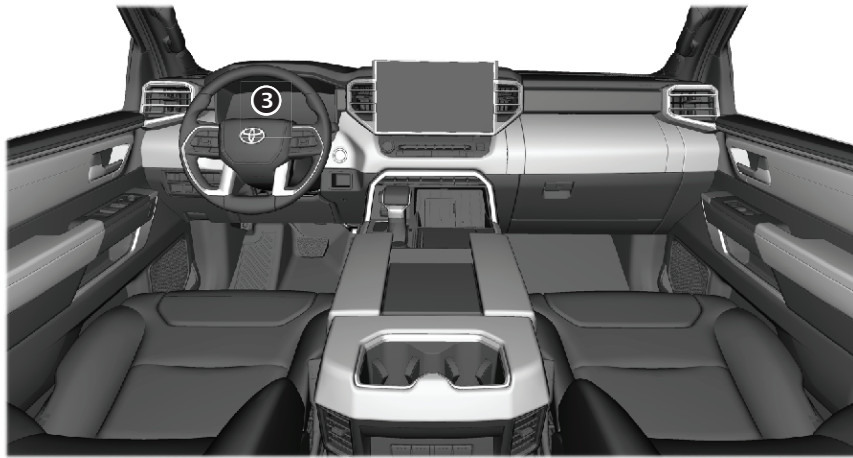
Exterior Rear and Left Side View

Interior

- ③ The instrument cluster (hybrid system indicator, **READY** indicator and warning lights) located in the dash behind the steering wheel.

NOTICE:

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



Interior View

③

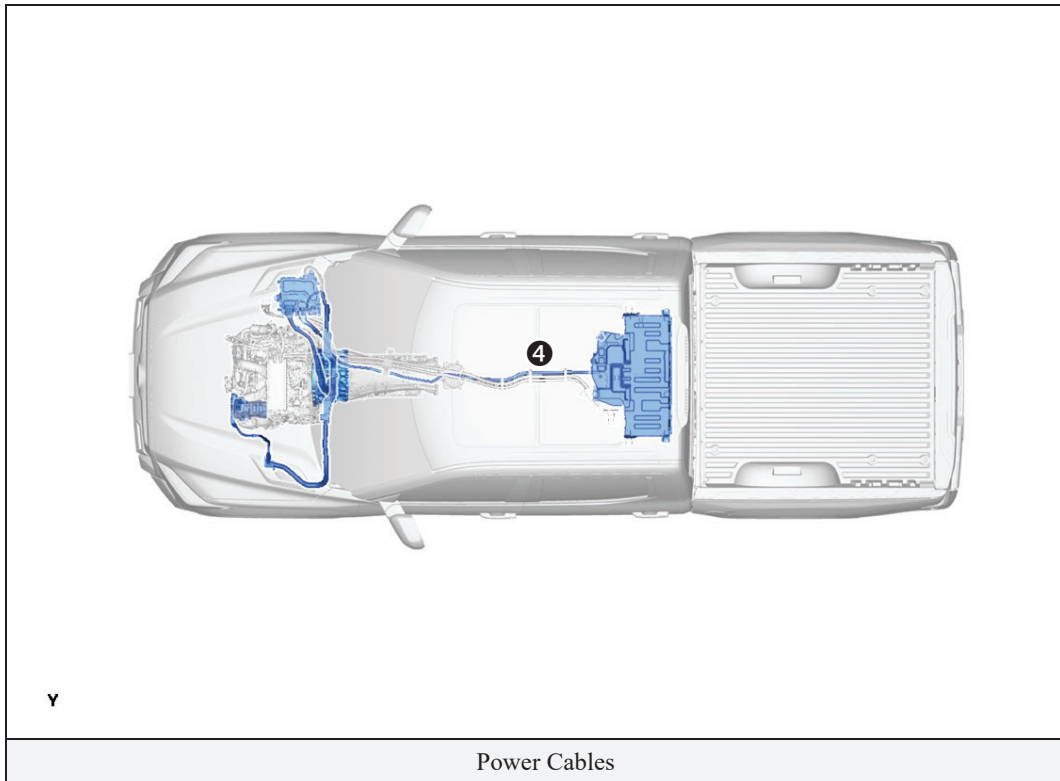


READY Indicator

Combination Meter View

Engine Compartment

- ④ Orange colored high voltage power cables.



Hybrid Component Locations & Descriptions

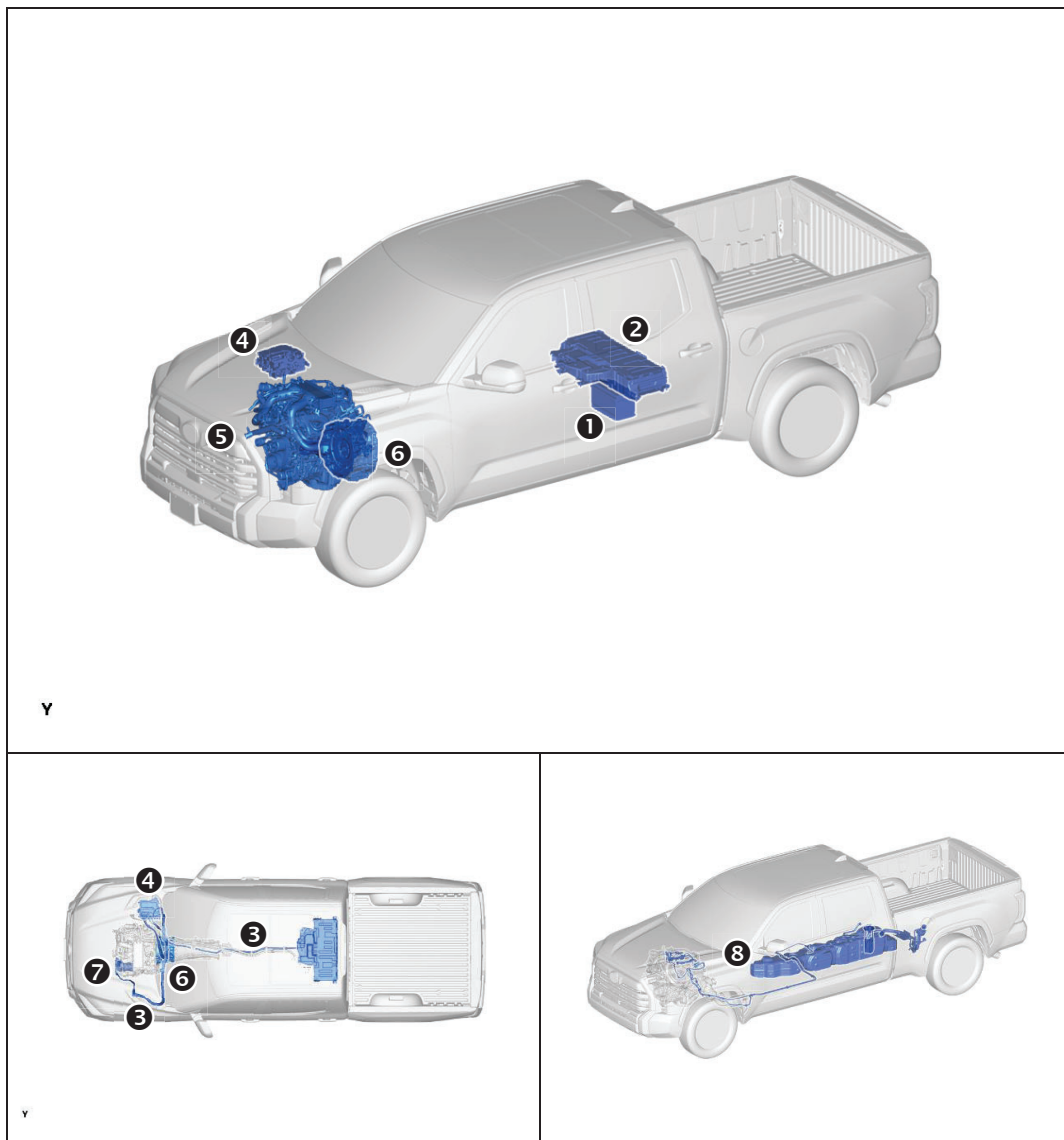
Component		Location	Description
Auxiliary Battery ❶		Cabin Area, Mounted Under Rear Seat	When the ignition switch is on (ACC) or on (IG), the auxiliary battery supplies power to the electrical equipment and ECUs.
HV Battery Pack (HV Supply Battery Assembly) ❷	HV Battery (HV Battery Modules)	Cabin Area, Mounted Under Rear Seat	- Supplies electrical power to MG and compressor with motor assembly in accordance with the driving conditions of the vehicle. - Charged by MG in accordance with the SOC of the HV battery and the driving conditions of the vehicle. - Has a nominal (approximate) voltage of DC 288 V (actual voltage will vary depending on various conditions such as temperature, charge or discharge).
Power Cables ❸		Undercarriage and Engine Compartment	Connects the HV battery, hybrid motor control inverter assembly, hybrid module assembly, and compressor with motor assembly.
Hybrid Motor Control Inverter Assembly ❹	Inverter	Engine Compartment	Converts high-voltage DC (HV battery) into AC (MG) and vice versa (converts AC into DC).
	DC/DC Converter	Engine Compartment	Reduces the HV battery voltage from DC 288 V to approximately DC 14 V in order to supply electricity to body electrical components, as well as to recharge the auxiliary battery.
Gasoline Engine ❺		Engine Compartment	Provides two functions: 1) Powers vehicle. 2) Powers generator to recharge the HV battery pack. The engine is started and stopped under control of the vehicle computer.

Component		Location	Description
Hybrid Module Assembly ⑥	Motor Generator (MG)	Engine Compartment	· Driven by electrical power from the HV battery and generates motive force for the drive wheels. · Generates electricity to recharge the HV battery (regenerative braking) during braking or when the accelerator pedal is not depressed. · Driven by the engine and generates high-voltage electricity in order to charge the HV battery. Also, MG functions as a starter to start the engine.
Compressor with Motor Assembly ⑦		Engine Compartment	Driven at a speed calculated by the air conditioning amplifier assembly, receives drive requests from the hybrid vehicle ECU assembly and takes in, compresses and discharges refrigerant.
Fuel Tank and Fuel Line ⑧		Undercarriage and Center	The fuel tank provides gasoline via a fuel line to the engine. The fuel line is routed from the fuel tank under the right side of the vehicle passing across to the left side of the vehicle to the engine.

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

Specifications

Gasoline Engine:	290 kW, 3.5-liter Aluminum Alloy Engine
Electric Motors:	48hp (36 kw), Permanent Magnet Synchronous Motor
Transmission:	Automatic Only
HV Battery:	288 V Sealed NiMH-Battery
Curb Weight:	5,710-5,864 lbs / 2,590-2,660 kg (for 2WD) 6,008-6,148 lbs / 2,725-2,805 kg (for 4WD)
Fuel Tank:	26.8 Imp gals / 32.2 U.S. gals / 122.0 liters
Frame Material:	Steel Unibody
Body Material:	Steel Panels
Seating Capacity:	5 passenger



Hybrid System Operation

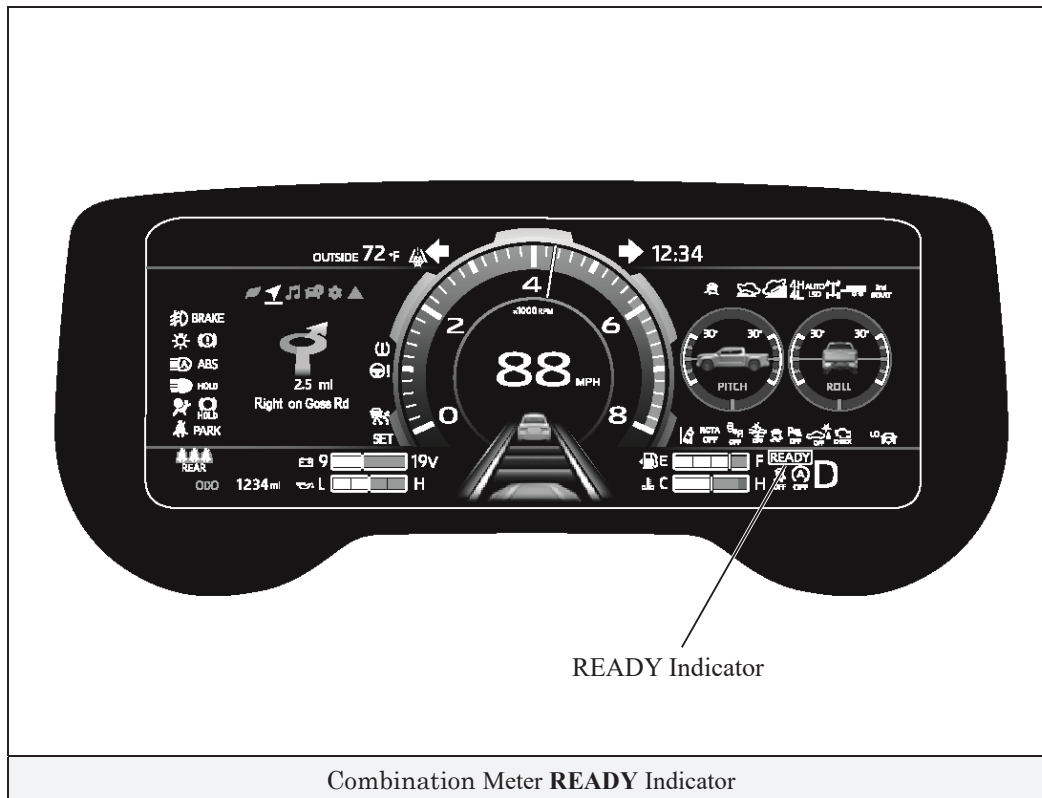
Once the **READY** indicator is illuminated in the instrument cluster, the vehicle may be driven. However, the gasoline engine does not idle like a typical automobile and will start and stop automatically. It is important to recognize and understand the **READY** indicator provided in the instrument 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 TUNDRA, 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.



HV Battery and Auxiliary Battery

The TUNDRA features a high voltage HV Battery 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 cabin area under the rear seats. The metal case is isolated from high voltage and concealed by fabric covers in the cabin area.
- The HV battery pack consists of 40 low voltage (7.2 Volts) NiMH battery modules connected in series to produce approximately 288 Volts. Each NiMH battery module is non-spillable and sealed in a resin 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	288 Volts
Number of NiMH battery modules in the pack	40
NiMH battery module voltage	7.2 Volts

Components Powered by the HV Battery Pack

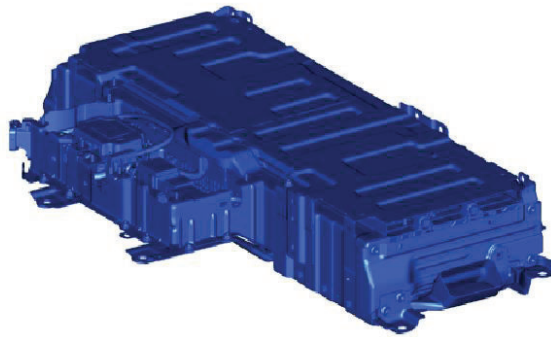
- Hybrid Module Assembly
 - Motor Generator (MG)
- Power Cables
- Compressor with Motor Assembly
- Hybrid Motor Control Inverter Assembly
 - Inverter
 - DC/DC Converter

HV Battery Pack Recycling

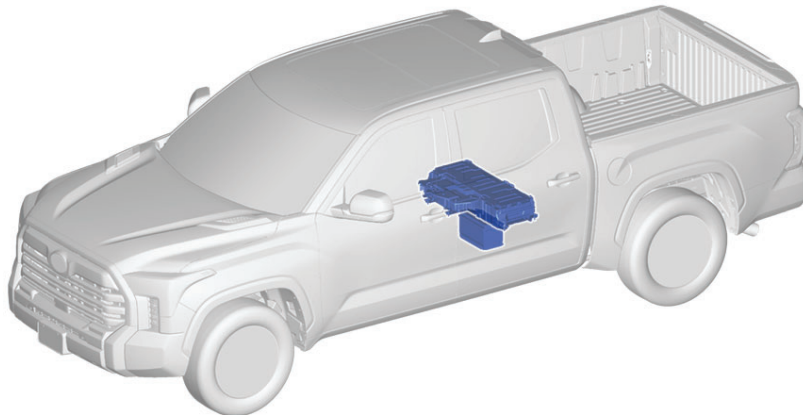
- The HV battery pack is recyclable. Contact either your Toyota distributor as mentioned on the caution label on the HV battery or the nearest Toyota dealer.

Auxiliary Battery

- The TUNDRA also contains a sealed lead-acid 12 Volts battery. This 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 cabin area.



288 Volts HV Battery Pack



12 Volt Auxiliary Battery and HV Battery Pack Mounted in Cabin 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. The inverter creates 3-phase AC to power the motor. Power cables are routed from the inverter to each high voltage motor (motor generator and compressor with motor assembly). 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 Volts normally open relays ❸*. When the vehicle is shut off, the relays stop electricity flow from leaving the HV battery pack.



WARNING:

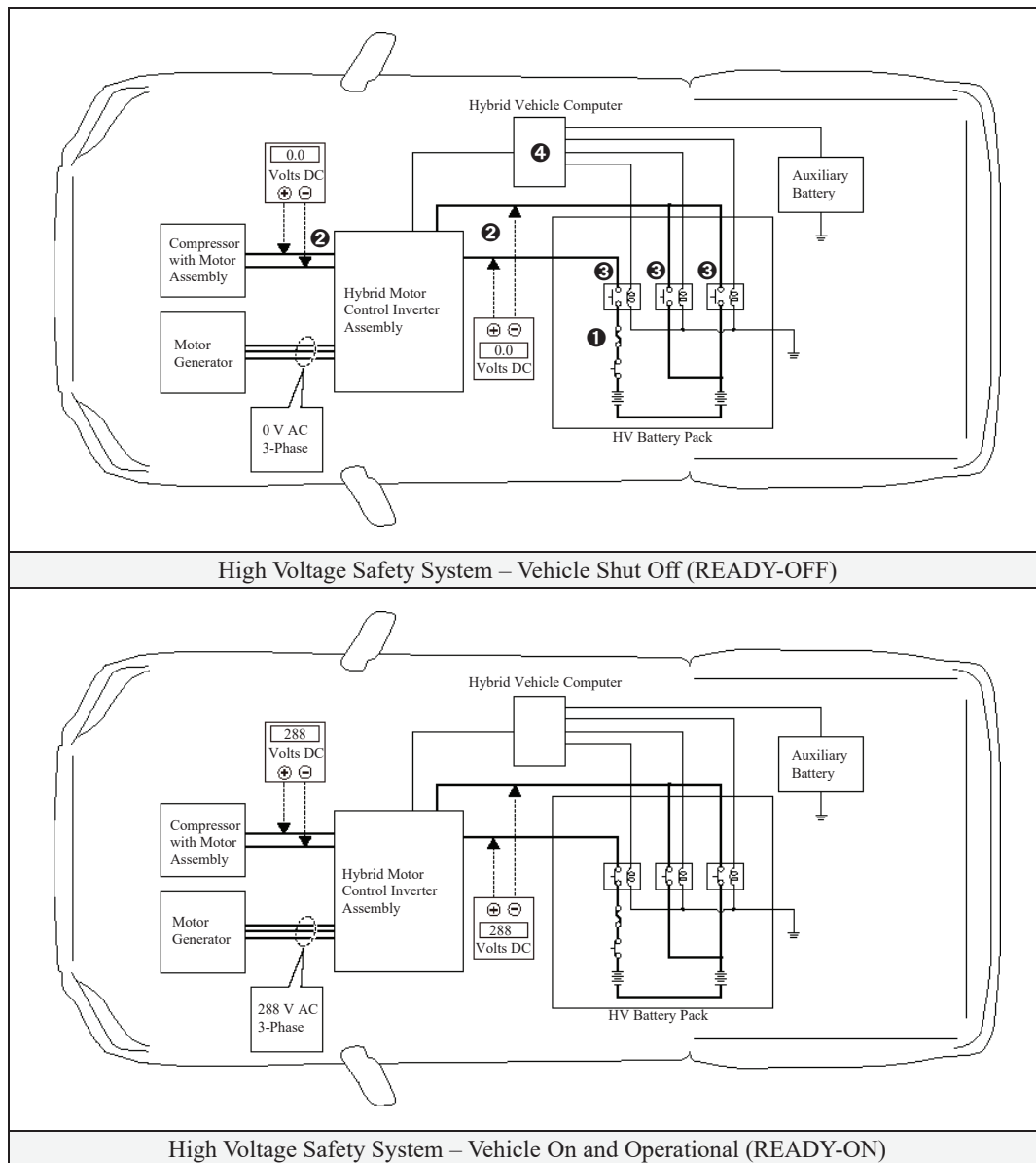
- ***The high voltage system may remain powered for up to 10 minutes after the vehicle is shut off or disabled. To prevent serious injury or death from severe burns or electric shock, avoid touching, cutting, or opening any orange high voltage power cable or high voltage component.***

- 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 in the hybrid vehicle computer 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 indicate a message that the hybrid system is malfunctioning will be displayed 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 16).



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 500 Volts or more.

Spills

The TUNDRA contains the same common automotive fluids used in other non-hybrid Toyota 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 resin battery module is cracked.

A catastrophic crash that would breach both the metal battery pack case and a resin 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.

- 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 a TUNDRA.
Read these instructions before proceeding to the HV battery removal instructions on page 21.



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 breaching any orange high voltage power cable or any high voltage component.***

1. Shut off the ignition (READY indicator is off).

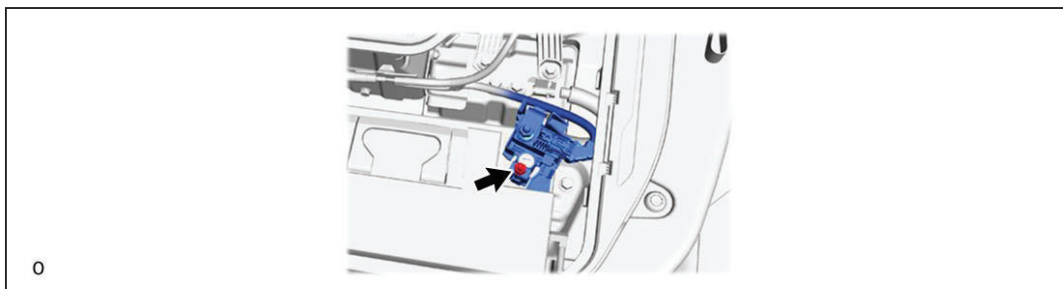
2. Remove battery cover.

a.



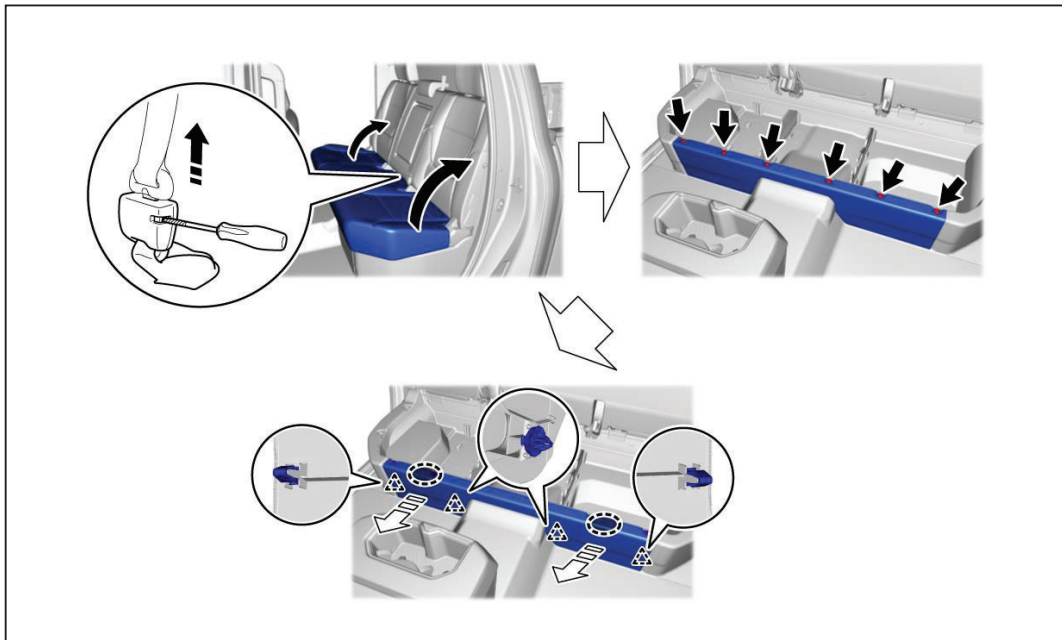
3. Disconnect cable from negative auxiliary battery terminal.

a.



4. Remove rear under coer.

a.



	Place Hands Here		Remove in this Direction (1)
	Remove in this Direction (2)	-	-

5. Remove service plug grip.



CAUTION:

- Be sure to wear insulated gloves.
- Do not inspect or service the high voltage system with the service plug grip installed.
- To reduce the risk of electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.





- To reduce the risk of 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 installing it while you are servicing the vehicle.



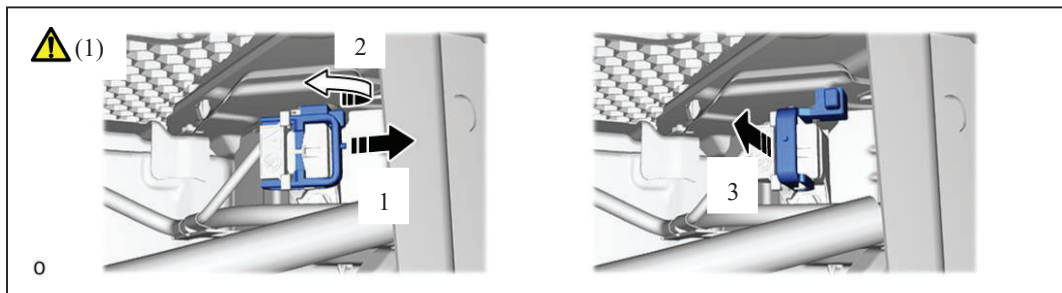
NOTICE:

- After removing the service plug grip, turning the ignition switch to ON (READY) may cause a malfunction. Do not turn the ignition switch to ON (READY) unless instructed by the repair manual.
- Do not touch the terminals of the service plug grip.
- If the service plug grip has been struck or dropped, replace it.

HINT:

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

a.

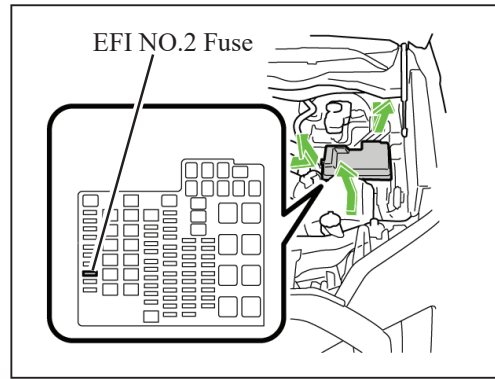


- (1) While wearing insulated gloves, rotate the handle of the service plug grip and remove the service plug grip as indicated by the arrows in the order shown in the illustration.
6. Carry the removed service plug grip in your pocket to prevent other staff from accidentally reinstalling it while you are dismantling the vehicle.
7. 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 20).

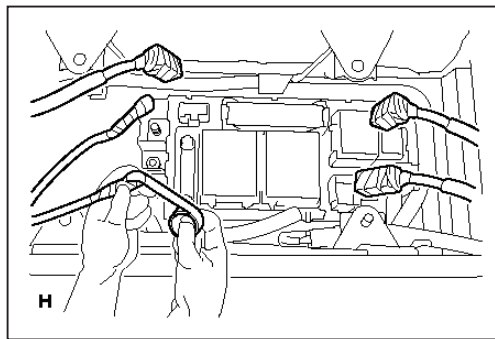
8. If the service plug grip cannot be removed due to damage to the vehicle, remove the **EFI NO.2** fuse (7.5 A).

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.



9. 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.



10. 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.
11. 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.
12. 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.
13. With the exception of the HV battery, remove parts by following procedures which are similar to conventional Toyota vehicles. For the removal of the 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 EV system, fold this sign and
put it on the roof of the vehicle.

Removal of HV battery



WARNING:

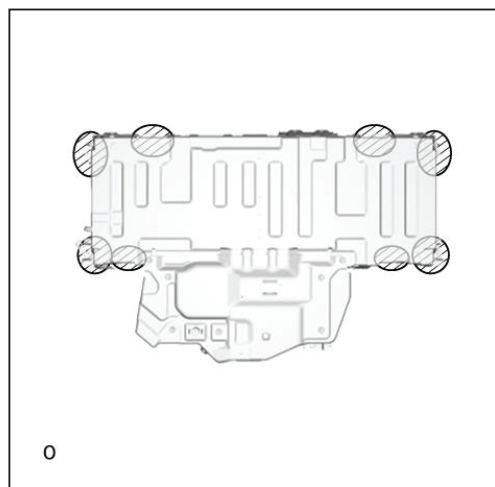
- *Be sure to wear insulated gloves when handling high-voltage parts.*
- *Even if the vehicle is shut off and the relays are off, be sure to remove the service plug grip before performing any further work.*
- *Power remains in the high voltage electrical system for 10 minutes even after the HV battery 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. PRECAUTION



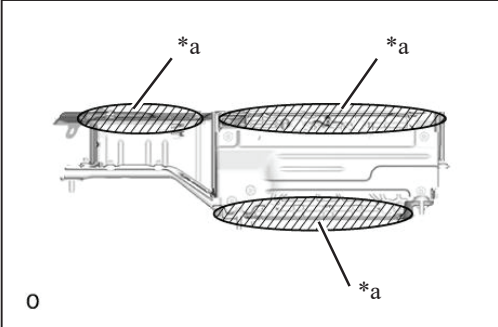
NOTICE:

- Make sure to insulate the high-voltage connectors and terminals of the HV supply battery assembly with insulating tape after removing it.
If the HV supply battery assembly stored without insulating the connectors and terminals, electric shock or fire may result.
- Do not touch any high voltage wire harnesses, connectors or parts with bare hands.
- Hold the areas shown in the illustration and lift the HV supply battery assembly.
- Do not allow foreign matter, such as grease or oil, to adhere to the bolts or nuts of the HV supply battery assembly.





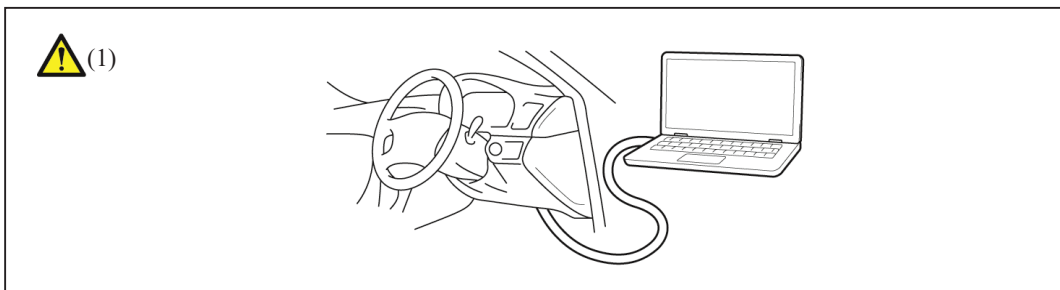
- Do not put your hands into the openings of the HV supply battery assembly.
- When removing/installing/moving the HV supply battery assembly, make sure not to tilt it more than 80°.
- Do not climb on top of or stand on the HV supply battery assembly.
- Do not allow any foreign matter or water to enter the HV supply battery assembly.
- If any bolts, nuts or clips are dropped into the HV supply battery assembly, make sure to remove them.



*a	Opening
----	---------

2. READ VALUE USING GTS

a.



(1) Read the Data List.

Powertrain > Hybrid Control > Data List

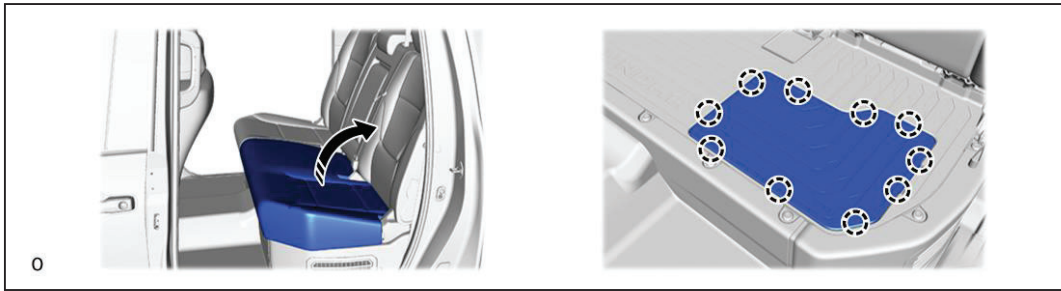
Tester Display
Hybrid/EV Battery Temperature 1
Hybrid/EV Battery Temperature 2
Hybrid/EV Battery Temperature 3
Hybrid/EV Battery Temperature 4
Hybrid/EV Battery Temperature 5
Hybrid/EV Battery Temperature 6

Notice:

If any of the temperatures listed in "Hybrid/EV Battery Temperature 1 to 6" are 50°C or more, leave the vehicle until the temperature drops to less than 50°C.

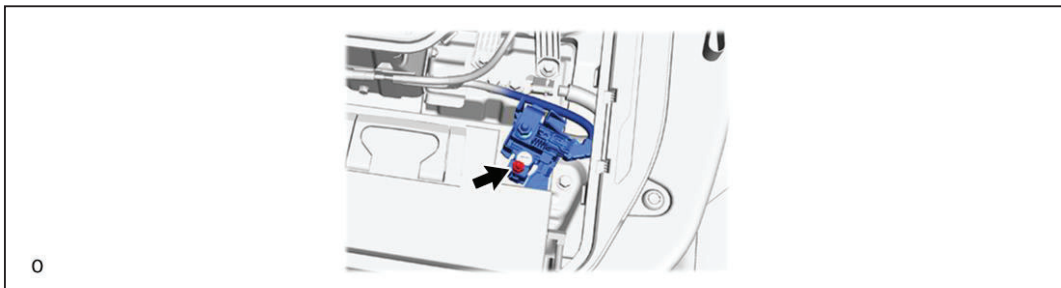
3. REMOVE BATTERY COVER

a.



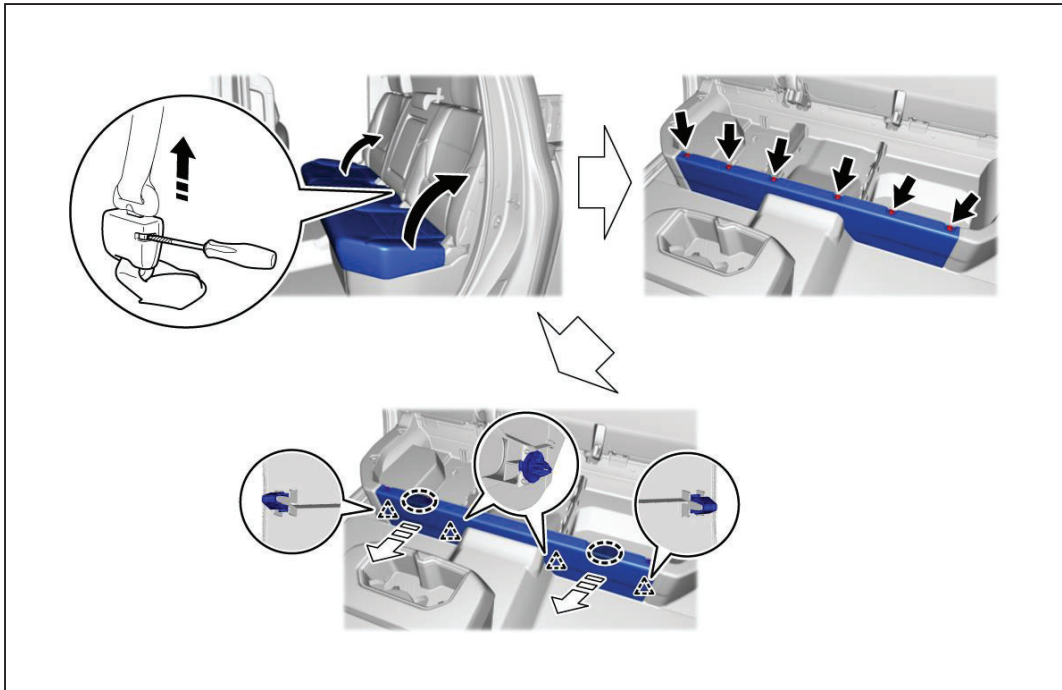
4. DISCONNECT CABLE FROM NEGATIVE AUXILIARY BATTERY TERMINAL

a.



5. REMOVE REAR UNDER COVER

a.



	Place Hands Here		Remove in this Direction (1)
	Remove in this Direction (2)	-	-

6. REMOVE SERVICE PLUG GRIP



CAUTION:

- Be sure to wear insulated gloves.
- Do not inspect or service the high voltage system with the service plug grip installed.
- To reduce the risk of electric shock, make sure to remove the service plug grip to cut off the high voltage circuit before servicing the vehicle.





- To reduce the risk of 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 installing it while you are servicing the vehicle.



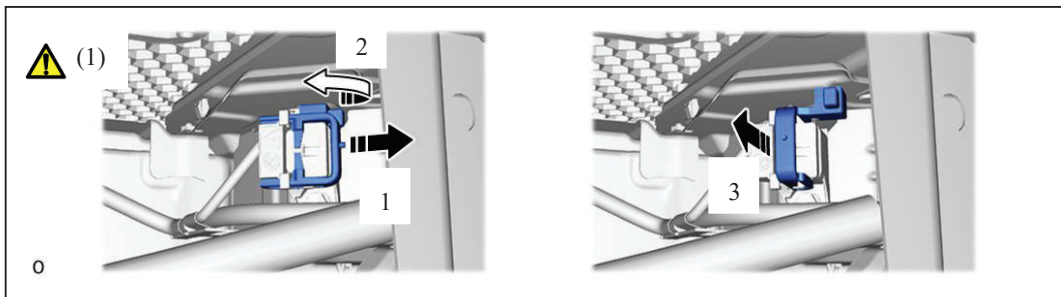
NOTICE:

- After removing the service plug grip, turning the ignition switch to ON (READY) may cause a malfunction. Do not turn the ignition switch to ON (READY) unless instructed by the repair manual.
- Do not touch the terminals of the service plug grip.
- If the service plug grip has been struck or dropped, replace it.

HINT:

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

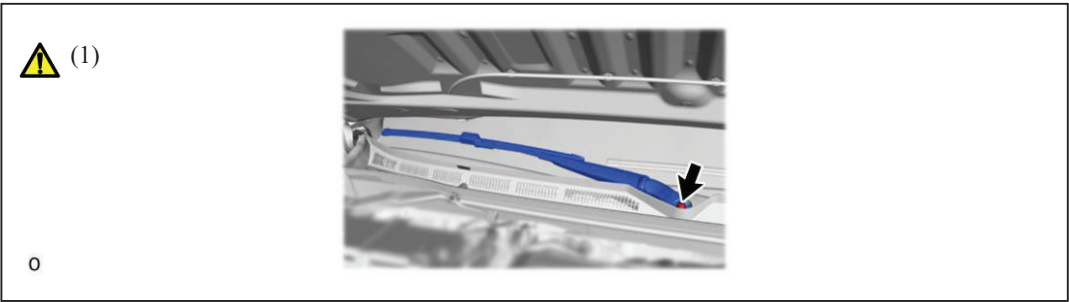
a.



- (1) While wearing insulated gloves, 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.

7. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH

a.



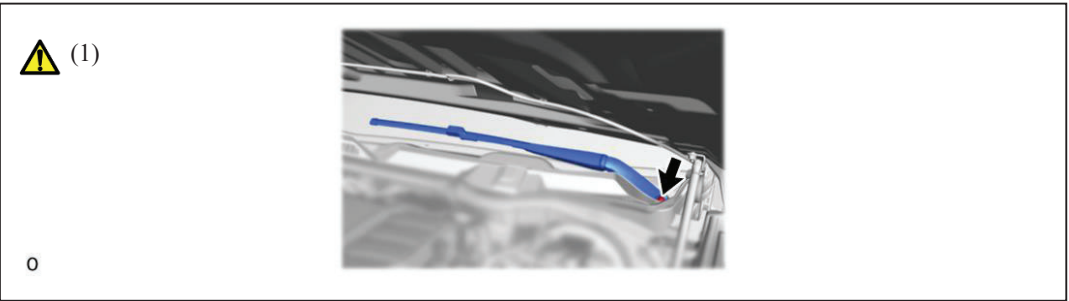
(1) Remove the nut and front wiper arm and blade assembly RH.

Hint:

While holding the front wiper arm and blade assembly RH, loosen the nut.

8. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH

a.



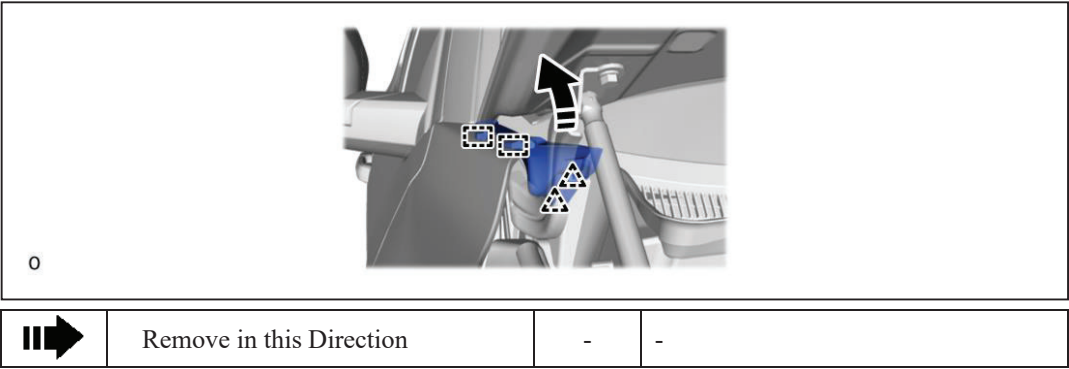
(1) Remove the nut and the front wiper arm and blade assembly LH.

Hint:

While holding the front wiper arm and blade assembly LH, loosen the nut.

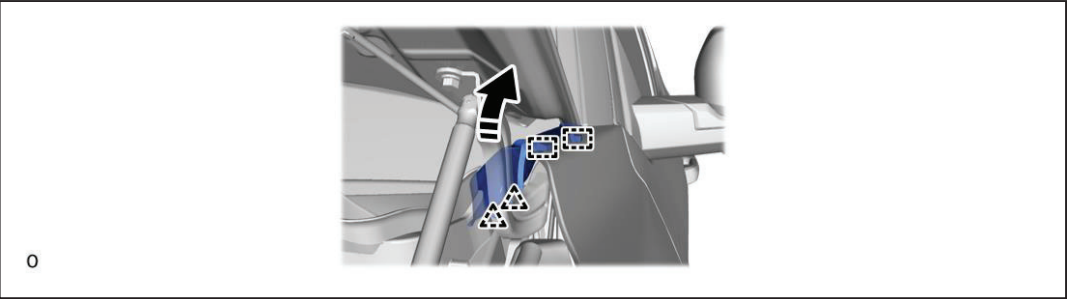
9. REMOVE FRONT FENDER TO COWL SIDE SEAL RH

a.



10. REMOVE FRONT FENDER TO COWL SIDE SEAL LH

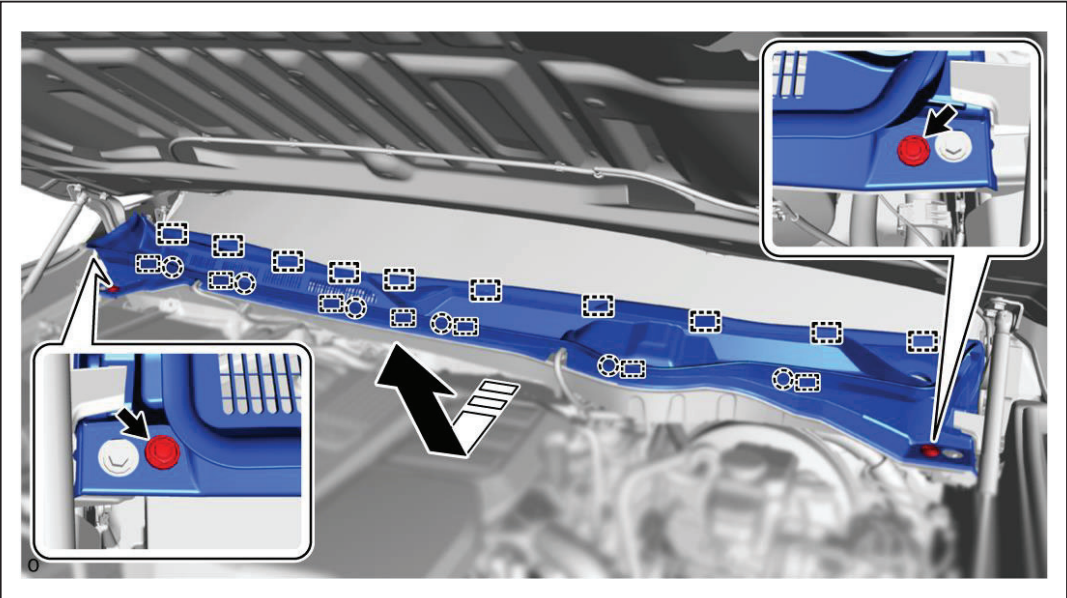
a.



	Remove in this Direction	-	-
---	--------------------------	---	---

11. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY

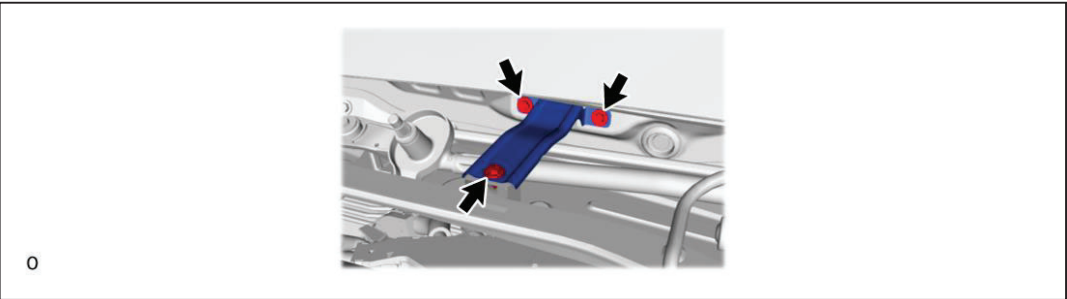
a.



	Remove in this Direction	-	-
---	--------------------------	---	---

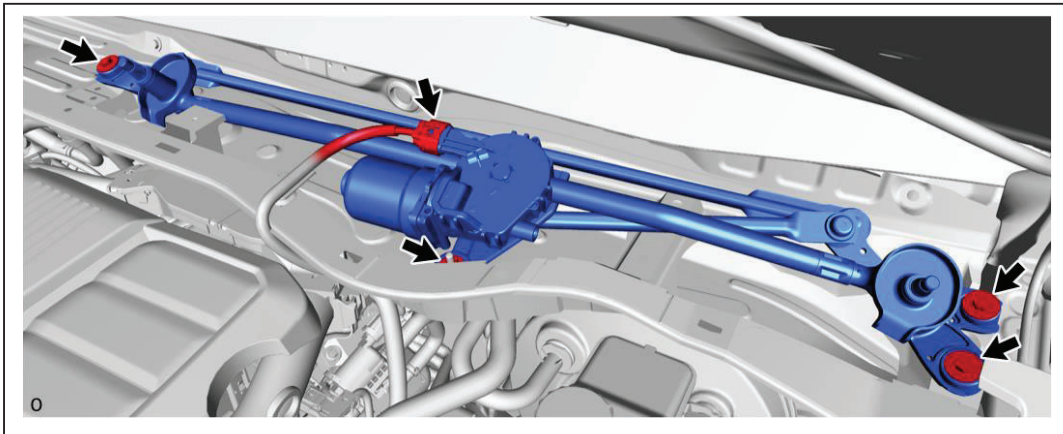
12. REMOVE INNER NO. 2 COWL TOP REINFORCEMENT

a.



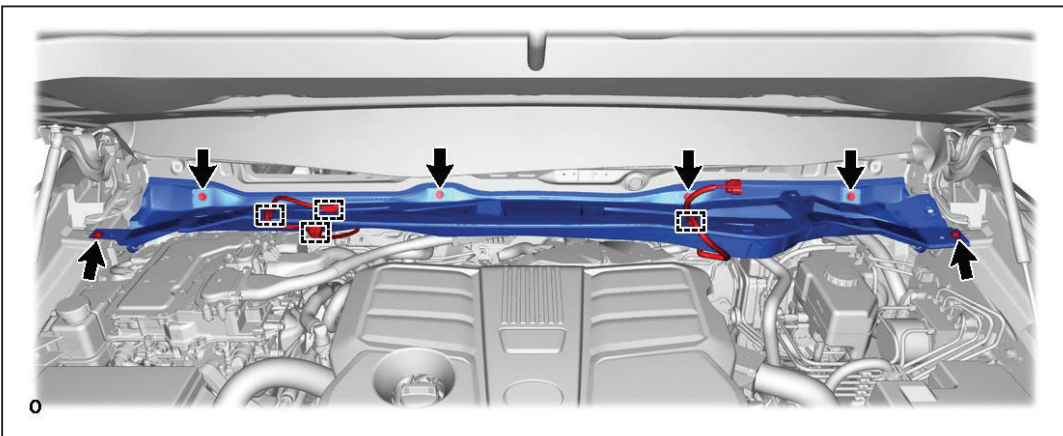
13. REMOVE WINDSHIELD WIPER MOTOR AND LINK ASSEMBLY

a.



14. REMOVE OUTER COWL TOP PANEL SUB-ASSEMBLY

a.



15. REMOVE UPPER INVERTER COVER SUB-ASSEMBLY



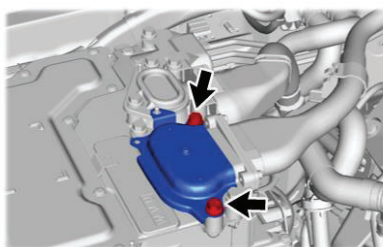
CAUTION:

Wear insulated gloves.

NOTICE:

- Make sure to pull the upper inverter cover sub-assembly straight up, as a connector is connected to the bottom of the cover.
- Do not touch the upper inverter cover sub-assembly waterproofing rubber.
- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.

a.



0

16. REMOVE INVERTER TERMINAL COVER



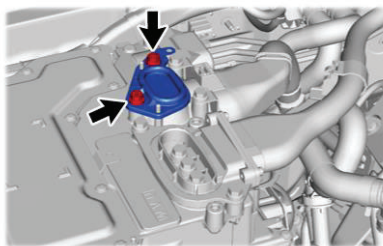
CAUTION:

Wear insulated gloves.

NOTICE:

- Make sure to pull the inverter terminal cover straight up, as a connector is connected to the bottom of the cover.
- Do not touch the inverter terminal cover waterproofing rubber.
- Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.

a.

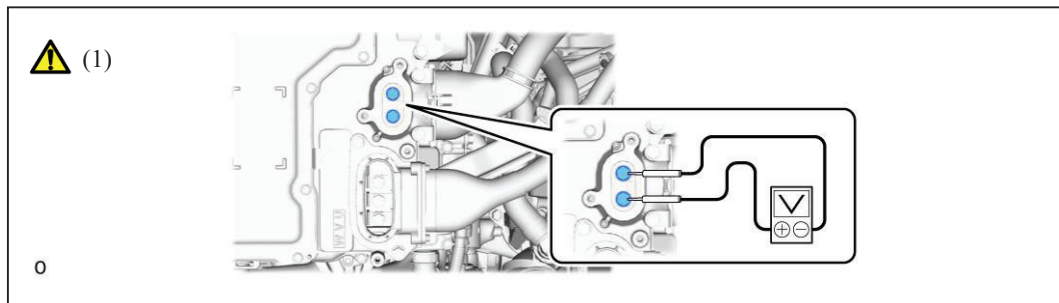


0

17. CHECK TERMINAL VOLTAGE

	CAUTION: Wear insulated gloves. NOTICE: Do not allow any foreign matter or water to enter the hybrid motor control inverter assembly.
---	--

a.



- (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.

18. INSTALL INVERTER TERMINAL COVER

	CAUTION: Wear insulated gloves. NOTICE: • Visually confirm that the inverter terminal cover waterproofing rubber is securely installed before installing the inverter terminal cover. • Do not touch the inverter terminal cover waterproofing rubber.
---	---

a.

Torque:

8.0 N*m (82 kgf*cm, 71 in.*lbf)

19. INSTALL UPPER INVERTER COVER SUB-ASSEMBLY

	CAUTION:
	Wear insulated gloves.
	NOTICE:
	• Visually confirm that the upper inverter cover sub-assembly waterproofing rubber is securely installed before installing the upper inverter cover sub-assembly. • Do not touch the upper inverter cover sub-assembly waterproofing rubber. • Make sure that the interlock is fully engaged.

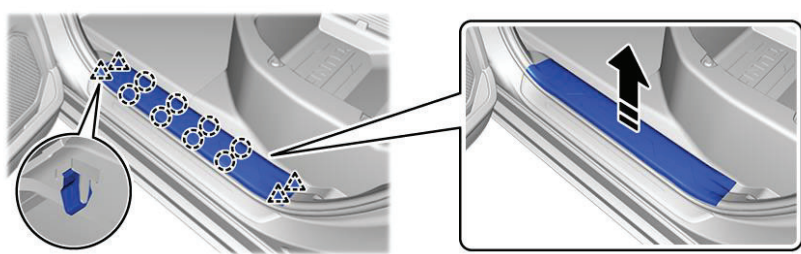
a.

Torque:

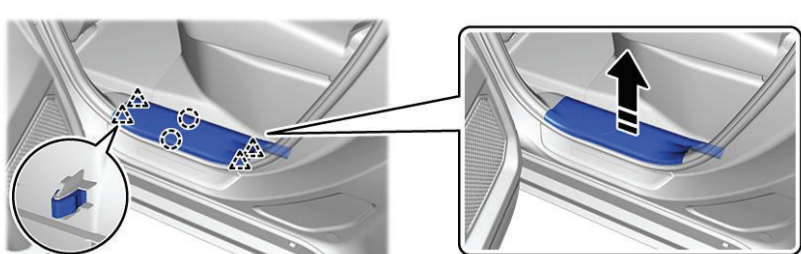
8.0 N*m (82 kgf*cm, 71 in.*lbf)

20. REMOVE REAR DOOR SCUFF PLATE LH

a. for CrewMax:

			
	Remove in this Direction	-	-

b. for Double Cab:

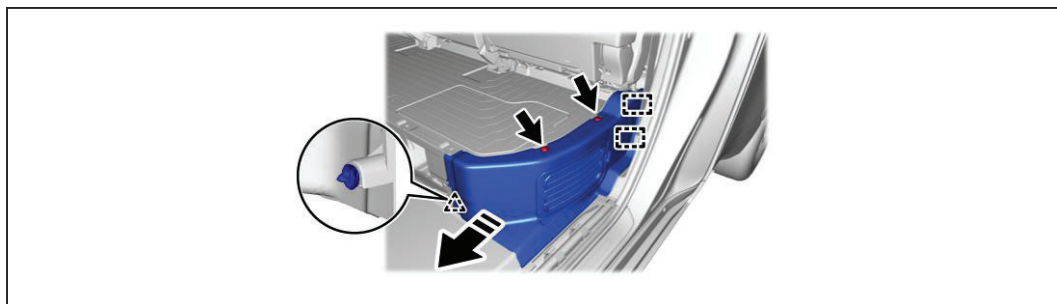
			
	Remove in this Direction	-	-

21. REMOVE REAR DOOR SCUFF PLATE RH

a. Use the same procedure described for the LH side.

22. REMOVE REAR UNDER SIDE COVER LH

a.



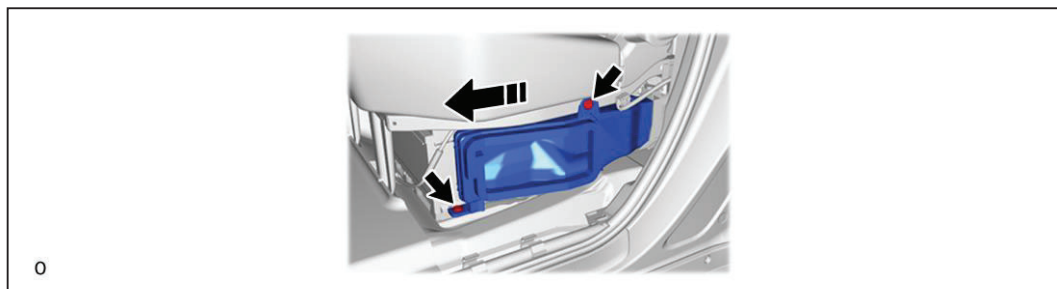
	Remove in this Direction	-	-
---	--------------------------	---	---

23. REMOVE REAR UNDER SIDE COVER RH

a. Use the same procedure described for the LH side.

24. REMOVE NO. 1 HYBRID BATTERY INTAKE DUCT LH

a.



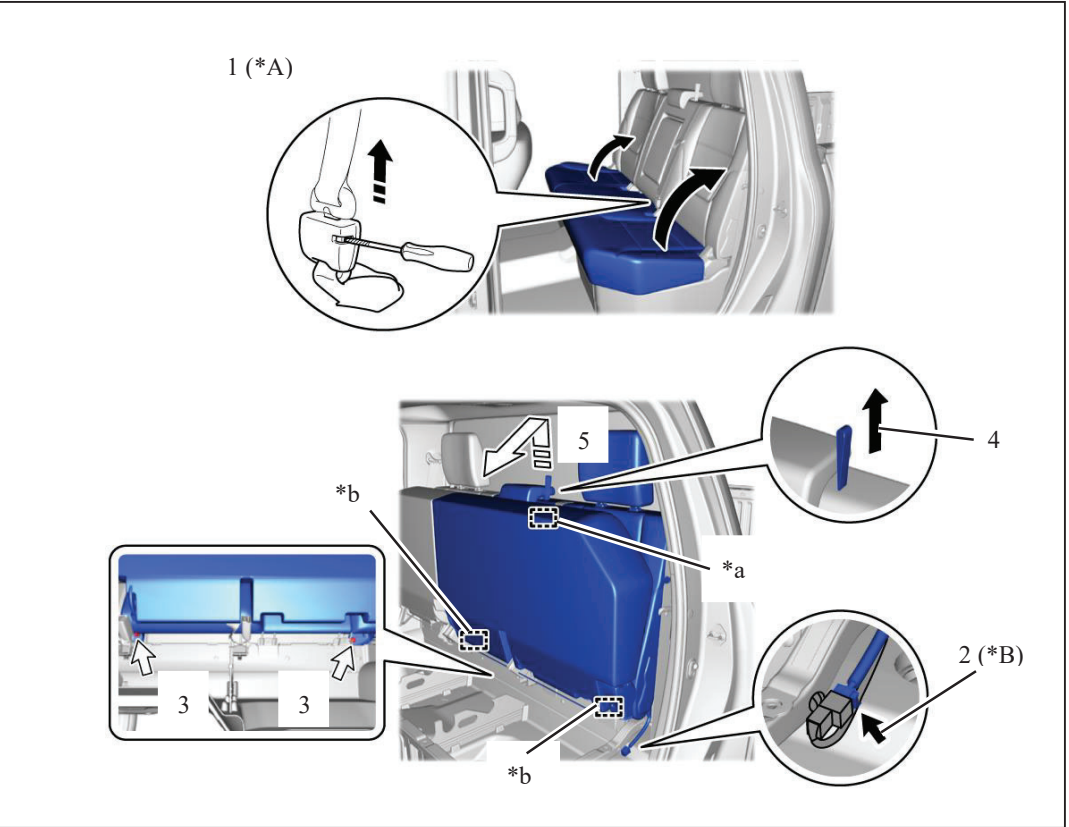
	Remove in this Direction	-	-
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25. REMOVE NO. 1 HYBRID BATTERY INTAKE DUCT

a. Use the same procedure described for the LH side.

26. REMOVE REAR SEAT ASSEMBLY LH

a.

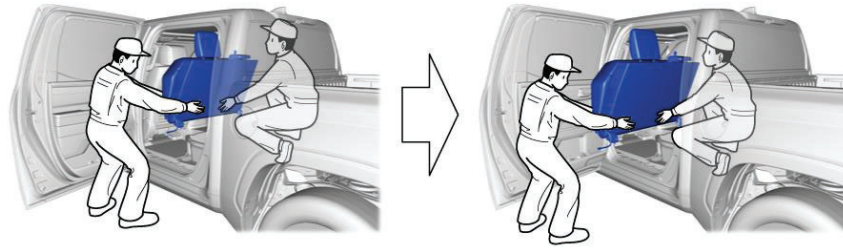


*A	w/o Seat Heater System	*B	w/ Seat Heater System
*a	Latch	*b	Location Pin
	Remove in this Direction (1)		Remove in this Direction (2)
	Connector		Bolt

- (1) w/o Seat Heater System:
- Using a screwdriver, push the buckle button to release the lock and disconnect the rear center outer seat belt assembly.
- Fold up the 2 rear seat cushion assemblies.
- (2) w/ Seat Heater System:
- Disconnect the connector.
- (3) Remove the 2 bolts
- (4) Pull the belt of the rear seatback lock assembly and unlock the latch.
- (5) Pull out the location pins as shown in illustration and remove the rear seat assembly LH.

b.

 (1)



0

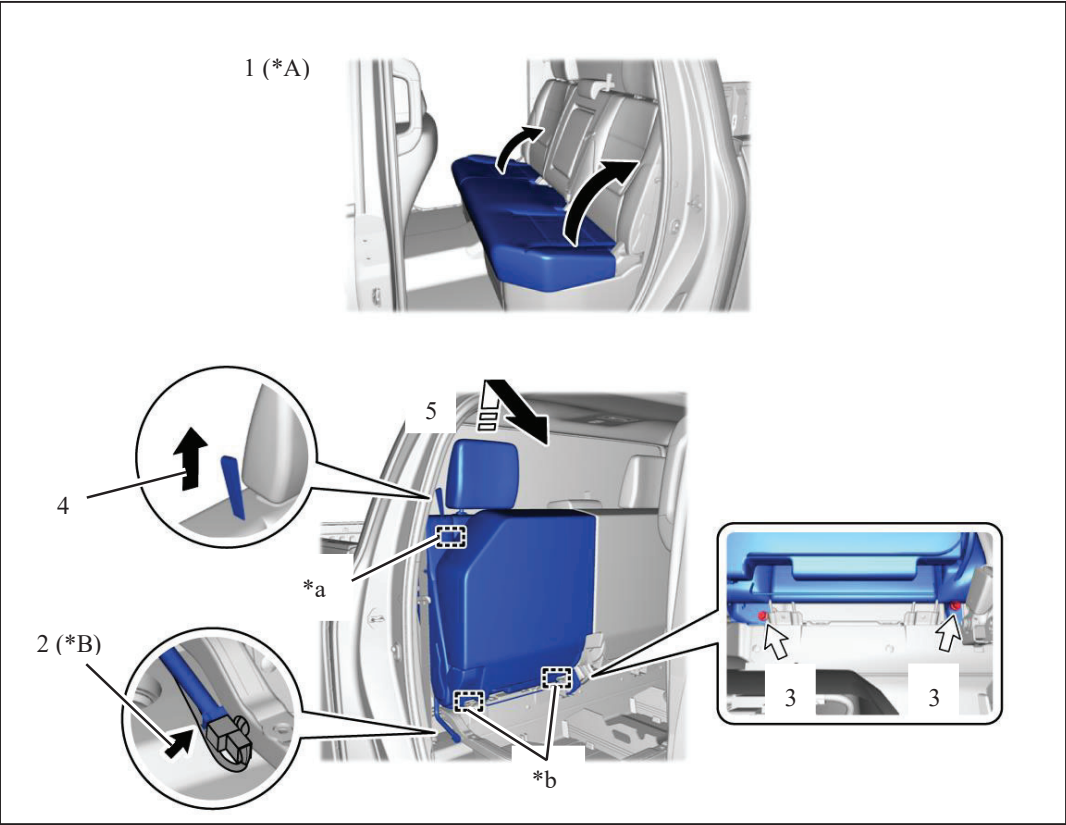
(1) Remove and carry the rear seat assembly LH out of the vehicle.

Notice:

Carrying the rear seat assembly LH from the vehicle must be performed by multiple people.

27. REMOVE REAR SEAT ASSEMBLY RH

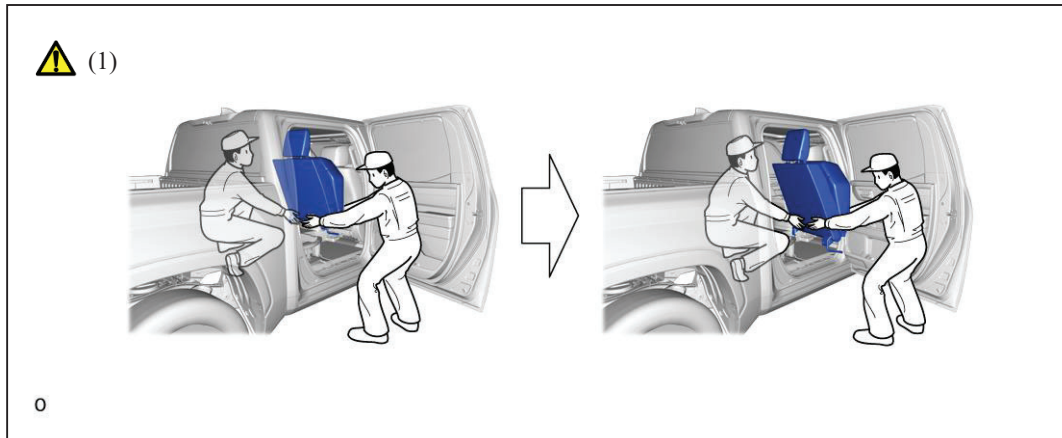
a.



*A	w/o Seat Heater System	*B	w/ Seat Heater System
*a	Latch	*b	Location Pin
	Remove in this Direction (1)		Connector
	Bolt	-	-

- (1) w/o Seat Heater System:
Fold up the 2 rear seat cushion assemblies.
- (2) w/ Seat Heater System:
Disconnect the connector.
- (3) Remove the 2 bolts
- (4) Pull the belt of the rear seatback lock assembly and unlock the latch.
- (5) Pull out the location pins as shown in illustration and remove the rear seat assembly RH.

b.



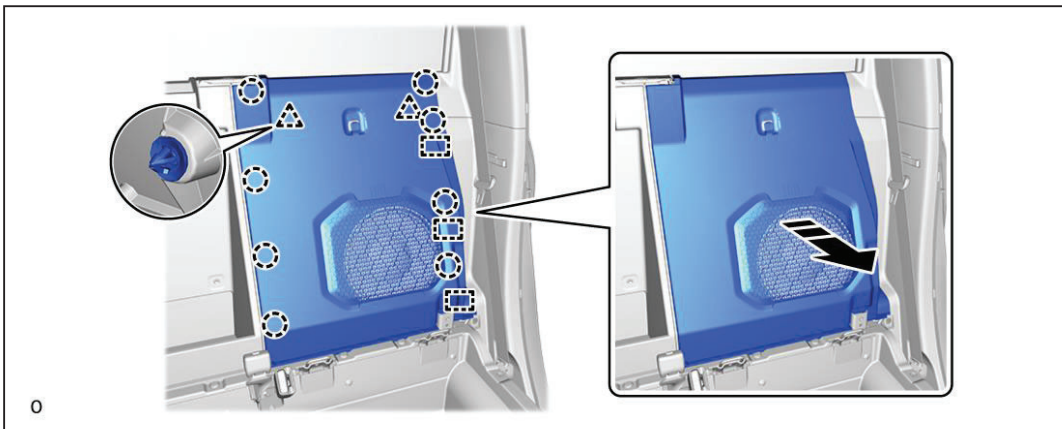
(1) Remove and carry the rear seat assembly RH out of the vehicle.

Notice:

Carrying the rear seat assembly RH from the vehicle must be performed by multiple people.

28. REMOVE LUGGAGE ROOM BOX SEPARATOR (for 12 Speakers)

a. for CrewMax:

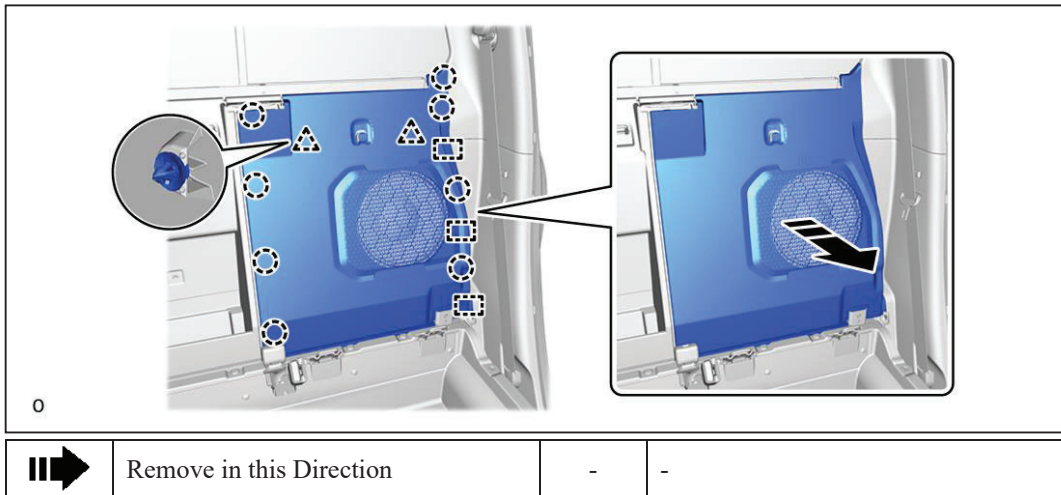


Remove in this Direction

-

-

b. for Double Cab:

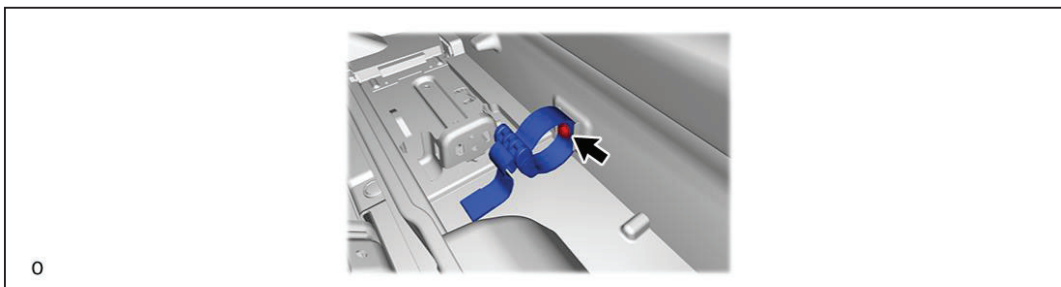


29. REMOVE LUGGAGE COMPARTMENT SIDE TRAY (except 12 Speakers)

- a. Use the same procedure described for the luggage room box separator.

30. REMOVE PACKAGE TRAY TRIM STRAP

- a.



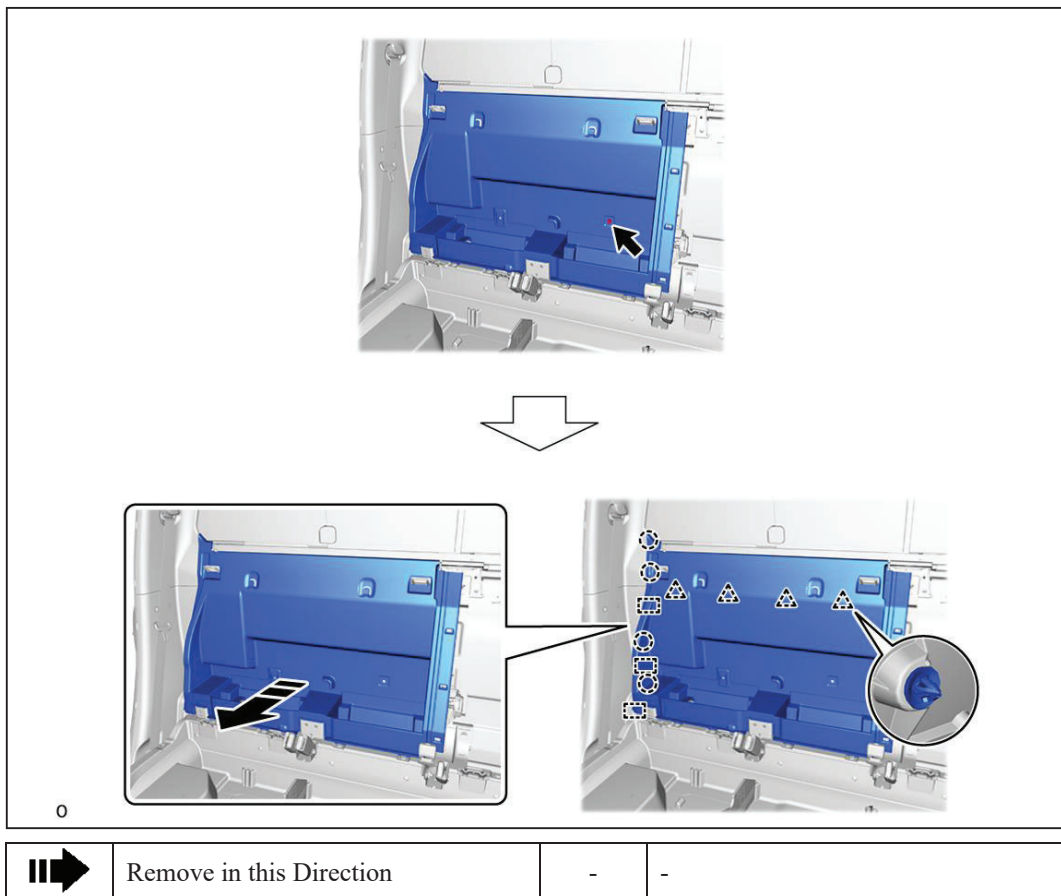
31. REMOVE LUGGAGE COMPARTMENT SIDE TRAY

a. for CrewMax:

0

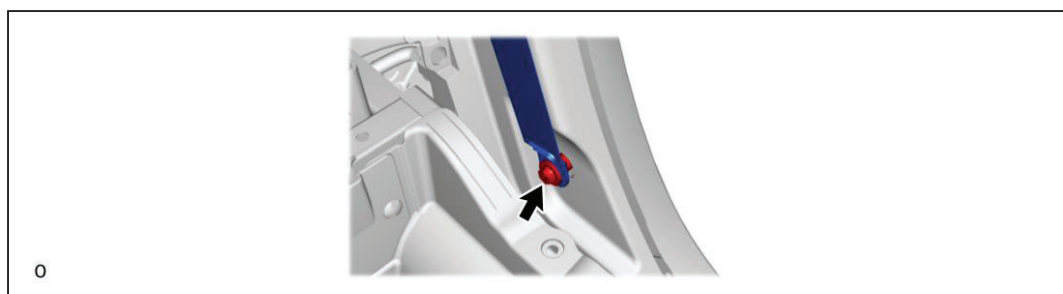
	Remove in this Direction	-	-
--	--------------------------	---	---

b. for Double Cab:



32. DISCONNECT REAR SEAT OUTER BELT ASSEMBLY LH (FLOOR ANCHOR)

a.



33. REMOVE REAR DOOR OPENING TRIM WEATHERSTRIP LH

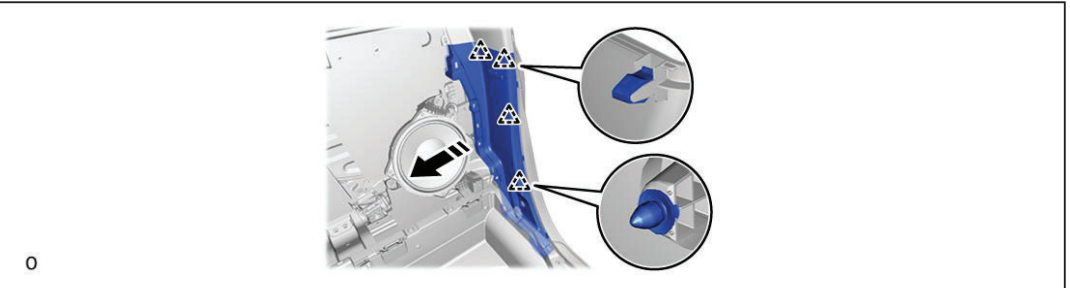
	HINT: Remove a part of the rear door opening trim weatherstrip LH so that the lower quarter trim panel assembly LH can be removed.
---	--

a.



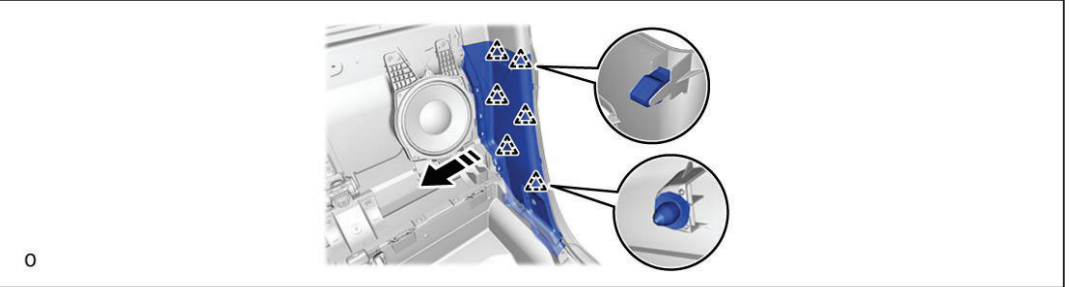
34. REMOVE LOWER QUARTER TRIM PANEL ASSEMBLY LH

a. for CrewMax:



	Remove in this Direction	-	-
---	--------------------------	---	---

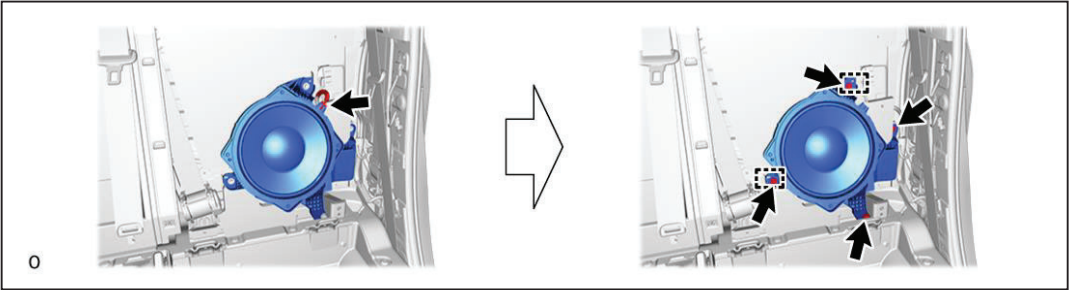
b. for Double Cab:



	Remove in this Direction	-	-
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35. REMOVE NO. 1 SPEAKER WITH BOX ASSEMBLY (for 12 Speakers)

a. for CrewMax:

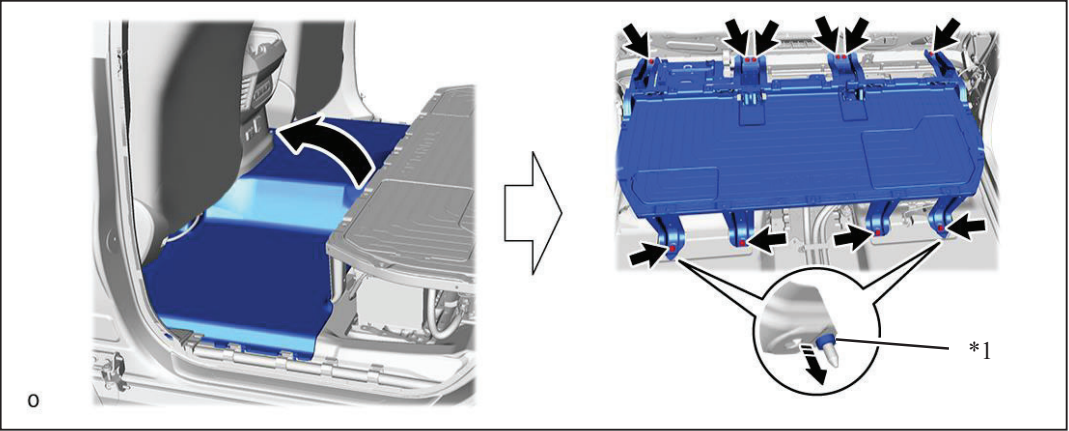


b. for Double Cab:



36. REMOVE REAR SEAT LEG SUB-ASSEMBLY (CHILD RESTRAINT SEAT ANCHOR BRACKET)

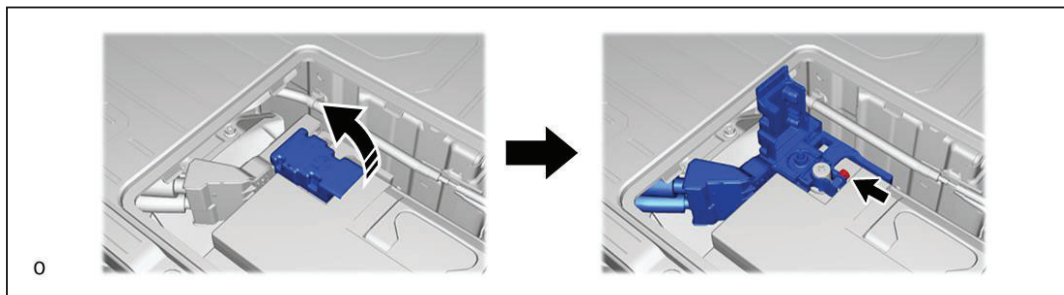
a.



*1	Rear Seat Leg Stopper Sub-assembly	-	-
➡	Remove in this Direction	-	-

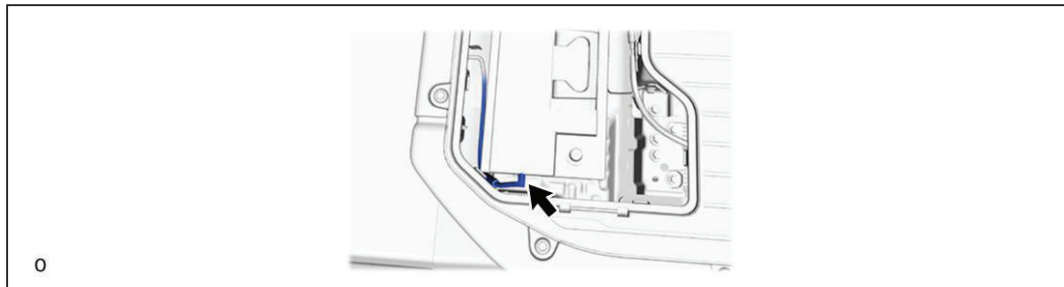
37. DISCONNECT CABLE FROM POSITIVE AUXILIARY BATTERY
TERMINAL

a.



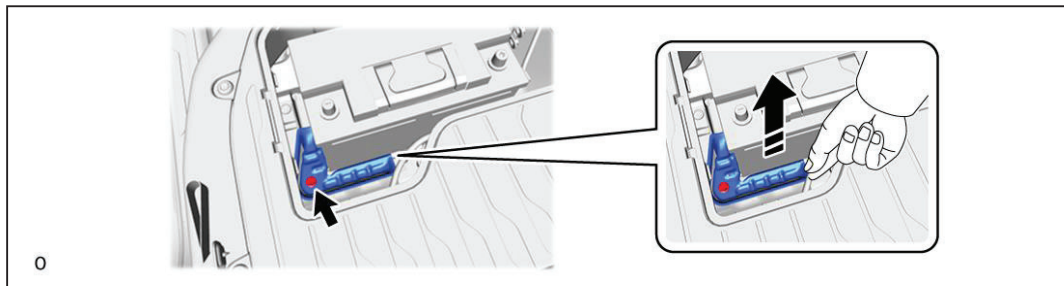
38. DISCONNECT BATTERY HOSE

a.



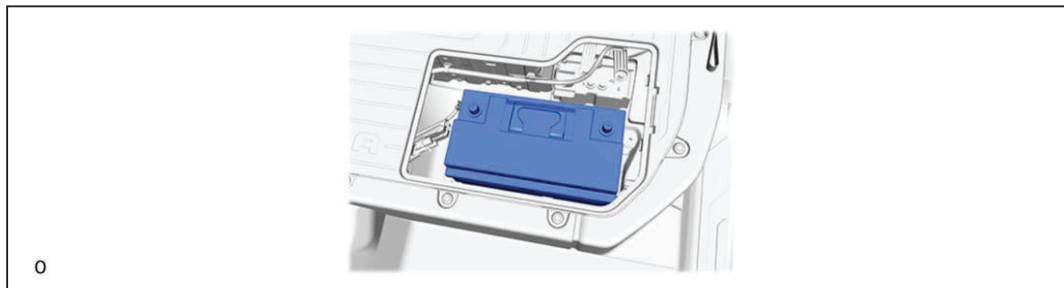
39. REMOVE NO. 3 BATTERY CLAMP

a.



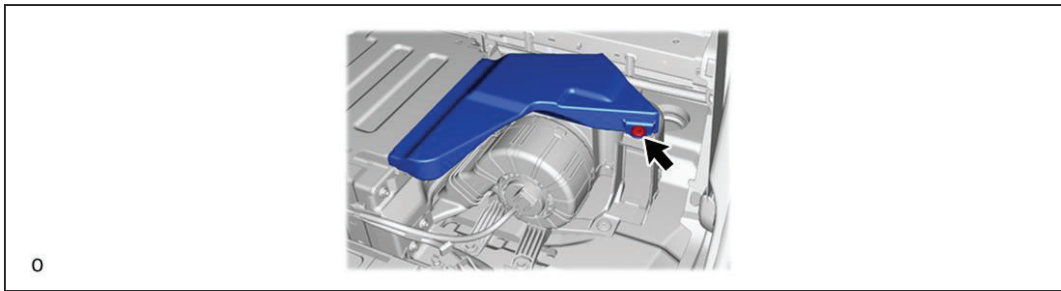
40. REMOVE AUXILIARY BATTERY

a.



41. REMOVE NO. 1 HYBRID BATTERY EXHAUST DUCT LH

a.

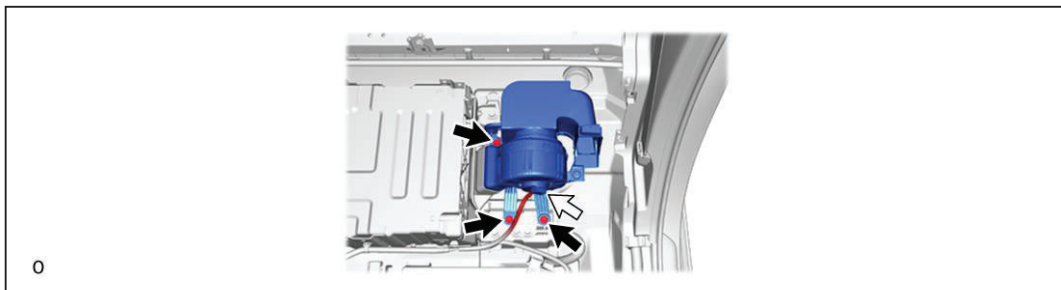


42. REMOVE NO. 1 HYBRID BATTERY EXHAUST DUCT

a. Use the same procedure described for the LH side.

43. REMOVE NO. 2 BATTERY COOLING BLOWER ASSEMBLY WITH NO. 2 HYBRID BATTERY INTAKE DUCT LH

a.



	Bolt		Connector
---	------	---	-----------

44. REMOVE BATTERY COOLING BLOWER ASSEMBLY WITH NO. 2 HYBRID BATTERY INTAKE DUCT RH

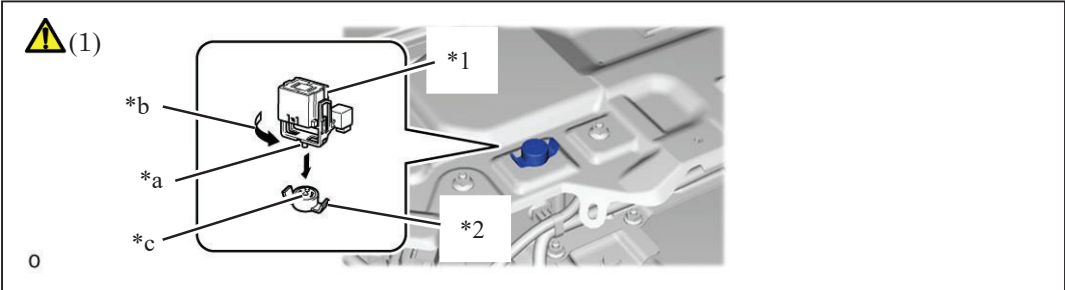
a. Use the same procedure described for the LH side.

45. REMOVE BATTERY COVER LOCK STRIKER



CAUTION:
Wear insulated gloves.

a.



*1	Service Plug Grip	*2	Battery Cover Lock Striker
*a	Projection	*b	Turn
*c	Button	-	-

(1) Using the service plug grip, remove the battery cover lock striker.

Hint:

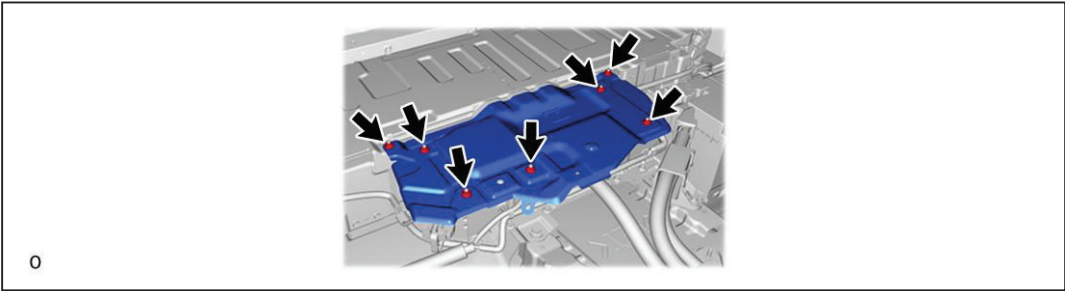
Insert the projection of the service plug grip and turn the button of the battery cover lock striker counterclockwise to release the lock.

46. REMOVE NO. 9 HV BATTERY SHIELD PANEL



CAUTION:
Wear insulated gloves.

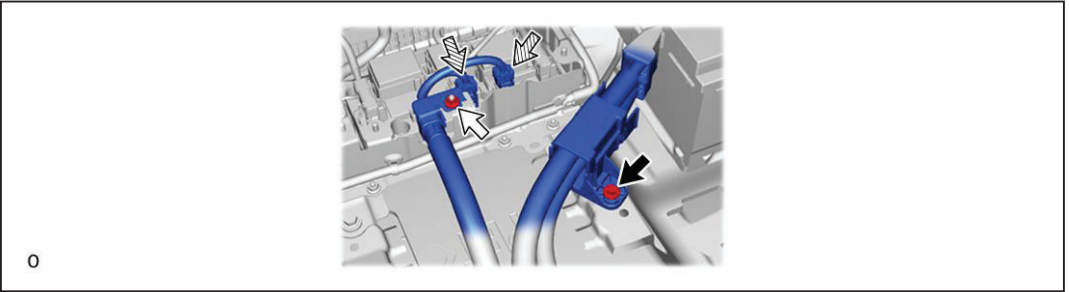
a.



47. DISCONNECT FLOOR UNDER WIRE

	CAUTION: Wear insulated gloves.
---	--

a.

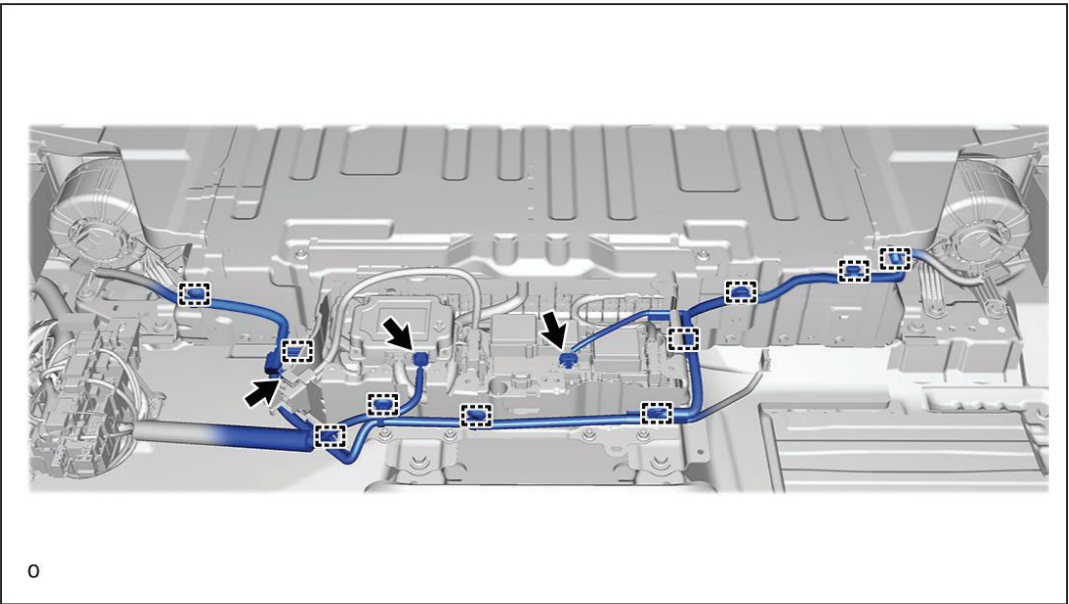


	Bolt		Nut
	Connector	-	-

48. DISCONNECT FLOOR WIRE

	CAUTION: Wear insulated gloves.
---	--

a.

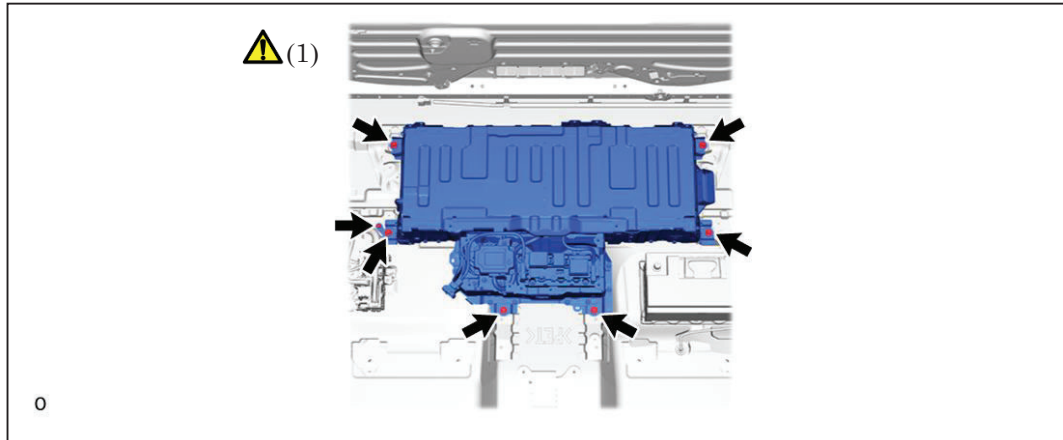


49. REMOVE HV SUPPLY BATTERY ASSEMBLY



CAUTION:
Wear insulated gloves.

a.



(1) Remove the 7 bolts and HV supply battery assembly.

Notice:

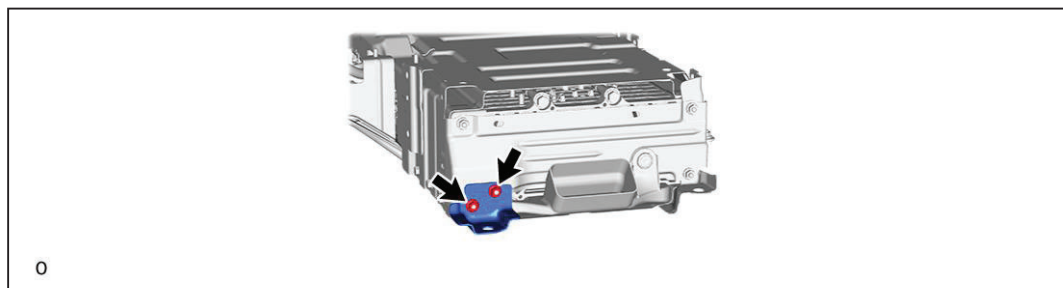
- To prevent the wire harness from being caught, make sure to bundle the wire harness using insulating tape or equivalent.
- Since the HV supply battery assembly is very heavy, 2 people are needed to remove it.
- When removing/installing/moving the HV supply battery assembly, make sure not to tilt it more than 80°.

50. REMOVE NO. 2 HYBRID BATTERY CARRIER BRACKET



CAUTION:
Wear insulated gloves.

a.

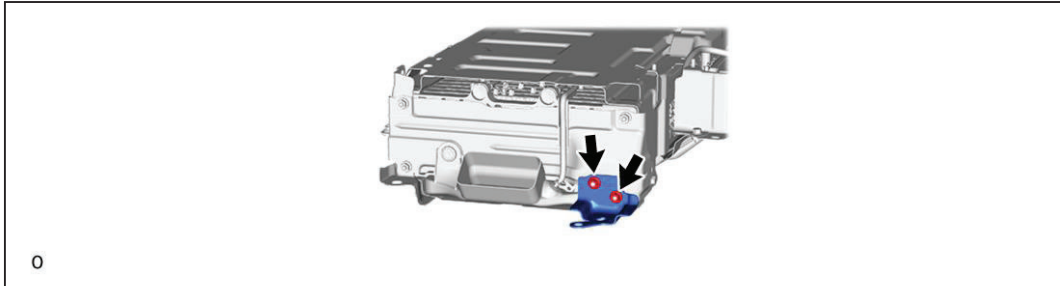


51. REMOVE NO. 1 HYBRID BATTERY CARRIER BRACKET



CAUTION:
Wear insulating gloves.

a.

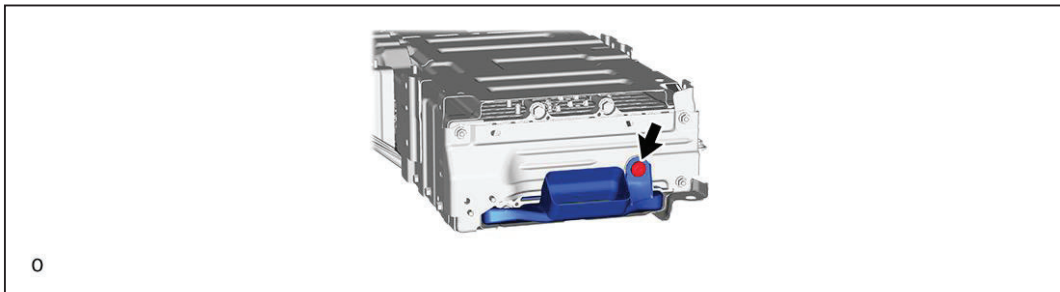


52. REMOVE NO. 3 HYBRID BATTERY INTAKE DUCT LH



CAUTION:
Wear insulated gloves.

a.

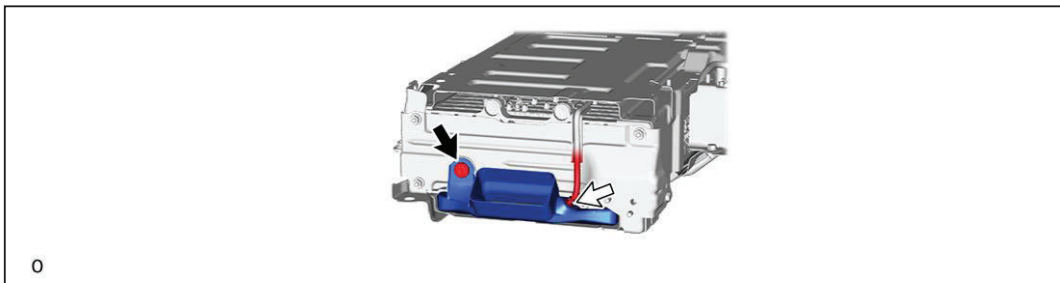


53. REMOVE NO. 3 HYBRID BATTERY INTAKE DUCT RH



CAUTION:
Wear insulated gloves.

a.

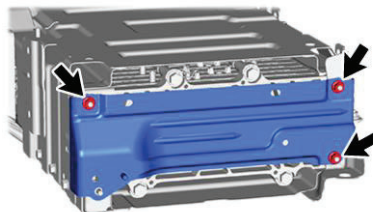


54. REMOVE NO. 2 HV BATTERY SHIELD PANEL



CAUTION:
Wear insulated gloves.

a.



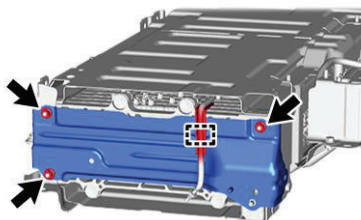
0

55. REMOVE NO. 1 HV BATTERY SHIELD PANEL



CAUTION:
Wear insulated gloves.

a.



0