



PRIUS+  
PRIUSV



# Hybrid

## *Emergency Response Guide*



## Foreword

In March 2012, Toyota released the PRIUS +/PRIUS v gasoline-electric hybrid vehicle. To educate and assist emergency responders in the safe handling of the PRIUS +/PRIUS v hybrid technology, Toyota published this PRIUS +/PRIUS v Emergency Response Guide.

The PRIUS +/PRIUS v is based on the 3<sup>rd</sup> generation Toyota PRIUS. While many features from the Toyota PRIUS are similar, emergency responders should recognize and understand the new, updated features of the PRIUS +/PRIUS v covered in this guide.

High voltage electricity powers the electric motor, generator, air conditioning compressor and inverter/converter. All other automotive electrical devices such as the headlights, radio, and gauges are powered from a separate 12 Volt auxiliary battery. Numerous safeguards have been designed into the PRIUS +/PRIUS v to help ensure the high voltage, approximately 201.6 Volt, Li-ion Hybrid Vehicle (HV) battery assembly is kept safe and secure in an accident.

The PRIUS +/PRIUS v utilizes the following electrical systems:

- Maximum 650 Volts AC
- Nominal 201.6 Volts DC
- Maximum 27 Volts AC
- Nominal 12 Volts DC

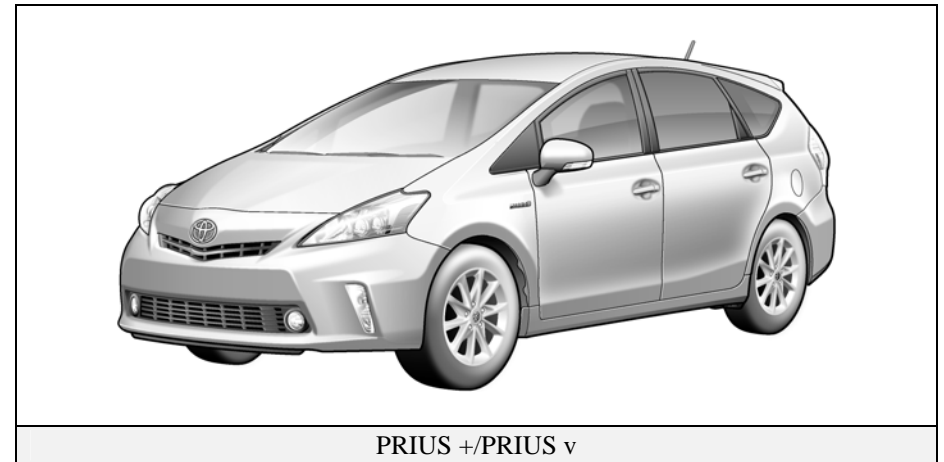
PRIUS +/PRIUS v Features:

- A boost converter in the inverter/converter that boosts the available voltage to the electric motor to 650 Volts.
- A high voltage Hybrid Vehicle (HV) battery assembly rated at 201.6 Volts.
- A high voltage motor driven Air Conditioning (A/C) compressor rated at 201.6 Volts.
- A body electrical system rated at 12 Volts, negative chassis ground.
- Supplemental Restraint System (SRS) - frontal airbags, a driver knee airbag, front seat side airbags, side curtain airbags and front seat belt pretensioners.
- An Electric Power Steering (EPS) assist motor rated at 27 Volts.

High voltage electrical safety remains an important factor in the emergency handling of the PRIUS +/PRIUS v Hybrid Synergy Drive. It is important to recognize and understand the disabling procedures and warnings throughout the guide.

Additional topics in the guide include:

- PRIUS +/PRIUS v identification.
- Major Hybrid Synergy Drive component locations and descriptions.
- Extrication, fire, recovery, and additional emergency response information.
- Roadside assistance information.



PRIUS +/PRIUS v

This guide is intended to assist emergency responders in the safe handling of a PRIUS +/PRIUS v vehicle during an incident.

**NOTE:**

Emergency Response Guides for Toyota hybrid vehicles may be viewed at <http://techinfo.toyota.com>.

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## About the PRIUS +/PRIUS v

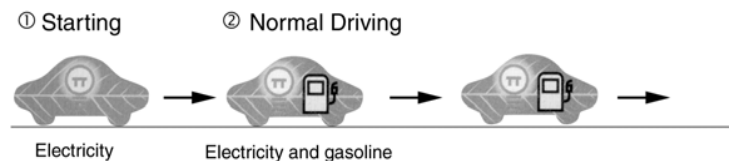
The PRIUS +/PRIUS v 5-door wagon joins the PRIUS, CAMRY Hybrid and AURIS Hybrid as a hybrid model for Toyota. Hybrid Synergy Drive means that the vehicle contains a gasoline engine and an electric motor for power. The two hybrid power sources are stored on board the vehicle:

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

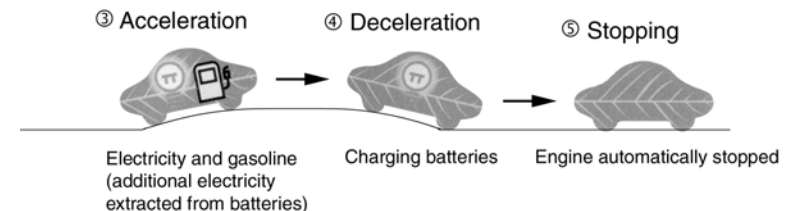
The result of combining these two power sources is improved fuel economy and reduced emissions. The gasoline engine also powers an electric generator to charge the battery assembly; unlike a pure all electric vehicle, the PRIUS +/PRIUS v never needs to be charged from an external electric power source.

Depending on the driving conditions one or both sources are used to power the vehicle. The following illustration demonstrates how the PRIUS +/PRIUS v 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 charge the battery assembly and drive to the electric 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 kinetic energy from the front wheels to produce electricity that charges the battery assembly.
- ❺ While the vehicle is stopped, the gasoline engine and electric motor are off, however the vehicle remains on and operational.



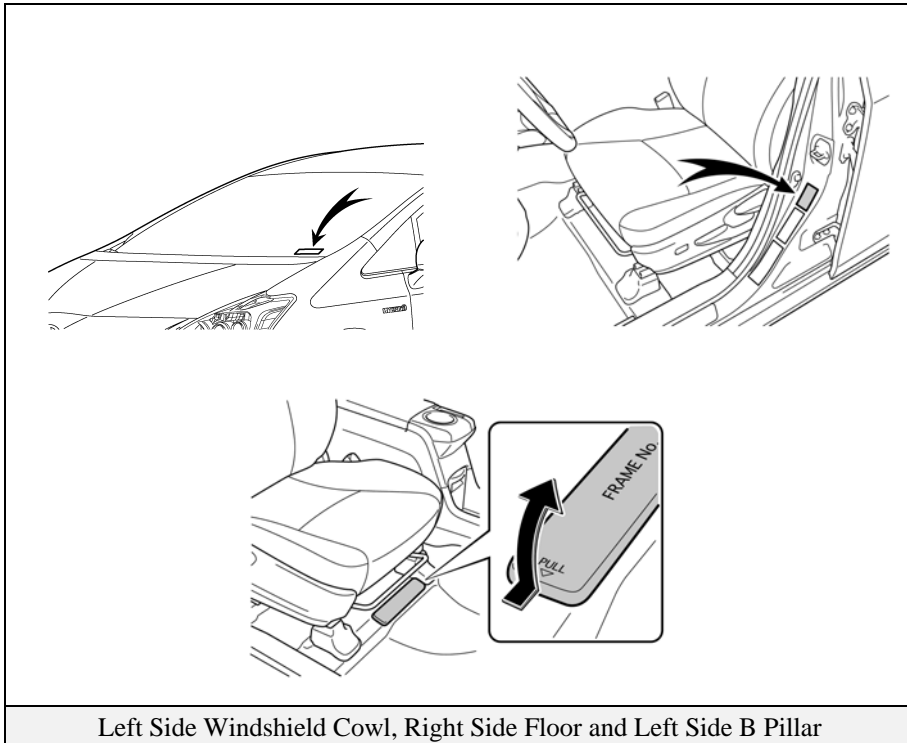
## PRIUS +/PRIUS v Identification

In appearance, the PRIUS +/PRIUS v is a 5-door wagon. Exterior, interior, and engine compartment illustrations are provided to assist in identification.

The alphanumeric 17 character Vehicle Identification Number (VIN) is provided in the front windshield cowl, right side floor and on the left side B pillar.



Example VIN: JTDZS3EU0C3000101

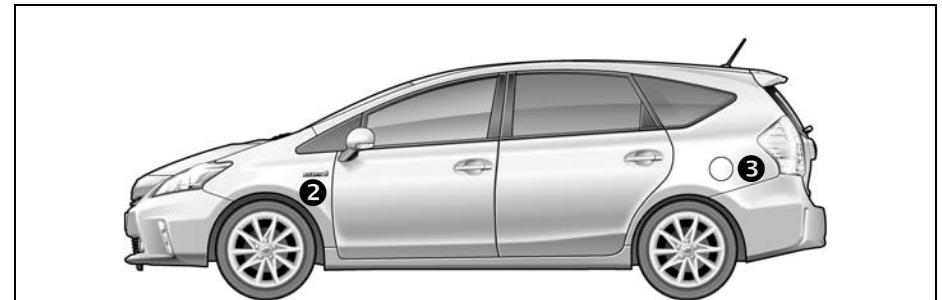
A PRIUS +/PRIUS v is identified by the first 8 alphanumeric characters **JTDZS3EU**.



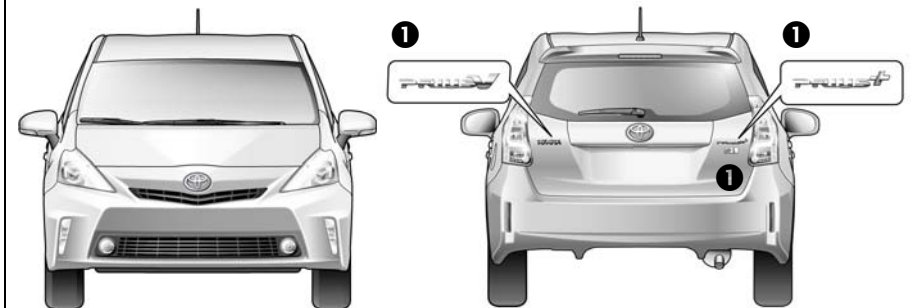
Left Side Windshield Cowl, Right Side Floor and Left Side B Pillar

## Exterior

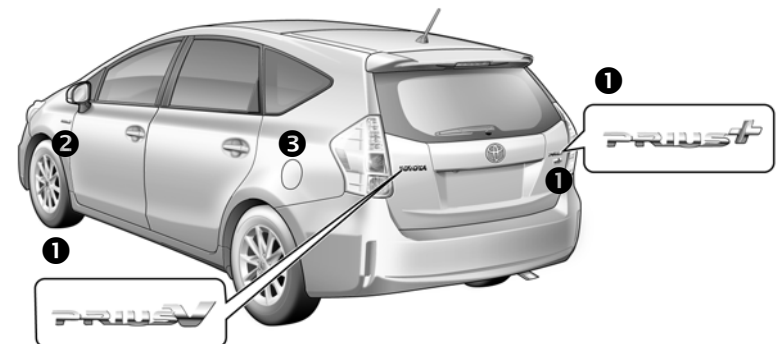
- 1 Name plate and  logos on the back door.
- 2  logo on each front fender.
- 3 Gasoline fuel filler door located on the left side rear quarter panel.



Exterior Left Side View



Exterior Front and Rear View



Exterior Rear and Left Side View

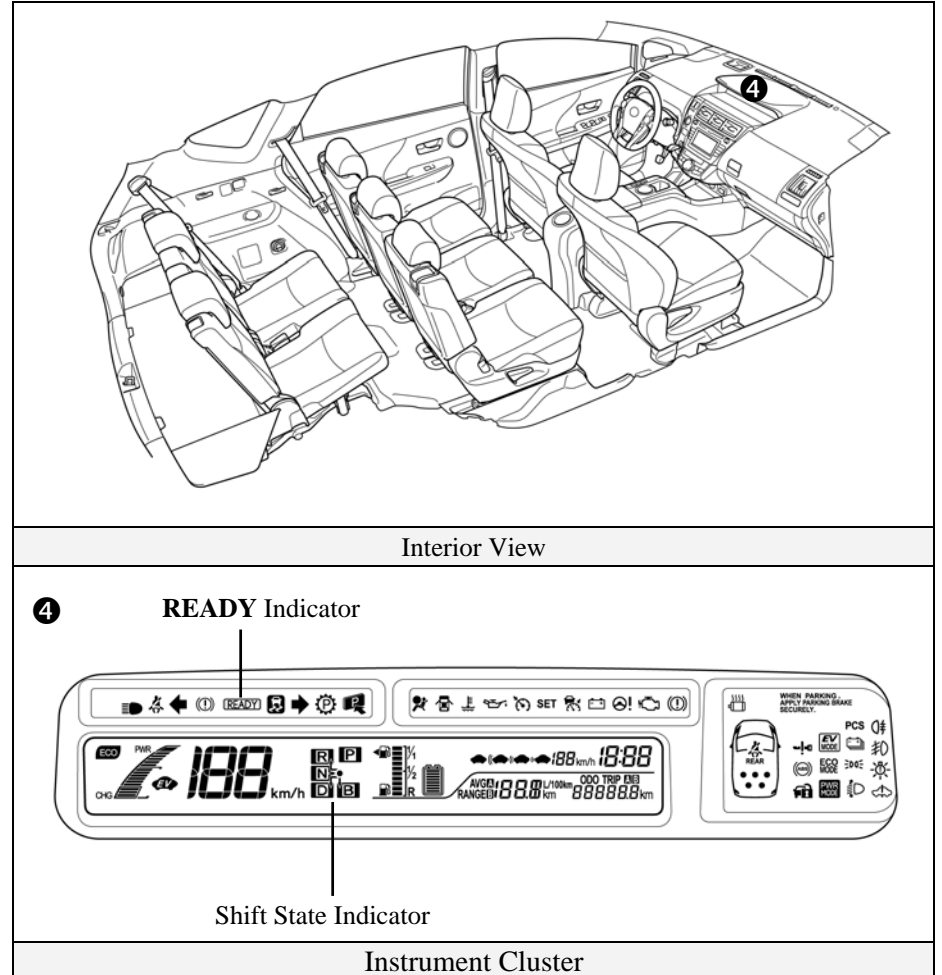
## PRIUS +/PRIUS v Identification (Continued)

### Interior

- ④ Instrument cluster (**READY** indicator, shift state indicators) located in center of the dash and near the base of the windshield.

#### NOTE:

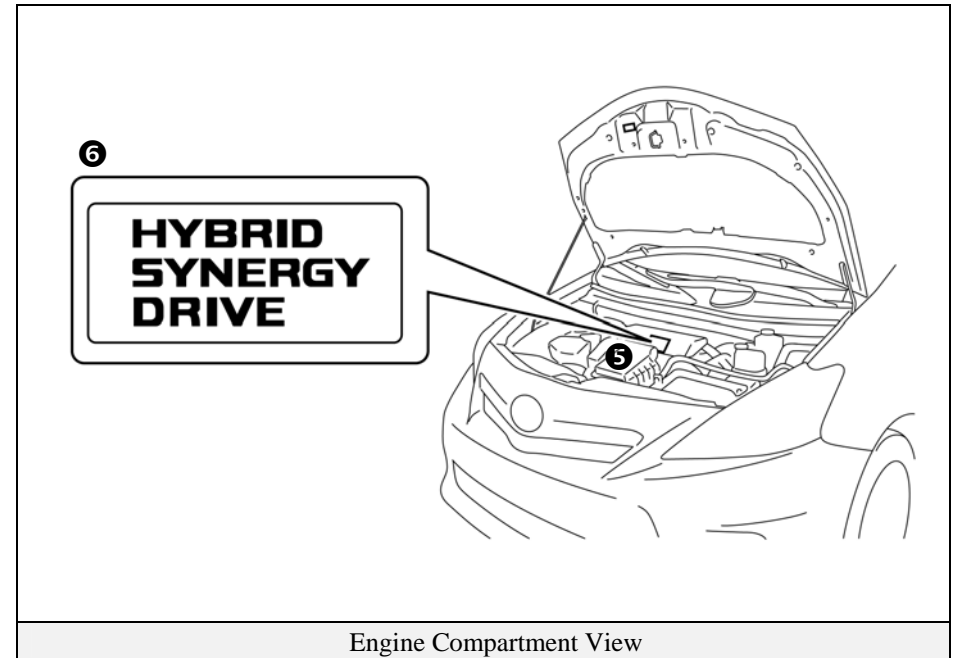
If the vehicle is shut off, the instrument cluster gauges will be “blacked out”, not illuminated.



## **PRIUS +/PRIUS v Identification (Continued)**

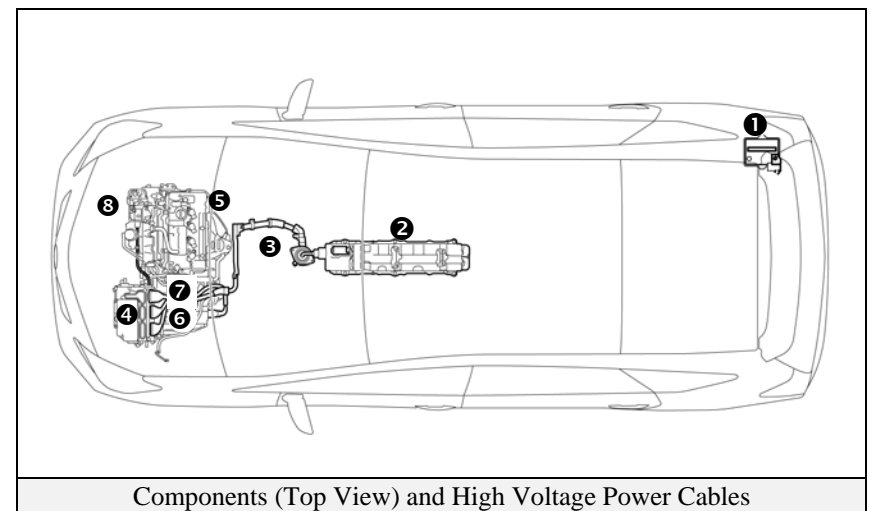
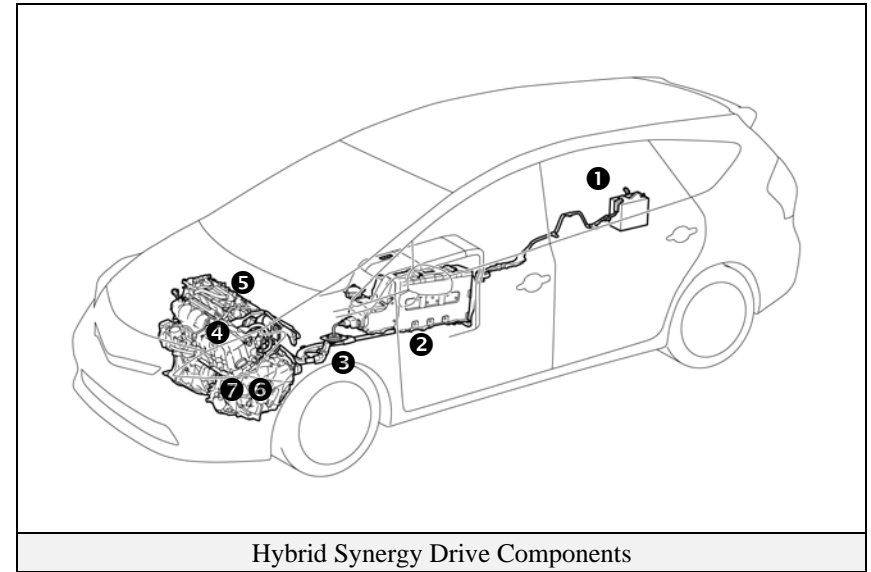
### Engine Compartment

- ⑤ 1.8-liter aluminum alloy gasoline engine.
- ⑥ Logo on the plastic engine cover.



## Hybrid Synergy Drive Component Locations & Descriptions

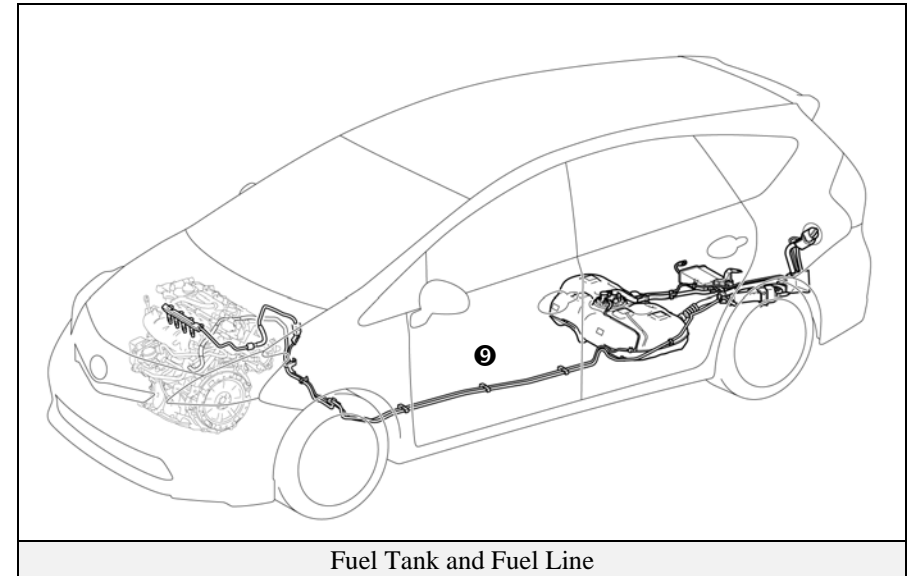
Component	Location	Description
12 Volt Auxiliary Battery ❶	Right Side of Cargo Area	A lead-acid battery that supplies power to the low voltage devices.
Hybrid Vehicle (HV) Battery Assembly ❷	Center Console	201.6 Volt Lithium-ion (Li-ion) battery assembly consisting of 56 low voltage (3.6 Volt) cells connected in series.
Power Cables ❸	Undercarriage and Engine Compartment	Orange colored power cables carry high voltage Direct Current (DC) between the HV battery assembly, inverter/converter, and A/C compressor. These cables also carry 3-phase Alternating Current (AC) between the inverter/converter, electric motor, and generator.
Inverter/Converter ❹	Engine Compartment	Boosts and inverts the high voltage electricity from the HV battery assembly to 3-phase AC electricity that drives the electric motor. The inverter/converter also converts AC electricity from the electric generator and electric motor (regenerative braking) to DC that charges the HV battery assembly.
Gasoline Engine ❺	Engine Compartment	Provides two functions: 1) Powers vehicle. 2) Powers generator to charge the HV battery assembly. The engine is started and stopped under control of the vehicle computer.
Electric Motor ❻	Engine Compartment	3-phase high voltage AC motor contained in the front transaxle. It is used to power the front wheels.
Electric Generator ❼	Engine Compartment	3-phase high voltage AC generator that is contained in the transaxle and charges the HV battery assembly.
A/C Compressor (with Inverter) ❸	Engine Compartment	3-phase high voltage AC electrically driven motor compressor.





## Hybrid Synergy Drive Component Locations & Descriptions (Continued)

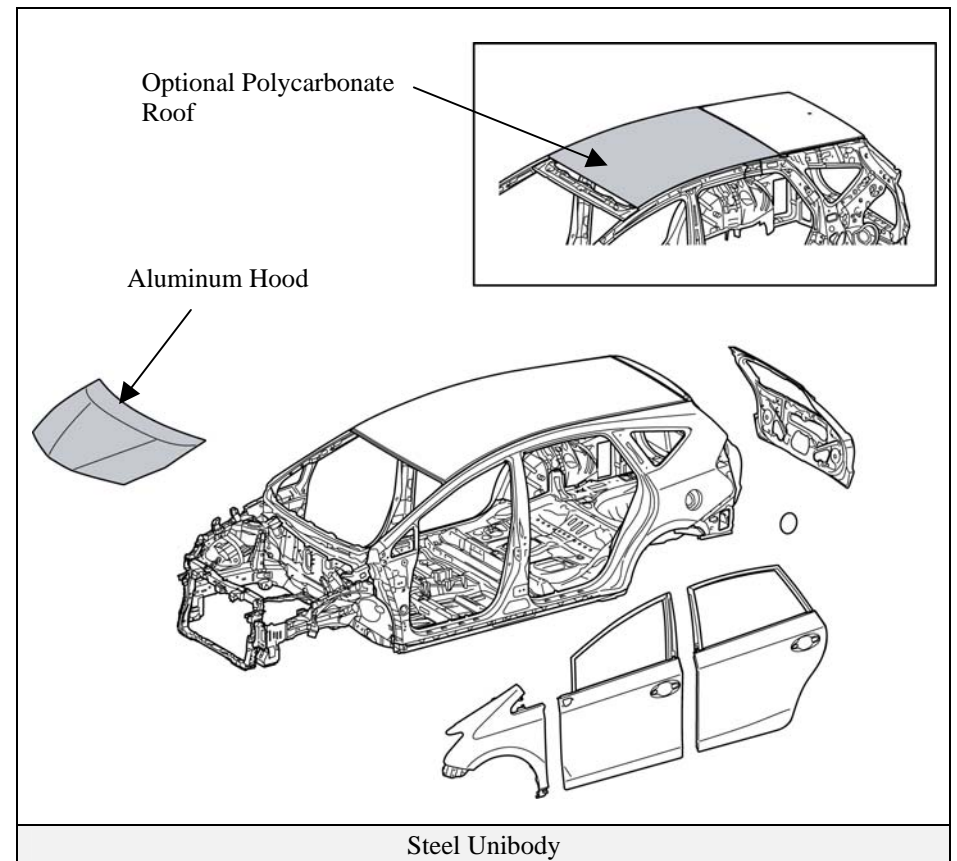
Component	Location	Description
Fuel Tank and Fuel Line ⑨	Undercarriage and Center	The fuel tank provides gasoline via a fuel line to the engine. The fuel line is routed under the center of vehicle.



## Hybrid Synergy Drive Component Locations & Descriptions (Continued)

### Key Specifications:

- Gasoline Engine: 73 kW (99 PS), 1.8-liter Aluminum Alloy Engine  
Electric Motor: 60 kW (81 PS), AC Motor  
Transmission: Automatic Only (electrically controlled continuously variable transaxle)  
HV Battery: 201.6 Volt Sealed Li-ion-Battery  
Curb Weight: 3,450 lbs/1,565 kg  
Fuel Tank: 11.9 gals/45.0 liters  
Frame Material: Steel Unibody  
Body Material: Steel Panels except for Aluminum Hood and Optional Polycarbonate Roof  
Seating Capacity: 7 passenger



## Entry and Start System

The PRIUS +/PRIUS v entry and start system consists of a key transceiver that communicates bi-directionally, enabling the vehicle to recognize the key in proximity to the vehicle. Once recognized, the key will allow the user to lock and unlock the doors without pushing key buttons, and start the vehicle without inserting it into an ignition switch.

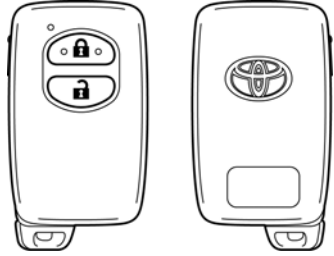
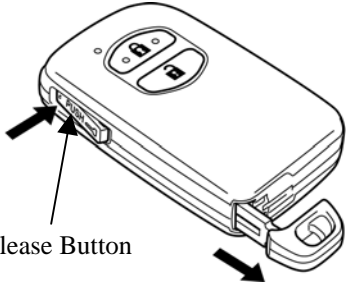
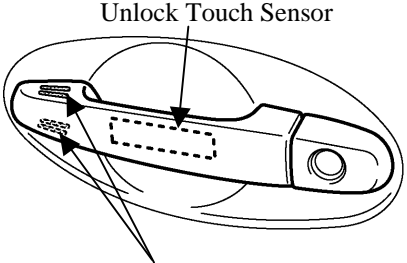

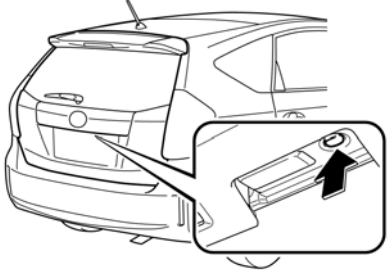
Smart key features:

- Passive (remote) function to lock/unlock the doors and start the vehicle.
- Wireless transmitter buttons to lock/unlock all 5 doors.
- Hidden metal cut key to lock/unlock the doors.

### Door (Lock/Unlock)

There are several methods available to lock/unlock the doors.

- Pushing the key lock button will lock all doors. Pushing the key unlock button unlocks all doors.
- Touching the sensor on the backside of the driver door exterior handle, with the key in proximity to the vehicle, unlocks all doors. Touching the sensor on the backside of the front passenger door exterior handle, with the key in proximity to the vehicle, unlocks all doors. Touching the lock touch sensor on either front door, or pushing the back door lock button will lock all doors.
- Inserting the hidden metal cut key in the driver door lock and turning clockwise unlocks all doors. To lock all doors turn the key counter clockwise once. Only the driver door contains an exterior door lock for the metal cut key.

	 <p>Release Button</p>
<p>Key (Fob)</p>	<p>Hidden Metal Cut Key for Door Lock</p>
 <p>Unlock Touch Sensor</p> <p>Lock Touch Sensor</p>	 <p>Use the Hidden Metal Cut Key</p>
<p>Driver Door Unlock Touch Sensor and Lock Touch Sensor</p>	<p>Front Driver Door Lock</p>
	<p>Back Door Lock Button</p>

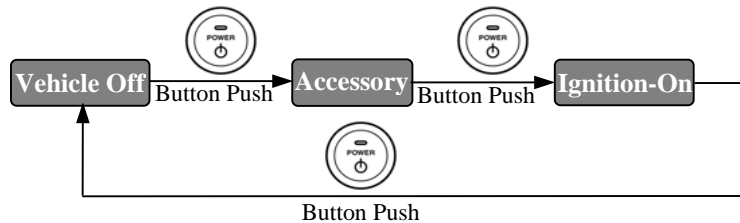
## Entry and Start System (Continued)

### Vehicle Starting/Stopping

The key has replaced the conventional metal cut key, and the power button with an integral status indicator light has replaced the ignition switch. The key only needs to be in proximity to the vehicle to allow the system to function.

- With the brake pedal released, the first push of the power button operates the accessory mode, the second push operates the ignition-on mode, and the third push turns the ignition off again.

Ignition Mode Sequence (brake pedal released):



- Starting the vehicle takes priority over all other ignition modes and is accomplished by depressing the brake pedal and pushing the power button once. To verify the vehicle has started, check that the power button status indicator light is off and the **READY** light is illuminated in the instrument cluster.
- If the internal key battery is dead, use the following method to start the vehicle.
  - Touch the Toyota emblem side of the key to the power button.
  - Within the 10 seconds after the buzzer sounds, push the power button with the brake pedal depressed (the **READY** light will illuminate).
- Once the vehicle has started and is on and operational (**READY-ON**), the vehicle is shut off by bringing the vehicle to a complete stop and then pressing the power button once.
- To shut off the vehicle before coming to a stop in an emergency, push and hold down the power button for more than 3 seconds. This procedure may be useful at an accident scene in which the **READY** indicator is on, park (P) cannot be selected, and the drive wheels remain in motion.

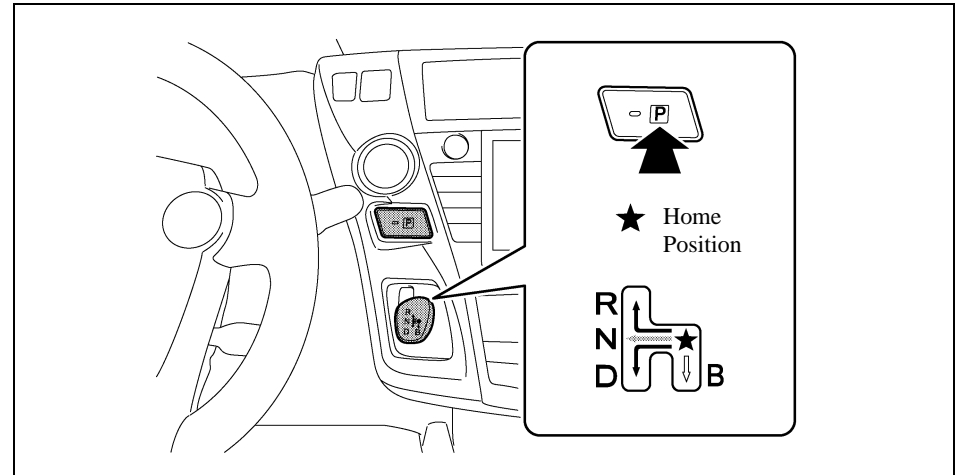
Ignition Mode	Power Button Indicator Light
Off	Off
Accessory	Amber
Ignition-On	Amber
Brake Pedal Depressed	Green
Vehicle Started (READY-ON)	Off
Malfunction	Blinking Amber

<p>Power Button with Integral Status Indicator Light</p>	<p>Ignition Modes (Brake Pedal Released)</p>
<p>Starting Sequence (Brake Pedal Depressed)</p>	<p>Key Recognition (When Key Battery is Dead)</p>

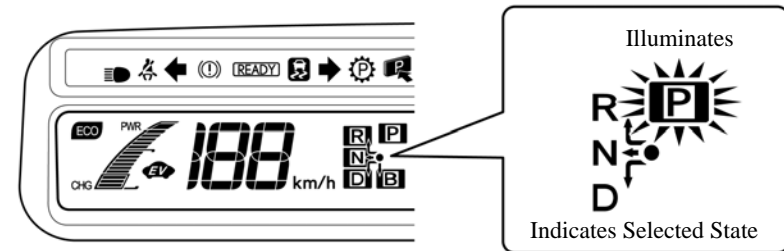
## Electronic Shift Selector

The PRIUS +/PRIUS v electronic shift selector is a momentary select shift-by-wire system that can be used to select reverse (R), neutral (N), drive (D), or engine brake (B) states.

- These states may only be selected while the vehicle is on and operational (READY-on), except for neutral (N) which may also be selected while in the ignition-on mode. After R, N, D, or B is selected, the transaxle remains in that state, identified on the instrument cluster, but the shift selector returns to the home position. To select neutral (N), it is necessary to hold the shift selector in the N position for approximately 0.5 seconds.
- Unlike a conventional vehicle, the electronic shift selector does not contain a park (P) position. Instead, a separate **P** switch located above the shift selector selects park (P).
- When the vehicle is stopped, regardless of shift state, the electro-mechanical parking lock pawl is engaged to lock the transaxle into park (P) by either pressing the P switch or pressing the power button to shut off the vehicle.
- Being electronic, the shift selector and park (P) systems depend on the low voltage 12 Volt auxiliary battery for power. If the 12 Volt auxiliary battery is discharged or disconnected, the vehicle cannot be started and cannot be shifted into or out of park (P). There is no manual override except to reconnect the auxiliary battery or jump start the vehicle, refer to Jump Starting on page 31.



Electronic Shift Selector and P Switch



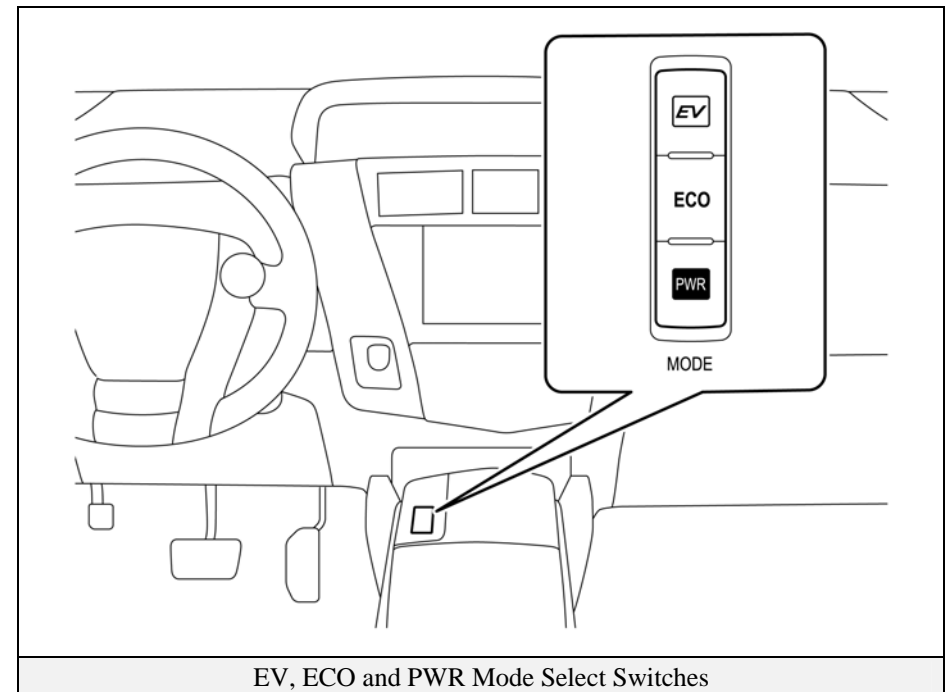
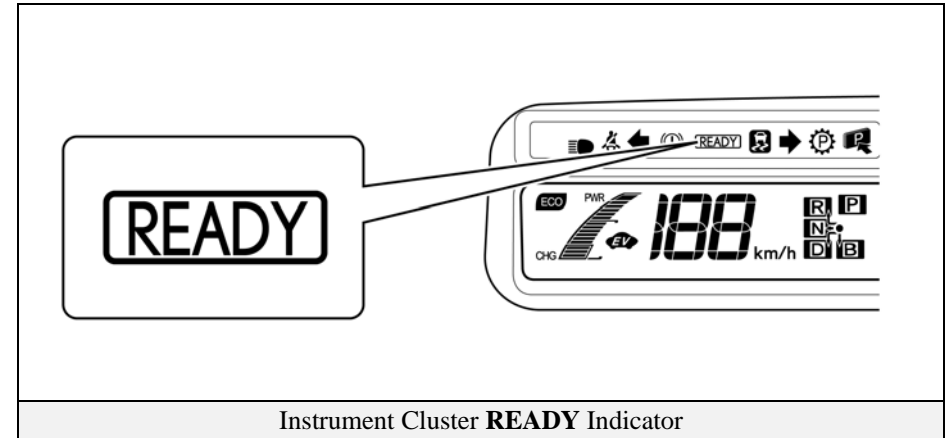
Instrument Cluster Shift State Indicator

## Hybrid Synergy Drive Operation

Once the **READY** indicator is illuminated in the instrument cluster, the vehicle may be driven. However, the gasoline engine does not idle like a typical automobile and will start and stop automatically. It is important to recognize and understand the **READY** indicator provided in the instrument cluster. When lit, 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 **PRIUS +/PRIUS v**, 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.
- The vehicle computer determines how the vehicle operates in order to improve fuel economy and reduce emissions. Three features on the **PRIUS +/PRIUS v** are EV (Electric Vehicle) mode, PWR (Power) mode and ECO (Economy) mode:
  1. **EV Mode:** When activated, and certain conditions have been met, the vehicle operates with the electric motor powered by the HV battery.
  2. **ECO Mode:** When activated, this mode helps enhance fuel economy on trips that involve frequent braking and acceleration.
  3. **PWR Mode:** When activated, Power mode optimizes acceleration feel by increasing the power output more quickly at the beginning of accelerator pedal operation.



## Hybrid Vehicle (HV) Battery Assembly

The PRIUS +/PRIUS v features a high voltage Hybrid Vehicle (HV) battery assembly that contains sealed Lithium-ion (Li-ion) battery cells.

### HV Battery Assembly

- The HV battery assembly is enclosed in a metal case and is rigidly mounted under the center console. The metal case is isolated from high voltage.
- The HV battery assembly consists of 56 low voltage (3.6 Volt) Li-ion battery cells connected in series to produce approximately 201.6 Volts. Each Li-ion battery cell is non-spillable and in a sealed case.
- The electrolyte used in the Li-ion battery cells is a flammable organic electrolyte. The electrolyte is absorbed into the battery cell separator and will not normally leak, even in a collision.

HV Battery Assembly	
Battery pack voltage	201.6 V
Number of Li-ion battery cells in pack	56
Li-ion battery cell voltage	3.6 V
Li-ion battery cell dimensions	4.4 x 0.6 x 4.4 in (111 x 14 x 112 mm)
Li-ion cell weight	0.55 lbs (0.25 kg)
Li-ion battery assembly dimensions	32.7 x 8.7 x 14.6 in (830 x 220 x 370 mm)
Li-ion battery assembly weight	69 lbs (31.5 kg)

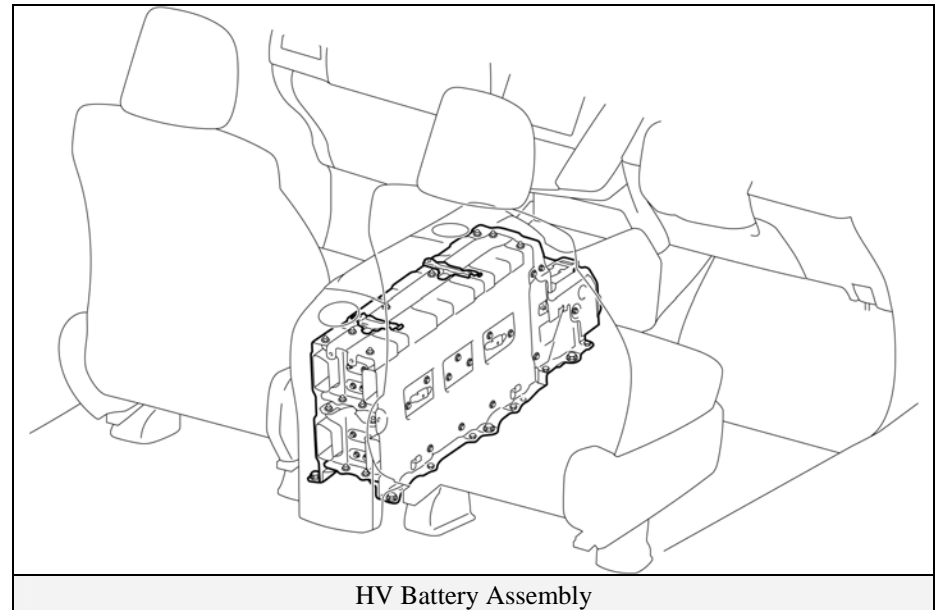
Note: Values in inches have been rounded

### Components Powered by the HV Battery Assembly

- Electric Motor
- Inverter/Converter
- Power Cables
- A/C Compressor
- Electric Generator

### Recovery of Li-ion HV Battery Assembly

- For information regarding recovery of the HV battery assembly, contact the nearest Toyota dealer.

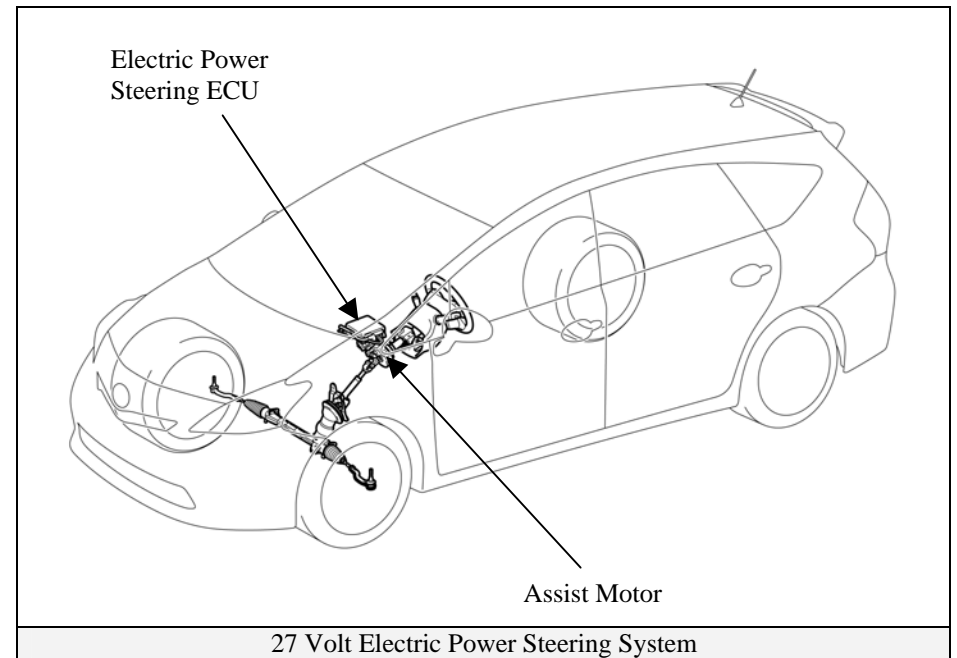


## 27 Volt System

The PRIUS +/PRIUS v is equipped with a 27 Volt AC assist motor for the Electric Power Steering (EPS) system. The EPS computer generates 27 Volts from the 12 Volt system. The 27 Volt wires are isolated from the metal chassis and routed a short distance from the EPS computer to the EPS assist motor in the steering column.

**NOTE:**

27 Volts AC has a higher arc potential than 12 Volts DC.





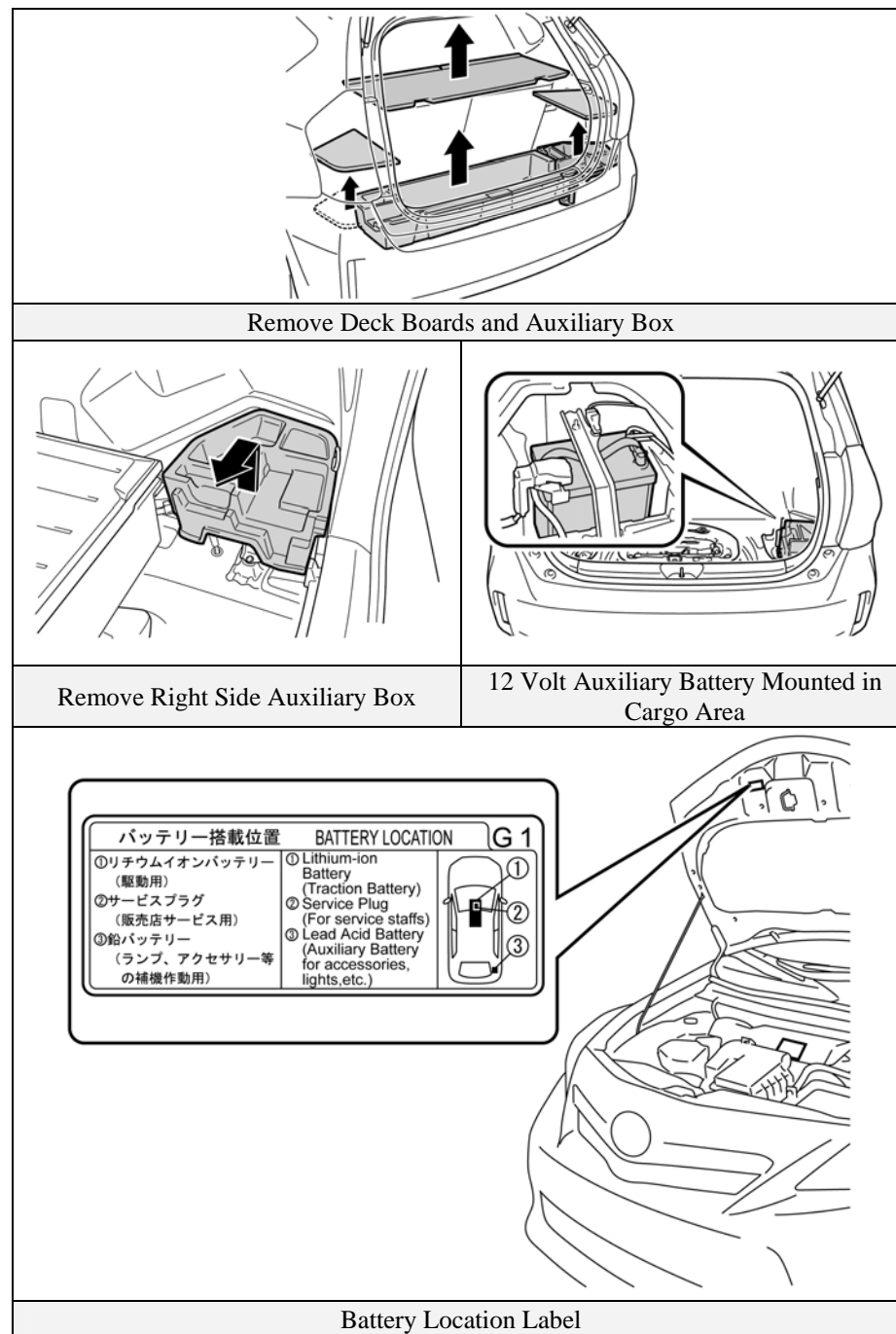
## Low Voltage Battery

### Auxiliary Battery

- The PRIUS +/PRIUS v contains a sealed lead-acid 12 Volt battery. The 12 Volt auxiliary battery powers the vehicle's electrical system similar to a conventional vehicle. As with conventional vehicles, the negative terminal of the auxiliary battery is grounded to the metal chassis of the vehicle.
- The auxiliary battery is located in the cargo area. It is concealed by a cover on the right side in the rear quarter panel well.

#### NOTE:

An under hood label shows the location of the HV battery (traction battery) and 12 Volt auxiliary battery.



## High Voltage Safety

The HV battery assembly powers the high voltage electrical system with DC electricity. Positive and negative orange colored high voltage power cables are routed from the battery assembly, under the vehicle floor pan, to the inverter/converter. The inverter/converter contains a circuit that boosts the HV battery voltage from 201.6 to 650 Volts DC. The inverter/converter creates 3-phase AC to power the motor. Power cables are routed from the inverter/converter to each high voltage motor (electric motor, electric generator, and A/C compressor). The following systems are intended to help keep occupants in the vehicle and emergency responders safe from high voltage electricity:

### High Voltage Safety System

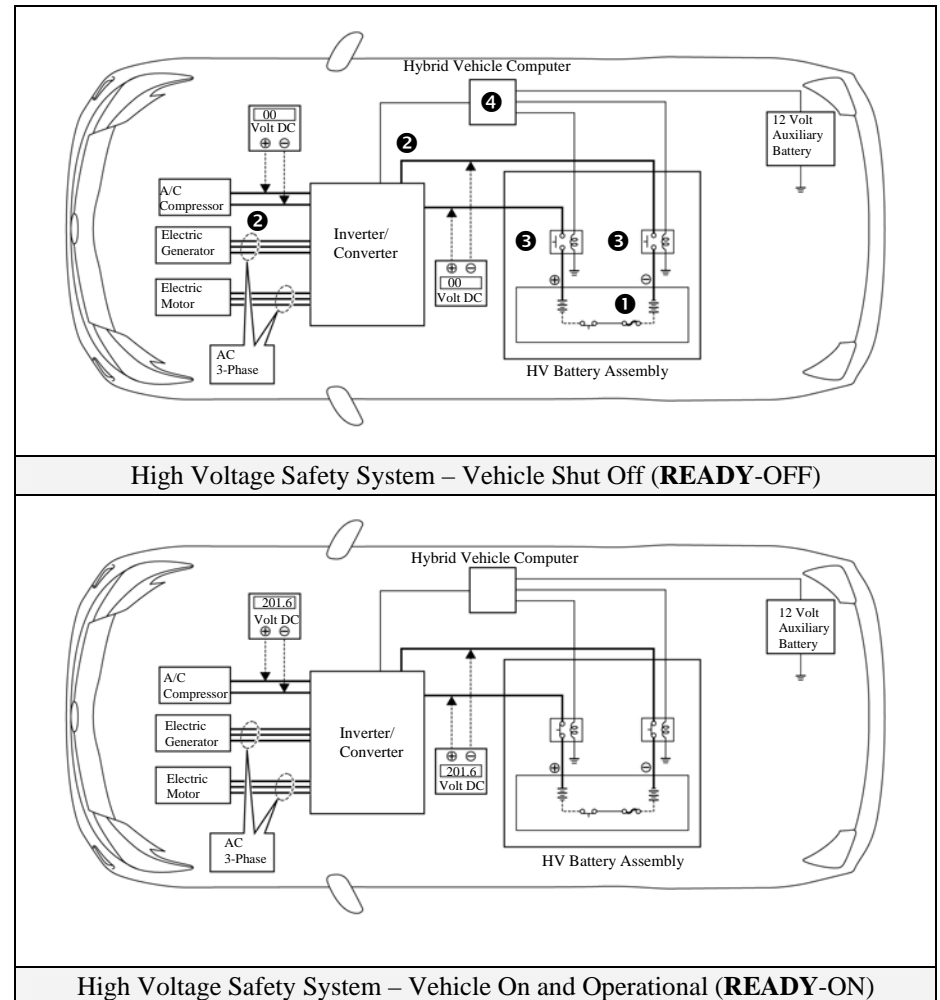
- A high voltage fuse ❶ provides short circuit protection in the HV battery assembly.
- Positive and negative high voltage power cables ❷ connected to the HV battery assembly are controlled by 12 Volt normally open relays ❸. When the vehicle is shut off, the relays stop electrical flow from leaving the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

#### ⚠ 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 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 high voltage components.

- A ground fault monitor continuously monitors for high voltage leakage to the metal chassis while the vehicle is running. If a malfunction is detected, the hybrid vehicle computer ❹ will illuminate the hybrid system warning light ⚡ in the instrument cluster.



## SRS Airbags & Seat Belt Pretensioners

### Standard Equipment

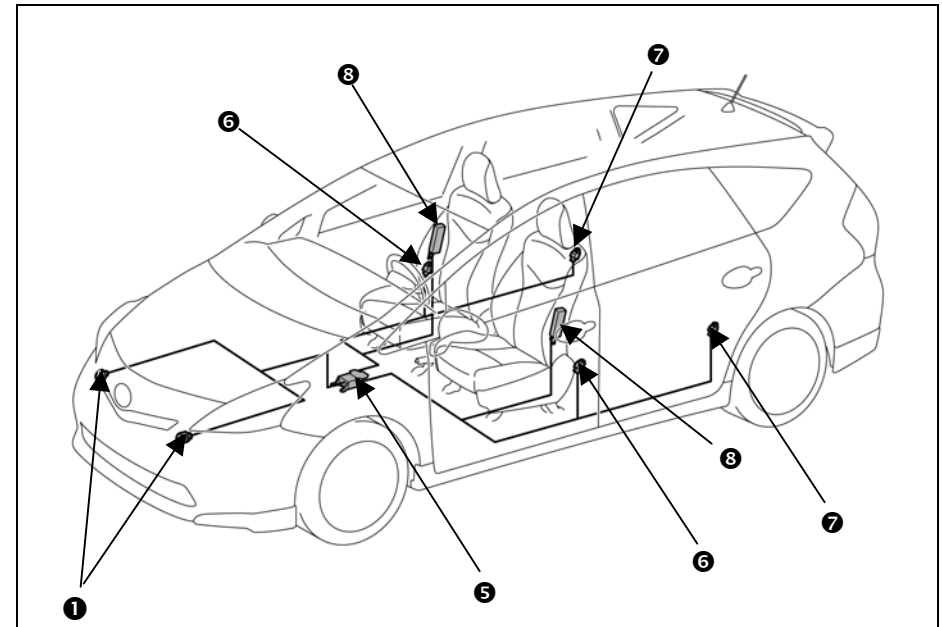
- Electronic frontal impact sensors (2) are mounted in the engine compartment ① as illustrated.
- Front seat belt pretensioners are mounted near the base of the B-pillars ②.
- A frontal driver airbag ③ is mounted in the steering wheel hub.
- A frontal passenger airbag ④ is integrated into the dashboard and deploys through the top of the dashboard.
- The SRS computer ⑤, which contains an impact sensor, is mounted on the floor pan underneath the instrument panel.
- Front electronic side impact sensors (2) are mounted near the base of the B-pillars. ⑥
- Rear electronic side impact sensors (2) are mounted near the base of the C-pillars. ⑦
- Front seat side airbags ⑧ are mounted in the front seatbacks.
- Side curtain airbags ⑨ are mounted along the outer edge inside the roof rails.
- A driver knee airbag ⑩ is mounted on the lower portion of the dash.

### Optional Equipment

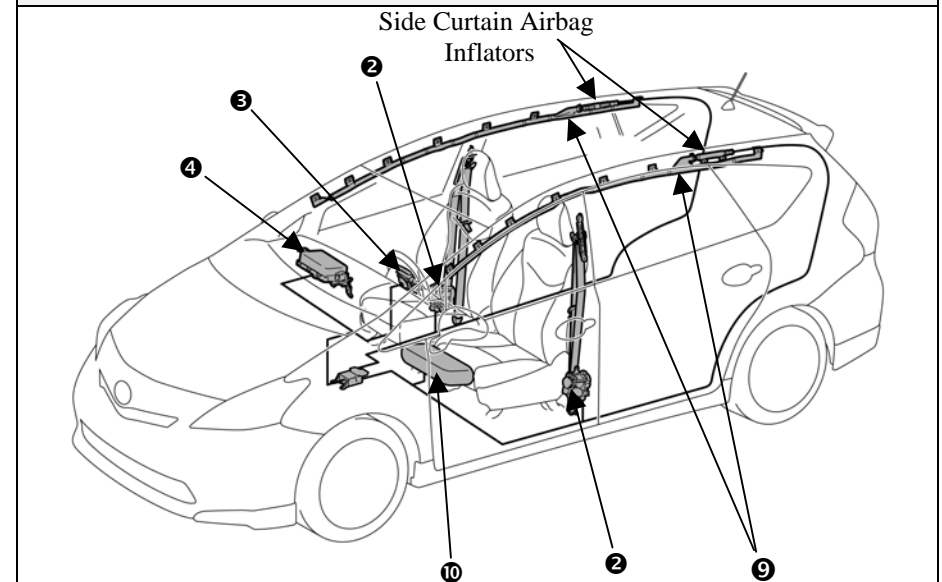
The optional pre-crash safety system contains a radar sensory system and an electric motor-pyrotechnic pretensioner system. During a pre-crash event, an electric motor in the pretensioners retracts the front seatbelts. When conditions stabilize the electric motor will reverse itself. When the airbags deploy, or as necessary, the pyrotechnic pretensioners function normally.

### WARNING:

*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 breaching the SRS components.*



Electronic Impact Sensors and Side Airbags



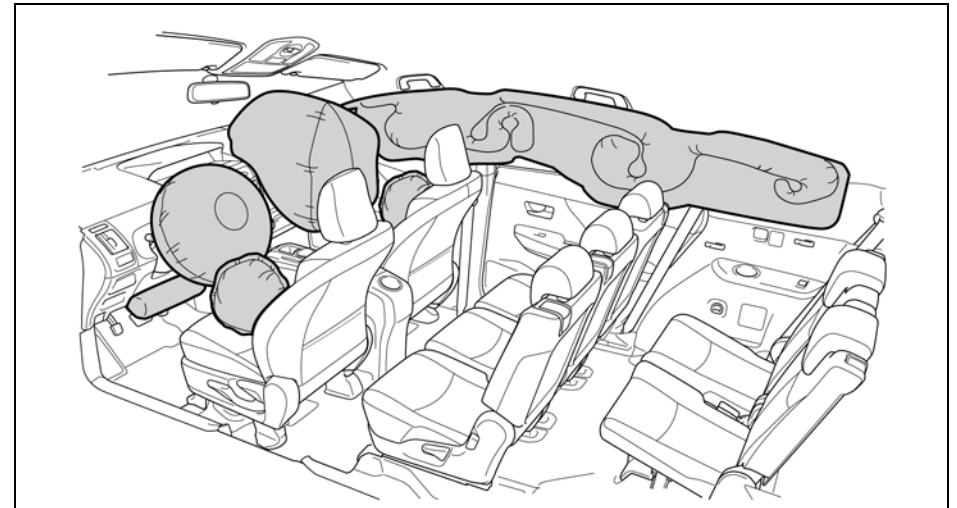
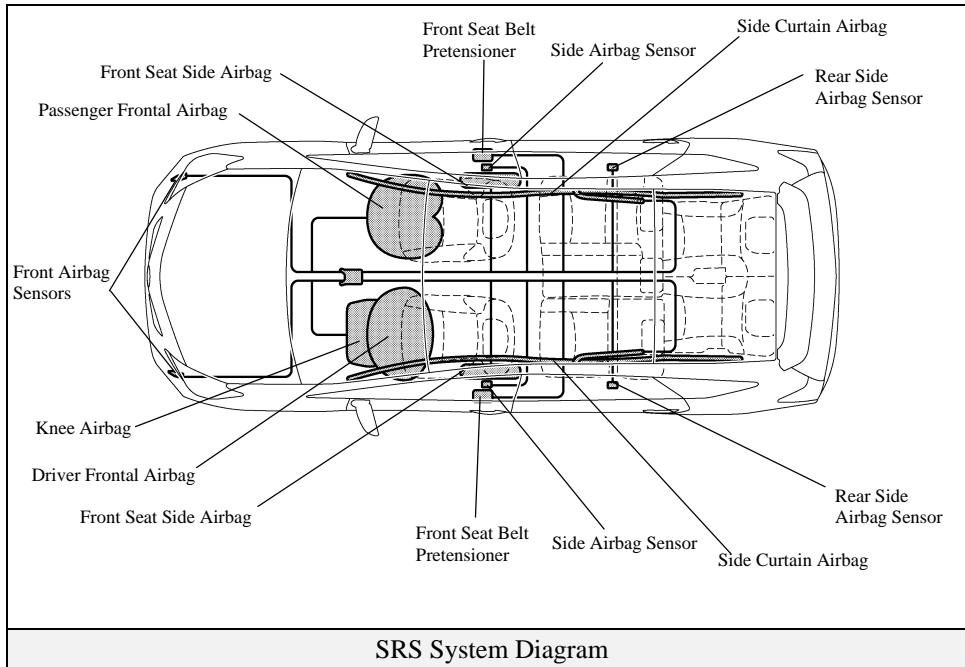
Standard Frontal Airbags, Seat Belt Pretensioners, Driver Knee Airbag, Side Curtain Airbags

## SRS Airbags & Seat Belt Pretensioners (Continued)

### NOTE:

The front seatback mounted side airbags and the side curtain airbags may deploy independently of each other.

The knee airbag is designed to deploy simultaneously with the frontal airbag.



Frontal, Knee, Front Seatback Mounted Side, Side Curtain Airbags



Driver Knee Airbag and Inflator

## Emergency Response

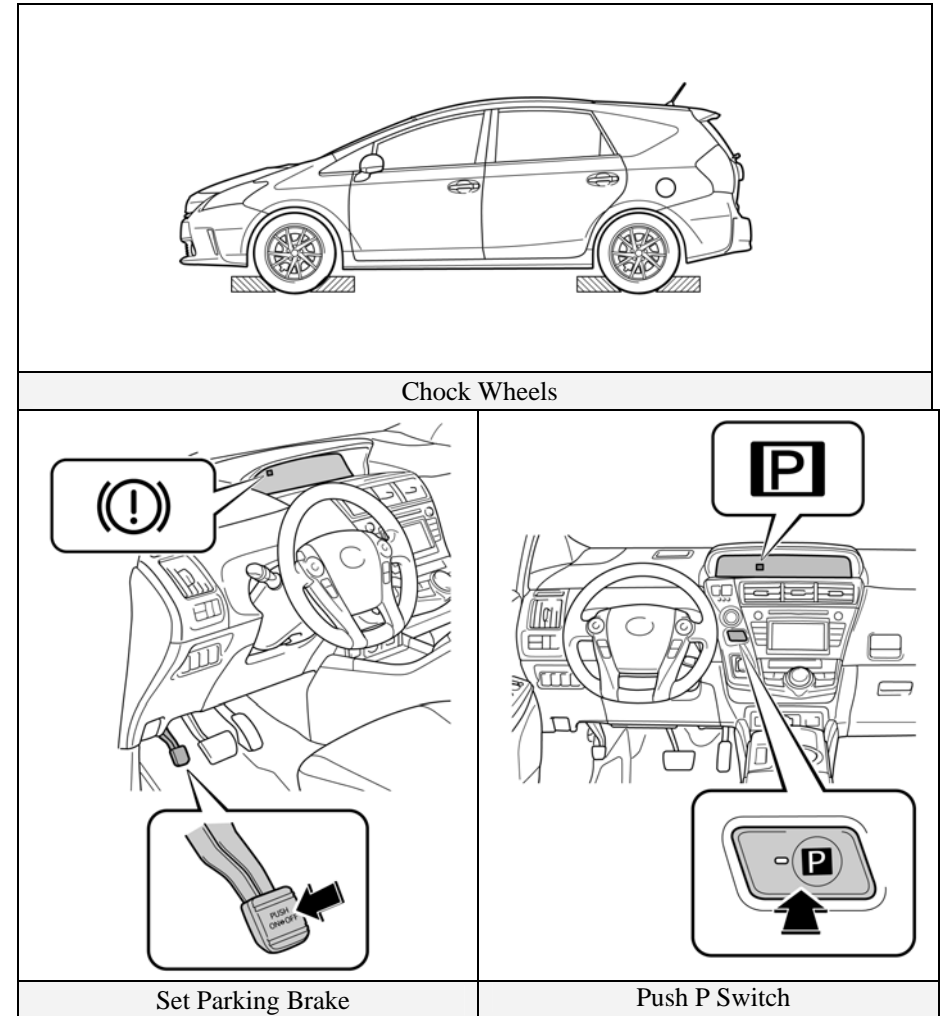
On arrival, emergency responders should follow their standard operating procedures for vehicle incidents. Emergencies involving the PRIUS +/PRIUS v may be handled like other automobiles except as noted in these guidelines for Extrication, Fire, Overhaul, Recovery, Spills, First Aid, and Submersion.

### ⚠ WARNING:

- *Never assume the PRIUS +/PRIUS v is shut off simply because it is silent.*
- *Always observe the instrument cluster for the **READY** indicator status to verify whether the vehicle is on or shut off. The vehicle is shut off when the **READY** indicator is off.*
- *Failure to shut off and disable the vehicle before emergency response procedures are performed may result in serious injury or death from the unintentional deployment of the SRS or severe burns and electric shock from the high voltage electrical system.*

### Extrication

- **Immobilise Vehicle**  
Chock wheels and set the parking brake.  
Push the P switch to engage park (P).
- **Disable Vehicle**  
Performing either of the following two procedures will shut the vehicle off and disable the HV battery assembly, SRS, and gasoline fuel pump.

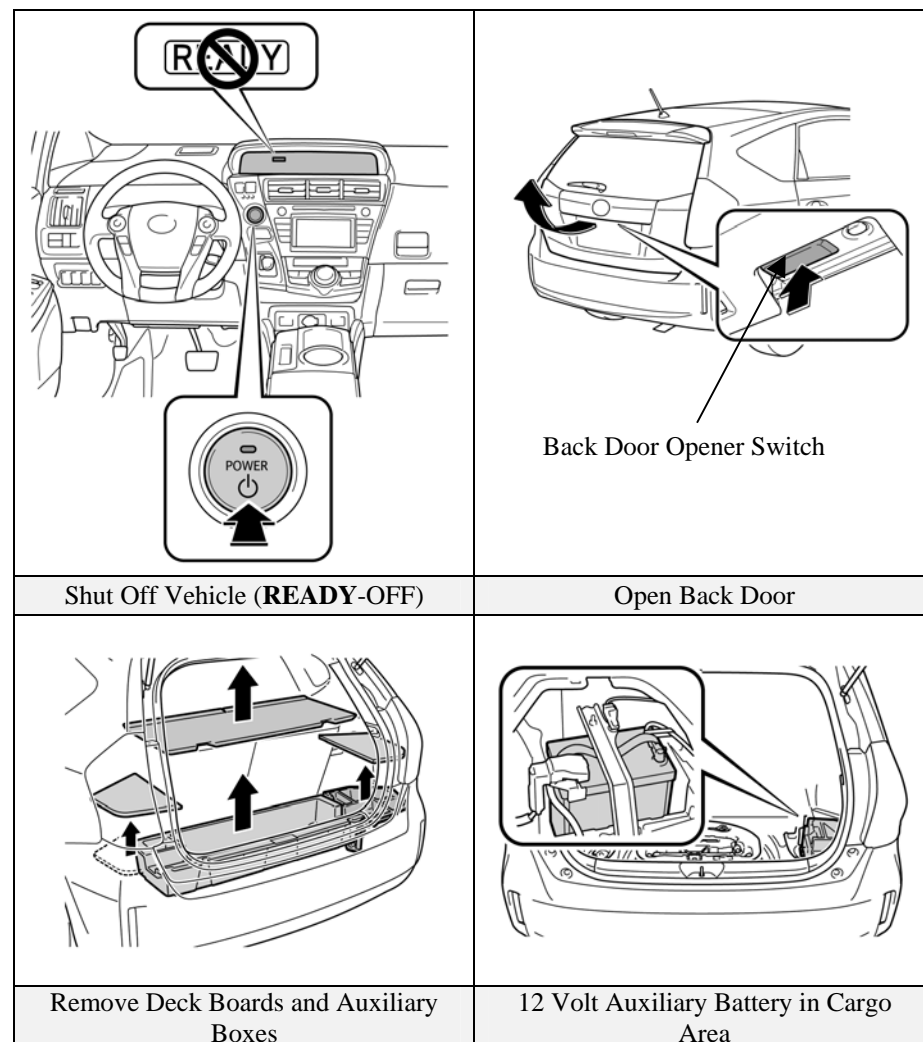


## Emergency Response (Continued)

### Extrication (Continued)

#### Procedure #1

1. Confirm the status of the **READY** indicator in the instrument cluster.
2. If the **READY** indicator is illuminated, the vehicle is on and operational. Shut off the vehicle by pushing the power button once.
3. The vehicle is already shut off if the instrument cluster lights and the **READY** indicator are not illuminated. Do **not** push the power button because the vehicle may start.
4. If the key is easily accessible, keep it at least 16 feet (5 meters) away from the vehicle and disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.
5. If the key cannot be found, disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.



## Emergency Response (Continued)

### Extrication (Continued)

#### Procedure #2 (Alternate if power button is inaccessible)

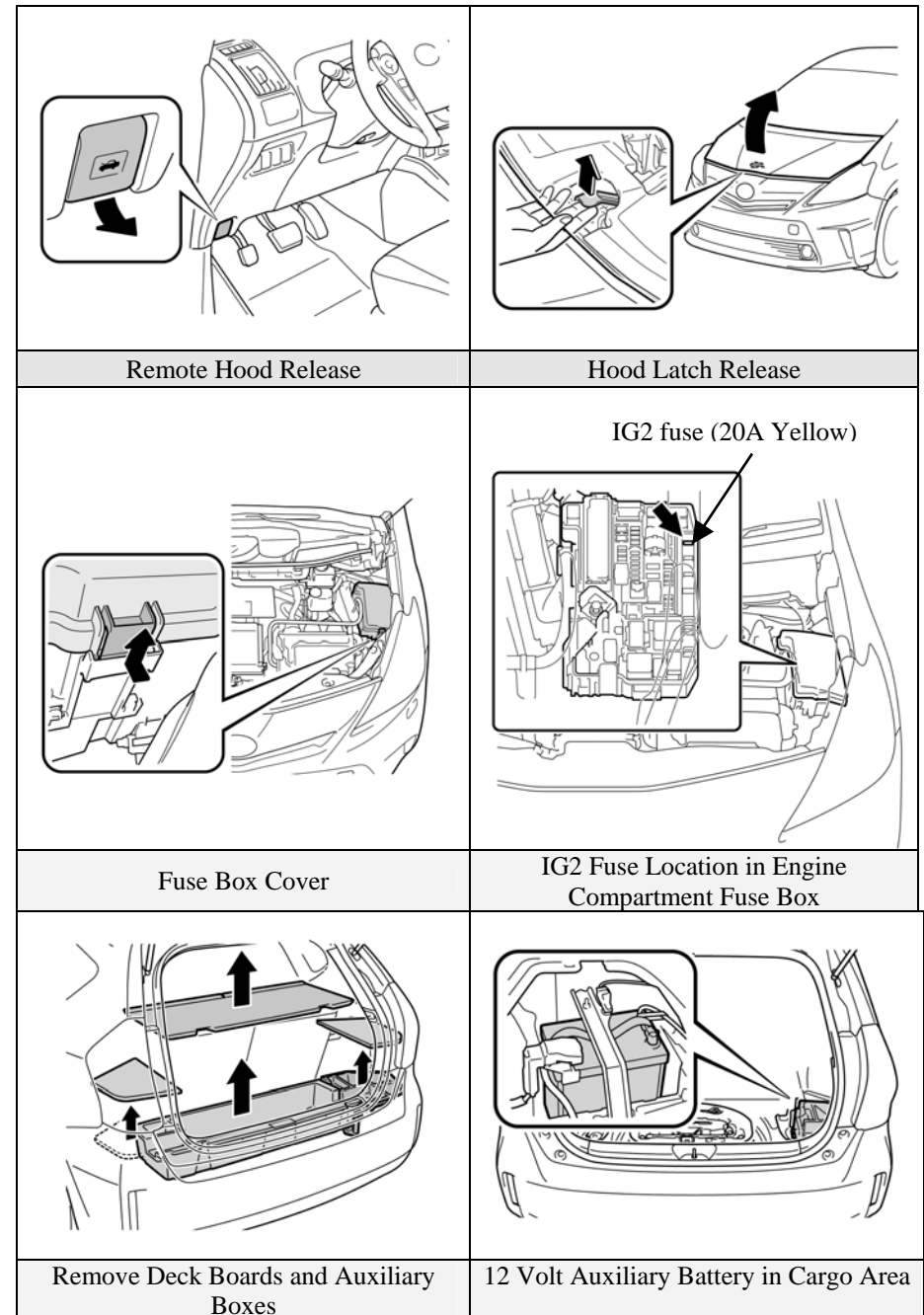
1. Open the hood.
2. Remove the fuse box cover.
3. Remove the **IG2** fuse (20A yellow colored) in the engine compartment fuse box (refer to illustration). If the correct fuse cannot be recognized, pull all fuses in the fuse box.
4. Disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.

#### NOTE:

Before disconnecting the 12 Volt auxiliary battery, if necessary, lower the windows, unlock the doors and open the back door as required. Once the 12 Volt auxiliary battery is disconnected, power controls will not operate.

#### ⚠ 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 high voltage component.*
- *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 breaching the SRS components.*
- *If none of the disabling procedures can be performed, proceed with caution as there is no assurance that the high voltage electrical system, SRS, or fuel pump are disabled.*



## Emergency Response (Continued)

### Extrication (Continued)

- Stabilize Vehicle

Crib at (4) points directly under the front and rear pillars.  
Do not place cribbing under the high voltage power cables, exhaust system, or fuel system.

- Access Patients

#### Glass Removal

Use normal glass removal procedures as required.

#### SRS Awareness

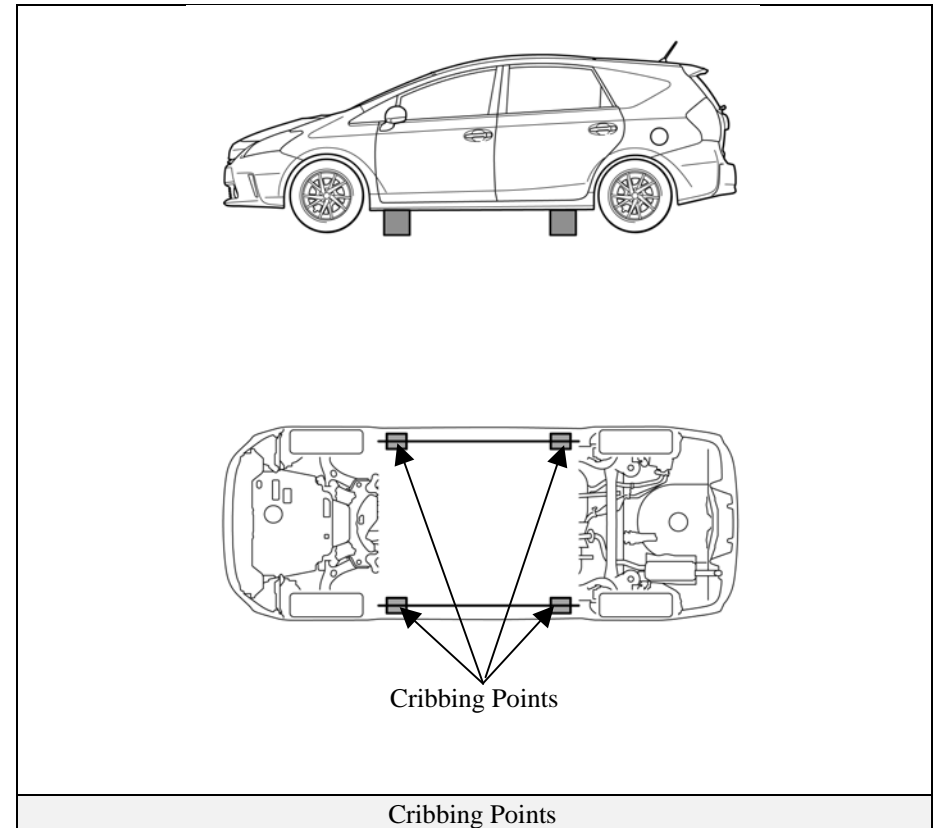
Responders need to be cautious when working in close proximity to undeployed airbags and seat belt pretensioners.

#### Door Removal/Displacement

Doors can be removed by conventional rescue tools such as hand, electric, and hydraulic tools. In certain situations, it may be easier to pry back the vehicle body to expose and unbolt the hinges.

#### NOTE:

To prevent accidental airbag deployment when performing front door removal/displacement, ensure the vehicle is shut off and the 12 Volt auxiliary battery is disconnected.





## Emergency Response (Continued)

### Extrication (Continued)

#### Roof Removal

The PRIUS +/PRIUS v is equipped with side curtain airbags. When undeployed, total roof removal is not recommended. Patient access through the roof can be performed by cutting the roof center section inboard of the roof rails as illustrated. This would avoid breaching the side curtain airbags, inflators, and wiring harness.

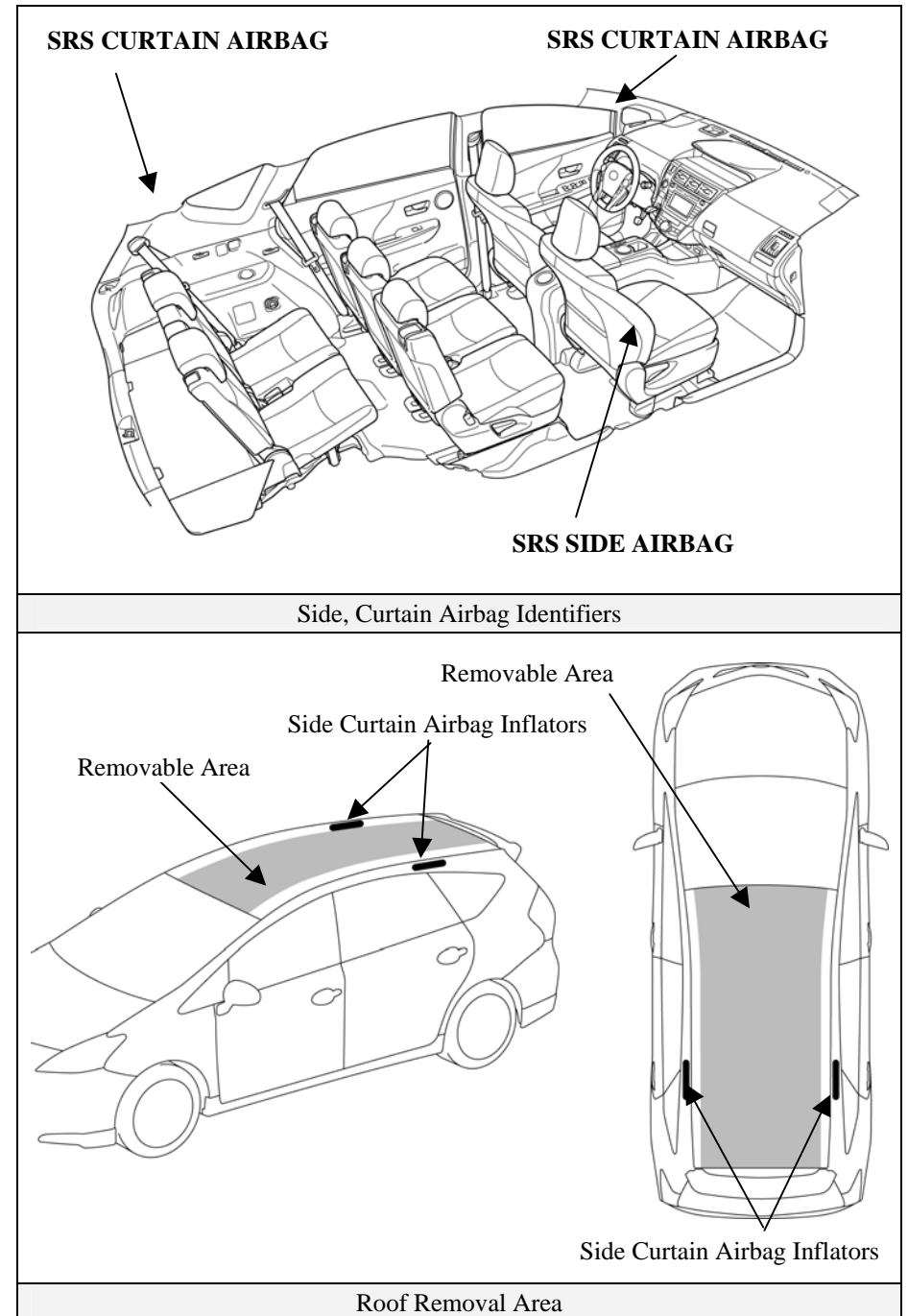
#### NOTE:

The side curtain airbags may be identified as illustrated on this page (additional component details on page 16).

An optional transparent dark gray polycarbonate roof panel is available for the PRIUS +/PRIUS v. When cutting the roof center section, use appropriate cutting tools for polycarbonate.

#### Dash Displacement

The PRIUS +/PRIUS v is equipped with side curtain airbags. When undeployed, total roof removal is not recommended to avoid breaching the side curtain airbags, inflators, and wiring harness. As an alternative, dash displacement may be performed by using a Modified Dash Roll.



## Emergency Response (Continued)

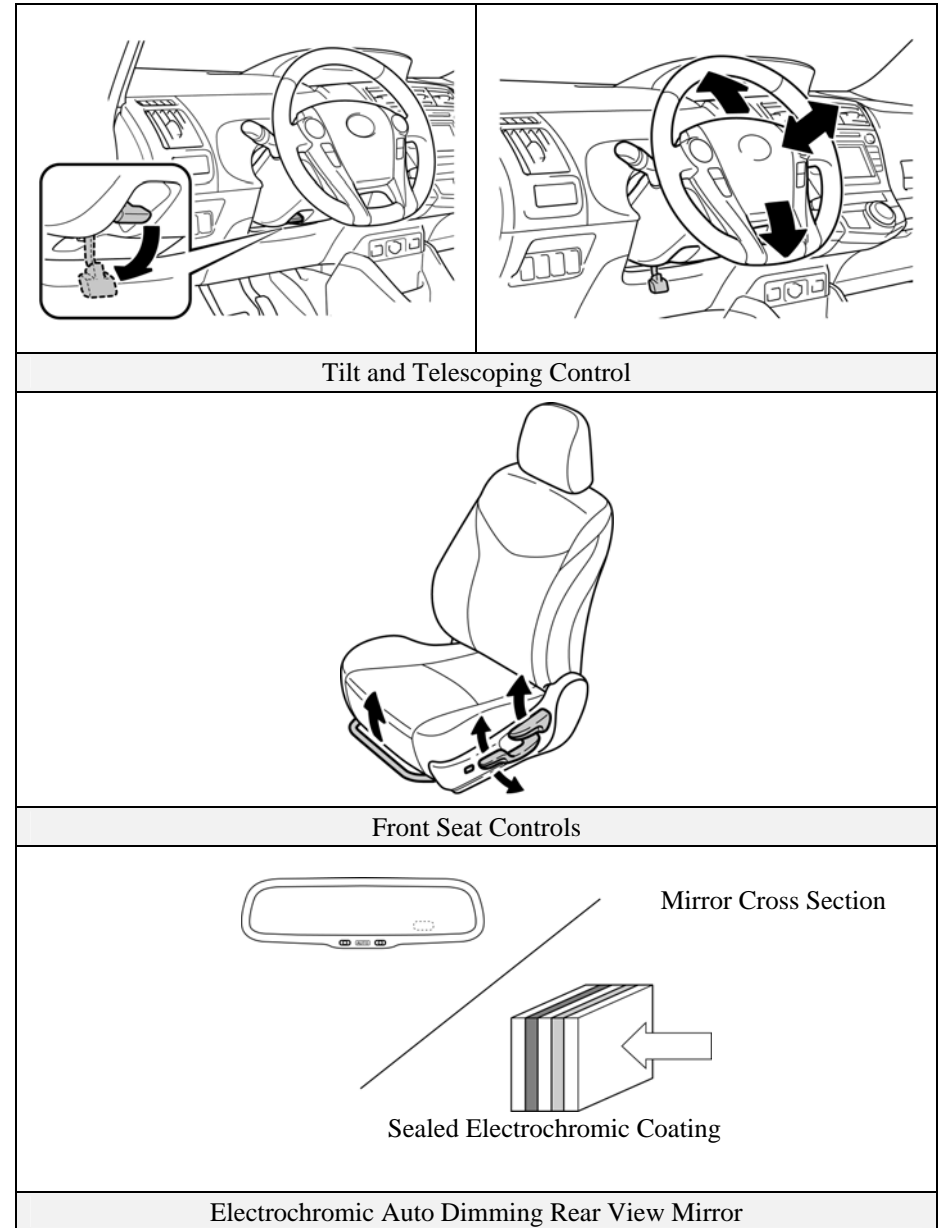
### Extrication (Continued)

#### Rescue Lift Air Bags

Do not place cribbing or rescue lift air bags under the high voltage power cables, exhaust system, or fuel system.

#### Repositioning Steering Wheel and Front and Rear Seats

Telescopic steering wheel and seat controls are shown in the illustrations.



#### NOTE:

The PRIUS +/PRIUS v is equipped with an optional electrochromic auto dimming rear view mirror. The mirror contains a minimal amount of transparent gel sealed between two glass plates that will not normally leak.

## Emergency Response (Continued)

### Fire

- Extinguishing Agent  
Water has been proven to be a suitable extinguishing agent.
- Initial Fire Attack  
Perform a fast, aggressive fire attack.  
Divert the runoff from entering watershed areas.  
Attack teams may not be able to identify a PRIUS +/-PRIUS v until the fire has been knocked down and overhaul operations have commenced.
- Fire in the HV Battery Assembly  
Should a fire occur in the Li-ion HV battery assembly, attack crews should utilize a water stream or fog pattern to extinguish any fire within the vehicle *except* for the HV battery assembly.

When allowed to burn themselves out, the PRIUS +/-PRIUS v Li-ion battery cells burn rapidly and are reduced to a combination of ashes and metal components.

#### *Offensive Fire Attack*

Normally, flooding a Li-ion HV battery assembly with copious amounts of water at a safe distance will effectively control the HV battery assembly fire by cooling the adjacent Li-ion battery cells to a point below their ignition temperature. The remaining cells on fire, if not extinguished by the water, will burn themselves out.

However, flooding the PRIUS +/-PRIUS v HV battery assembly is *not* recommended due to the battery case design and location

preventing the responder from properly applying water through the available vent openings safely. Therefore, it is recommended that the incident commander allow the PRIUS +/-PRIUS v HV battery assembly to burn itself out.

#### *Defensive Fire Attack*

If the decision has been made to fight the fire using a defensive attack, the fire attack crew should pull back a safe distance and allow the Li-ion battery cells to burn themselves out. During this defensive operation, fire crews may utilize a water stream or fog pattern to protect exposures or to control the path of smoke.

#### **WARNING:**

- *Burning batteries may irritate the eyes, nose, and throat. To prevent injury wear personal protective equipment suitable for organic solvents including SCBA.*
- *The battery cells are contained within a metal case and accessibility is limited.*
- *To avoid serious injury or death from severe burns or electric shock, **never** breach or remove the high voltage battery assembly cover under any circumstance including fire*

## Emergency Response (Continued)

### Overhaul

During overhaul, immobilize and disable the vehicle if not already done. Refer to illustrations on page 18, 19 and 20. The HV battery cover should *never* be breached or removed under any circumstances including fire. Doing so may result in severe electrical burns, shock, or electrocution.

- Immobilize Vehicle
  - Chock wheels and set the parking brake.
  - Push the P switch to engage park (P).
- Disable Vehicle
  - Performing either of the following two procedures will shut the vehicle off and disable the HV battery assembly, SRS, and gasoline fuel pump.

#### **Procedure #1**

1. Confirm the status of the **READY** indicator in the instrument cluster.
2. If the **READY** indicator is illuminated, the vehicle is on and operational. Shut off the vehicle by pushing the power button once.
3. The vehicle is already shut off if the instrument cluster lights and the **READY** indicator are not illuminated. Do **not** push the power button because the vehicle may start.
4. If the key is easily accessible, keep it at least 16 feet (5 meters) away from the vehicle and disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.
5. If the key cannot be found, disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.

#### **Procedure #2 (Alternate if power button is inaccessible)**

1. Open the hood.
2. Remove the fuse box cover.
3. Remove the **IG2** fuse (20A yellow colored) in the engine compartment fuse box (refer to illustration). If the correct fuse cannot be recognized, pull all fuses in the fuse box.
4. Disconnect the 12 Volt auxiliary battery behind the cover in the cargo area to prevent accidental restarting of the vehicle.

#### NOTE:

Before disconnecting the 12 Volt auxiliary battery, if necessary, lower the windows, unlock the doors and open the back door as required. Once the 12 Volt auxiliary battery is disconnected, power controls will not operate.

#### **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 high voltage component.*
- *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 breaching the SRS components.*
- *If none of the disabling procedures can be performed, proceed with caution as there is no assurance that the high voltage electrical system, SRS, or fuel pump are disabled.*

#### Recovery of Li-ion HV Battery Assembly

For information regarding recovery of the HV battery assembly, contact the nearest Toyota dealer.

## Emergency Response (Continued)

### Spills

The PRIUS +/PRIUS v contains the same common automotive fluids used in other non-hybrid Toyota vehicles, with the exception of the Li-ion electrolyte used in the HV battery assembly. The electrolyte used in the Li-ion battery cells is a flammable organic electrolyte. The electrolyte is absorbed into the battery cell separators, even if the battery cells are crushed or cracked, it is unlikely that liquid electrolyte will leak. Any liquid electrolyte that leaks from a Li-ion battery cell quickly evaporates.

#### **WARNING:**

- *The Li-ion battery contains organic electrolyte. Only a small amount may leak from the batteries which may irritate the eyes, nose, throat, and skin.*
- *Contact with the vapor produced by the electrolyte may irritate the nose and throat.*
- *To avoid injury by coming in contact with the electrolyte or vapor, wear personal protective equipment for organic electrolyte including SCBA or protective mask for organic gases.*

In an emergency, the Li-ion battery (part number G9280-47190) manufacturer's Product Safety Data Sheet (PSDS) is available.

- Handle Li-ion electrolyte spills using the following Personal Protective Equipment (PPE):
  - Splash shield or safety goggles. Fold down helmet shields are not acceptable for electrolyte spills.
  - Rubber gloves or gloves suitable for organic solvents.
  - Apron suitable for organic solvents.
  - Rubber boots or boots suitable for organic solvents.
  - Protective mask for organic gases or SCBA.
- Absorbent
  - Suitable absorbent for an organic solvent.

### First Aid

Emergency responders may not be familiar with Li-ion electrolyte exposure when rendering aid to a patient. Exposure to the electrolyte is unlikely except in a catastrophic crash or through improper handling. Utilize the following guidelines in the event of exposure.

- Wear Personal Protective Equipment (PPE)
  - Splash shield or safety goggles. Fold down helmet shields are not acceptable for electrolyte spills.
  - Rubber gloves or gloves suitable for organic solvents.
  - Apron suitable for organic solvents.
  - Rubber boots or boots suitable for organic solvents.
  - Protective mask for organic gases or SCBA
- Absorption
  - Perform gross decontamination by removing affected clothing and properly disposing of the garments.
  - Rinse the affected areas with water for 20 minutes.
  - Transport patients to the nearest emergency medical care facility.
- Inhalation in Non-Fire Situations
  - Contact with the vapor produced by the electrolyte with moisture may irritate the nose and throat. In severe cases such as confined spaces, move exposed patients to a well ventilated area.
  - Transport patients to the nearest emergency medical care facility.
- Inhalation in Fire Situations
  - Toxic gases are given off as by-products of combustion. All responders in the Hot Zone should wear the proper PPE for fire fighting including SCBA.
  - Move a patient from the hazardous environment to a safe area and administer oxygen.
  - Transport patients to the nearest emergency medical care facility.

## **Emergency Response (Continued)**

### First Aid (Continued)

- Ingestion
  - Do not induce vomiting, unless instructed by the doctor.
  - If vomiting occurs naturally, avoid aspiration.
  - Transport patients to the nearest emergency medical care facility.

### Submersion

A submerged hybrid vehicle does not have high voltage potential on the metal vehicle body, and is safe to touch.

#### Access Patients

Responders can access the patient and perform normal extrication procedures. High voltage orange color coded power cables and high voltage components should never be touched, cut, or breached.

#### Vehicle Recovery

If a hybrid vehicle is fully or partially submerged in water, emergency responders may not be able to determine if the vehicle has been automatically disabled. The PRIUS +/PRIUS v may be handled by following these recommendations:

#### NOTE:

If park (P) system related components are damaged due to submersion, it may not be possible to shift from park (P) to neutral (N). If this is the case, make sure to tow or move the vehicle with the front wheels off the ground.

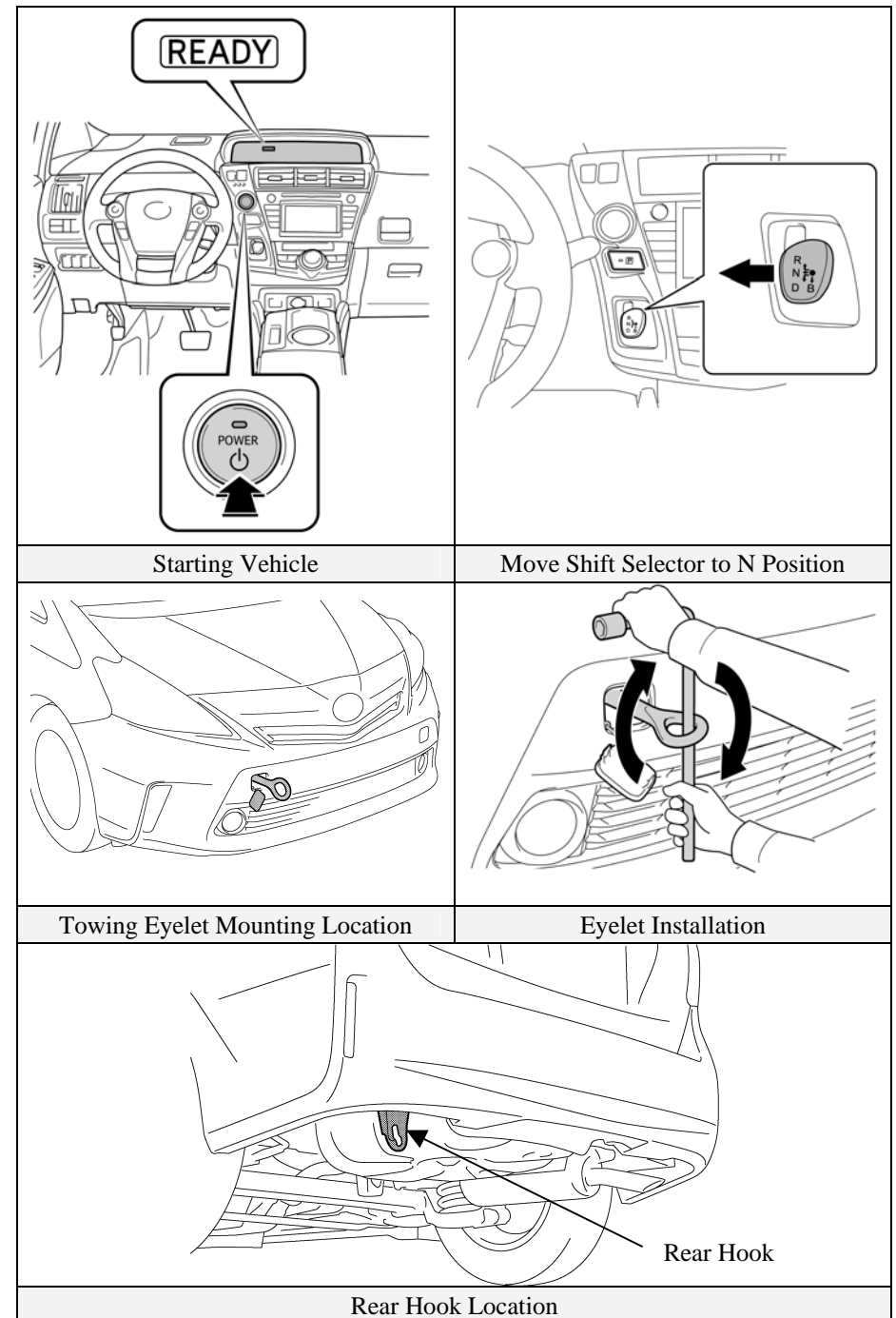
## Roadside Assistance

The PRIUS +/PRIUS v utilizes an electronic shift selector and a P switch for selecting park (P). If the 12 Volt auxiliary battery is discharged or disconnected, the vehicle cannot be started nor can it be shifted out of park (P). If discharged, the 12 Volt auxiliary battery can be jump started to allow vehicle starting and shifting out of park (P). Most other roadside assistance operations may be handled like conventional Toyota vehicles.

### Towing

The PRIUS +/PRIUS v is a front wheel drive vehicle and it **must** be towed with the front wheels off the ground. Failure to do so may cause serious damage to Hybrid Synergy Drive components.

- A flat bed trailer is the preferred method of towing.
- The vehicle may be shifted out of park (P) into neutral (N) when in either the ignition-on or READY-on mode. To select neutral (N), it is necessary to hold the shift selector in the N position for approximately 0.5 seconds.
- If the 12 Volt auxiliary battery is discharged, the vehicle will not start and shifting out of park (P) is not possible. There is no manual override except to jump start the vehicle, refer to the Jump Starting on page 31.
- If a tow truck is not available, in an emergency the vehicle may be towed using a cable or chain secured to the emergency towing eyelet or rear tow hook for short distances at low speeds (below 18 mph (30km/h)). The eyelet is located with the tools in the cargo area of the vehicle, refer to the illustration on page 30.

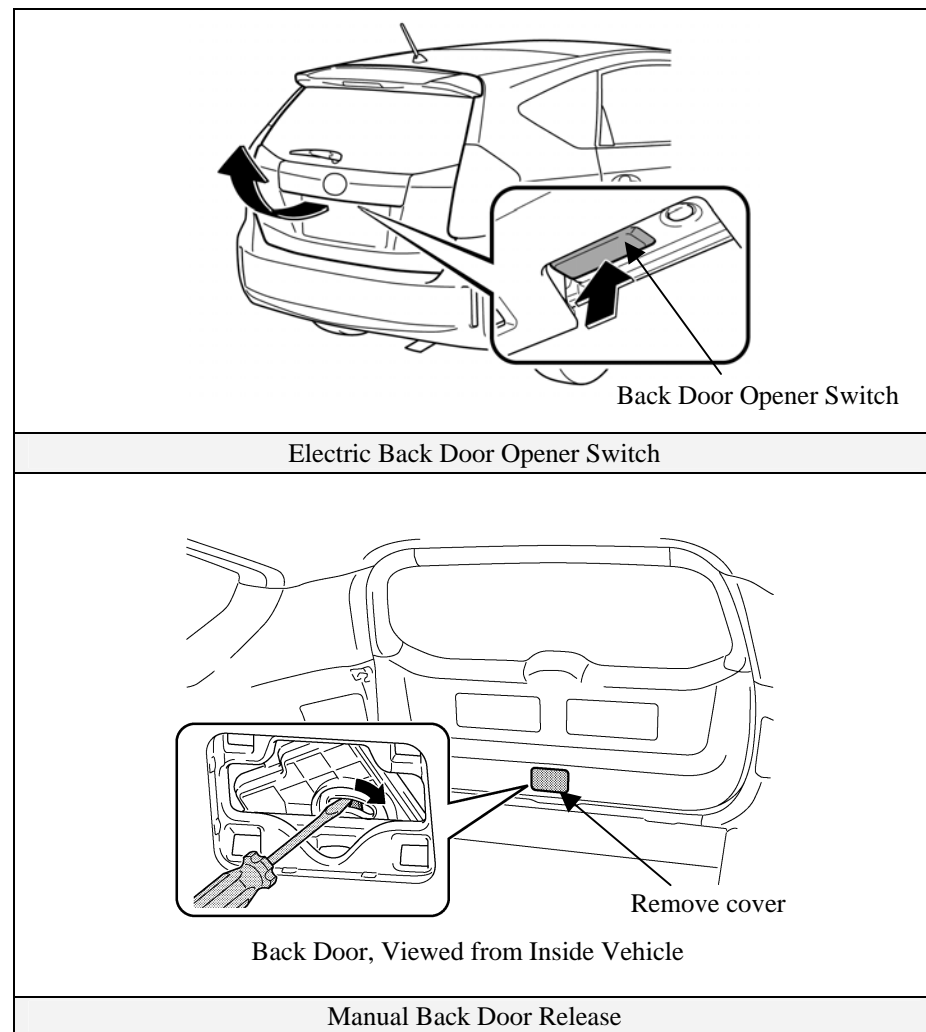


## Roadside Assistance (Continued)

### Electric Back Door Opener

The PRIUS +/PRIUS v is equipped with an electric back door opener. In the event of 12 Volt power loss, the back door cannot be opened from the outside of the vehicle.

The electric back door can be opened manually using the release as shown in the illustration.

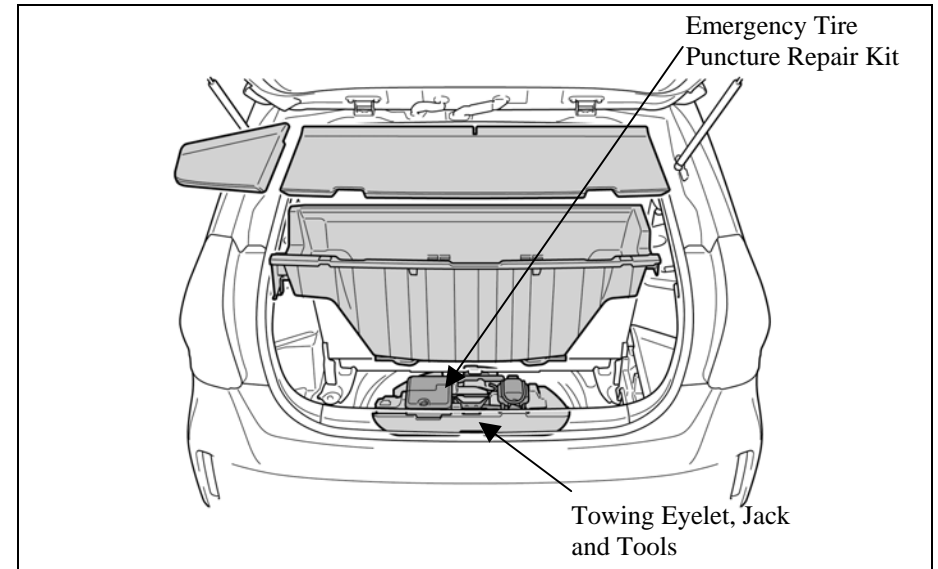




## Roadside Assistance (Continued)

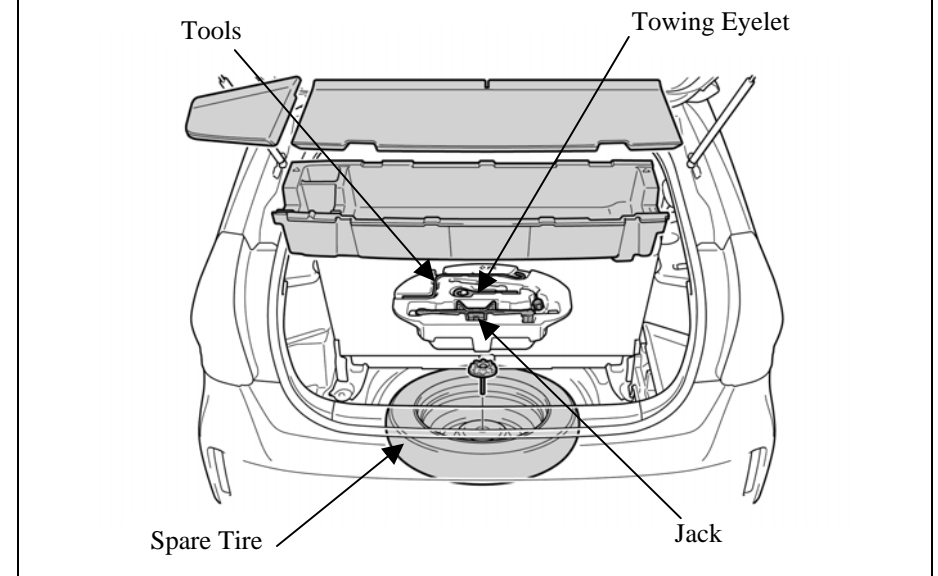
### Spare Tire

The jack, tools, towing eyelet and emergency tire puncture repair kit are provided as shown.



Tools, Jack, Towing Eyelet and Emergency Tire Puncture Repair Kit in the Cargo Area

The jack, tools, towing eyelet and optional spare tire are provided as shown.



Tools, Jack, Towing Eyelet and Spare Tire in the Cargo Area

## Roadside Assistance (Continued)

### Jump Starting

The 12 Volt auxiliary battery may be jump started if the vehicle does not start and the instrument cluster gauges are dim or off after depressing the brake pedal and pushing the power button.

The 12 Volt auxiliary battery is located in the cargo area. If the 12 Volt auxiliary battery is discharged, the back door cannot be opened. Instead, the vehicle can be jump started by accessing the remote positive 12 Volt auxiliary battery terminal in the engine compartment fuse box.

- Open the hood.
- Remove the fuse box cover, and open the positive terminal cover.
- Connect the positive jumper cable to the positive terminal.
- Connect the negative jumper cable to a solid ground.
- Place the key in proximity to the interior of the vehicle, depress the brake pedal, and push the power button.

#### NOTE:

If the vehicle does not recognize the key after connecting the booster battery to the vehicle, open and close the driver door when the vehicle is shut off.

If the key internal battery is dead, touch the Toyota emblem side of the key to the power button during the start sequence. Refer to the instructions and illustrations on page 9 for more details.

- The high voltage HV battery assembly cannot be jump started.

### Immobilizer

The PRIUS +/PRIUS v is equipped with a standard immobilizer system.

- The vehicle can be started only with a registered key.

