FCA

FIAT CHRYSLER AUTOMOBILES

EMERGENCY RESPONSE GUIDE

2017 Chrysler Pacifica Hybrid

January 2017

NAFTA

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Chrysler Pacifica Hybrid - Emergency Response Guide

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Identifying the Pacifica Hybrid Model

The Pacifica Hybrid can be identified by unique badging. The rear lift gate is marked “eHYBRID” at the lower right. At the driver-side front fender, the charge port door features the same “e” leaf logo. The engine cover is unique as shown, and the left dash gage is a power meter.

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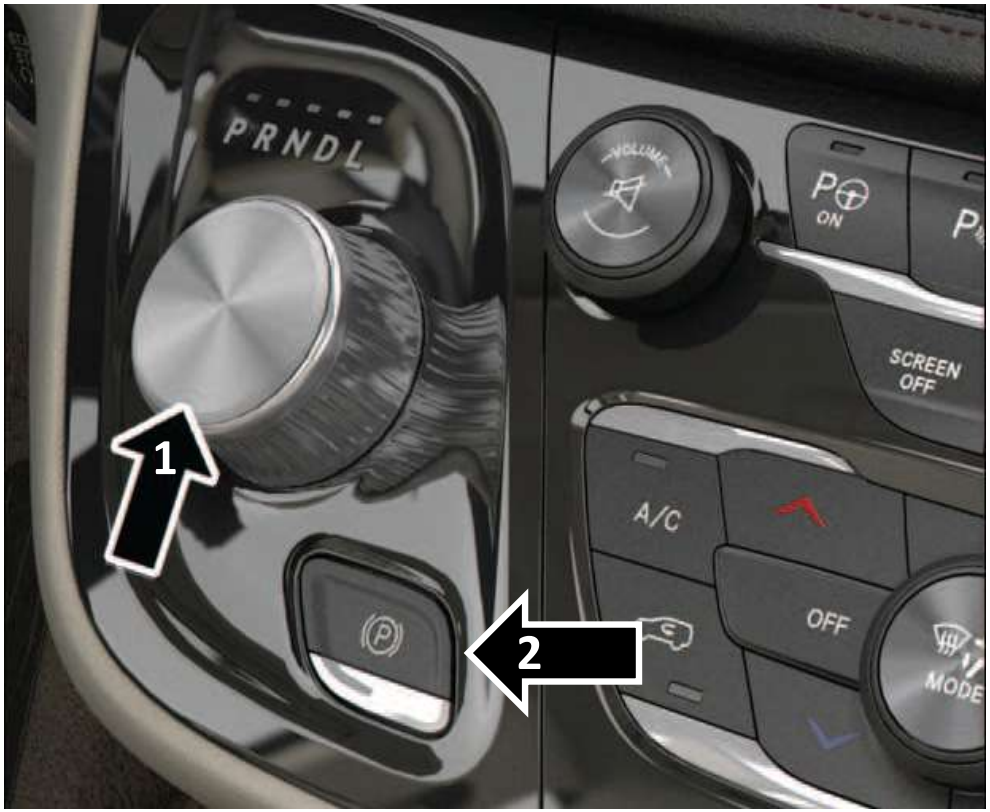
Driveline Controls



- This vehicle uses an electronic shift control (1) for its automatic transmission. To shift the vehicle into park, rotate the knob counter clockwise until it stops.
- To place the vehicle in Neutral, press on the brake and rotate the knob clockwise from Park 2 clicks until the bar LED above “N” is lit
- The electric parking brake control (2) is below the shifter. The LED illuminates when the brake is set.

NOTE: 12V power must be active to shift in and out of Park or to change the Parking Brake state.

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Engine Compartment Access

The hood latch release in the Chrysler Pacifica is located to the left of the steering wheel at the base of the lower dash panel. Placing fingers upward behind the edge at the flush inset lever handle, pull outward toward you. The hood will raise slightly and catch on the safety latch. Reach under the hood to the right of center and feel for the release. Push the lever toward the passenger side and the latch will release.

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Propulsion and Charging Operations

For propulsion, the hybrid minivan uses both a gasoline fueled internal combustion engine and an electric motor within the transmission, which is powered by a high voltage battery system. The vehicle control system uses the electric motor to do regenerative braking and recover some of the energy during vehicle braking. This energy is put back into the HV Battery System. Under rare circumstances, HV systems can be energized when the vehicle is pushed.

Plug-in charging of the HV Battery System is initiated by connecting the EVSE Recharge Coupler to the vehicle Charge Receptacle. Optionally, charging can be delayed or scheduled for a later start time. This may result in HV power-up without warning.

While the Recharge Coupler is connected to the vehicle Charge Receptacle the transmission is locked in park. The vehicle can not be shifted out of park. Also, one or more vehicle Charge Indicator Lights on the top of the dash panel will be illuminated.

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High Voltage Devices

Stored HV energy in the HV Battery System (1) is provided to the 'PIM' Power Electronics (2) and delivered as three phase AC power to the Electric Motors for propulsion. The stored HV energy is used by other vehicle components including:

- The 'EAC' HV Air Conditioning Compressor (3)
- The 'BCH' Battery Coolant Heater (4) which maintains battery temperature
- The 'APM' auxiliary Power Module (5) that charges the 12 volt low voltage system & battery

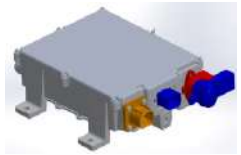
When plugged in, the HV power is supplied by the 'OBCM' On Board Charging Module (6)

(2) PIM

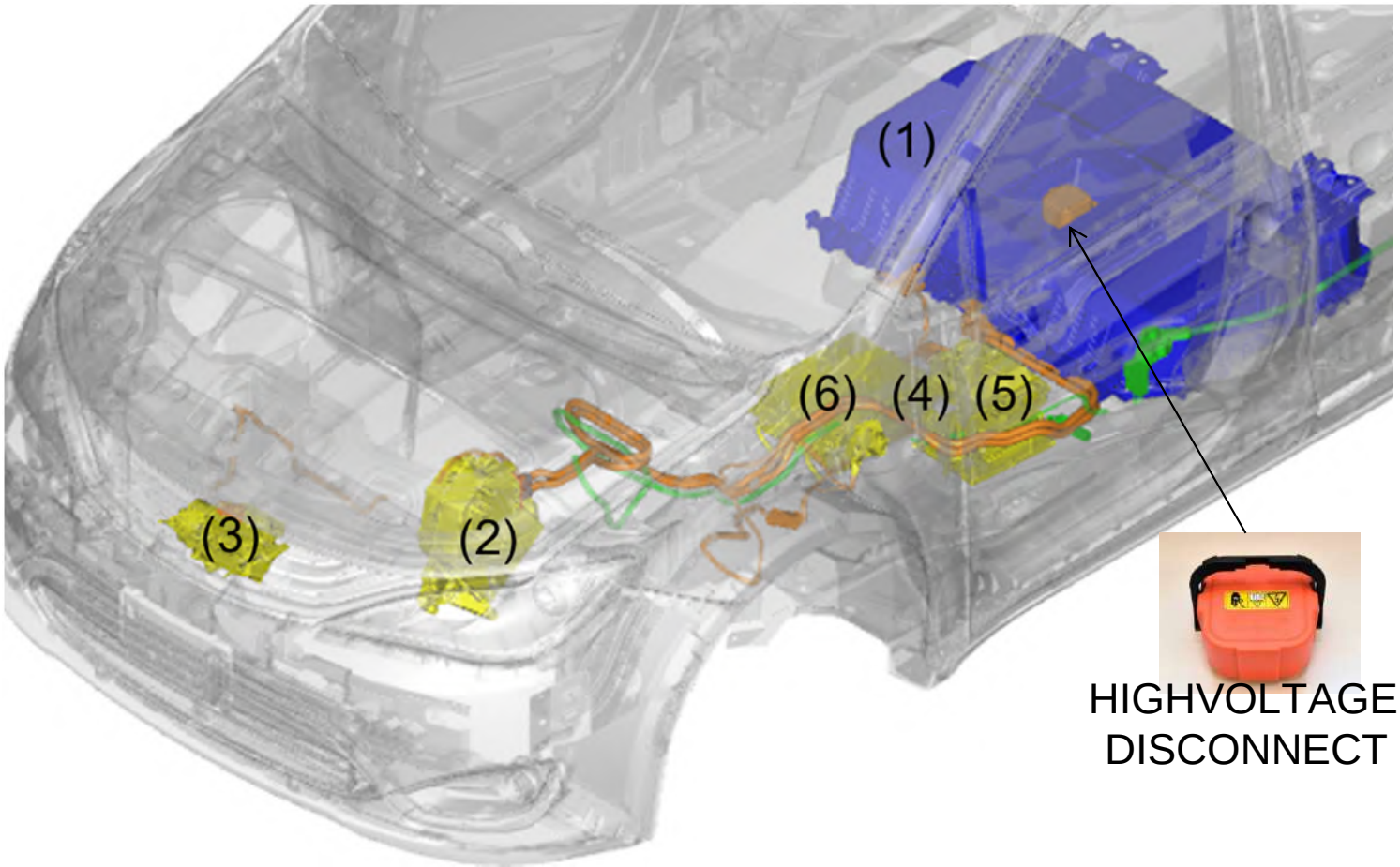
(3) EAC

(4) BCH

(5) APM



(6) OBCM



HIGHVOLTAGE DISCONNECT

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Emergency Disabling of Low and High Voltage Power

Standard procedure to disable 12 V and High Voltage (HV) power

To disable utility power to the vehicle do step 1. To disable 12 V power from the Vehicle Systems and to disable HV Battery power external from the HV Battery complete steps 2 *AND* 3. Step 4 should be done if possible safely and only disables HV Battery power external of the HV Battery. Step 5 allows the charge on HV capacitors to be discharged.

The following steps must be completed in numeric order:

1. Unplug the EVSE Recharge Coupler from the Vehicle Charge Receptacle, this will stop the AC power transfer to the vehicle. Press the Recharge Coupler button and pull to remove or turn off power to the EVSE.
2. Turn off Ignition switch by pressing stop button this will start the process of disabling 12 V and HV power. Remove the key fob and relocate it at least 20 feet away from the car.
3. Physically cut the 12 V power from the vehicle this will disable 12 V and HV power external of the HV battery. Remove a segment of the 12 V positive supply cable attached to the PDC in the front ("fuse box"). Protect the cut ends from arcing against metal parts as the cable is live.
4. (If possible safely) Remove the Service Disconnect and replace the access cover. This will only disable HV external of the HV battery system.
5. Wait 5 minutes to allow HV capacitors external of the HV Battery to discharge before addressing a damaged vehicle.

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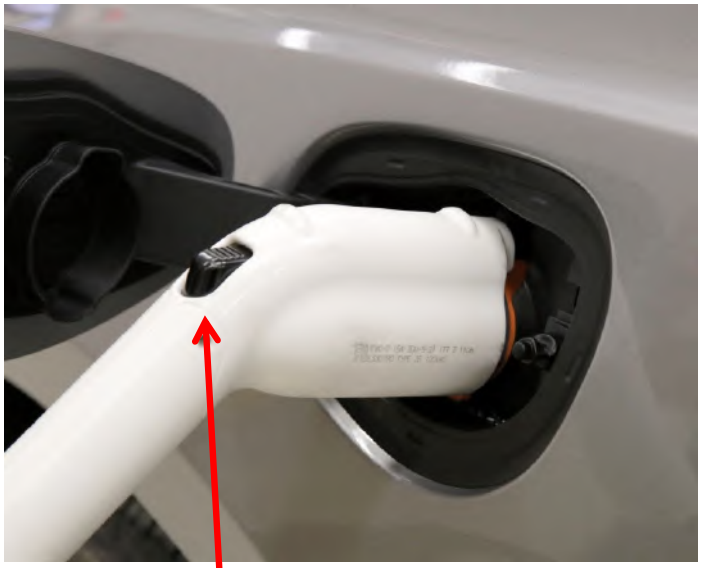
Emergency Disabling of Low and High Voltage Power

Procedure Step 1:

Unplug the EVSE Recharge Coupler from the Vehicle Charge Receptacle

This will remove EVSE AC power from the vehicle.



Press the EVSE Recharge Coupler button and pull to remove

This will remove EVSE AC power from the vehicle.

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Emergency Disabling of Low and High Voltage Power

Procedure Step 2:

Turn Ignition Switch to Off by pressing Stop button and move keys at least 20 feet away from the car

This action starts normal shutdown of 12 V and HV power.

Press stop button to turn off

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Emergency Disabling of Low and High Voltage Power

Procedure Step 3:

Physically cut the 12 V power

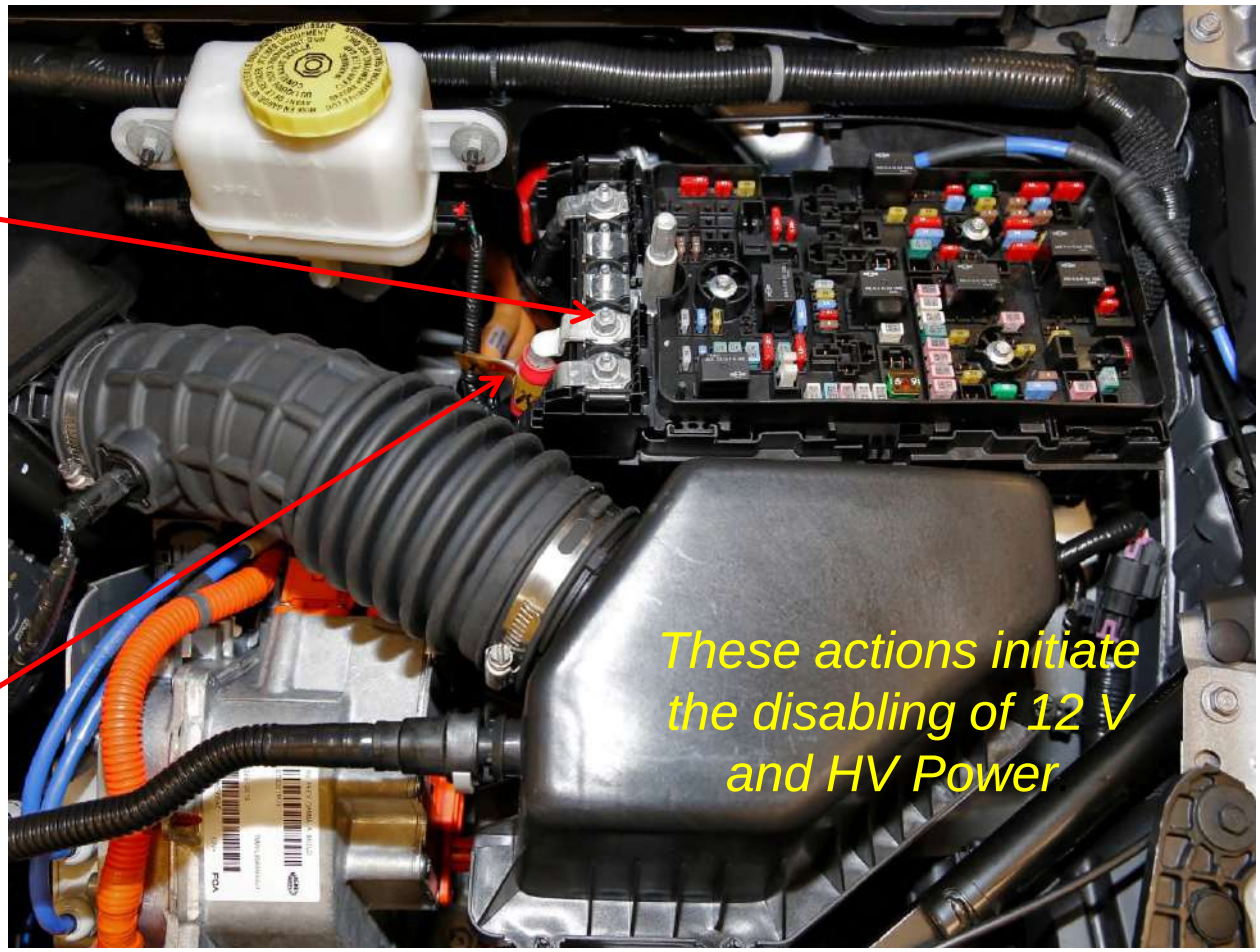
First:

Under the hood in the front, remove PDC cover to reveal the positive 12 V connection .

Second:

Cut and remove a segment of the 12V positive supply cable. Isolate the cut ends from chassis contact.

The 12V positive supply cable is marked with a First Responders Label designating the cut locations. Make a cut at each side of the label and remove the segment.



First Responders Label as seen in vehicle

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Emergency Disabling of Low and High Voltage Power

Procedure Step 4: (If possible safely)

Remove the Service Disconnect *This will disable High Voltage output from the battery*.

First: Uncover the Service Disconnect access cover.

Second: Unbolt the cover panel over the Service Disconnect.

Third: Remove the Service Disconnect.

Fourth: Reinstall the cover over the empty socket and replace the carpet.

The Service disconnect cover is between the 1st and 2nd row seat

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Emergency Disabling of Low and High Voltage Power

Procedure Step 5:

Wait 5 minutes

This will allow the HV capacitors to discharge under most circumstances. However, under some circumstances the HV Battery System HV Contactors may not open. Consequently, HV may not be contained to within the HV Battery System.

Personal Protective Equipment (HV qualified Gloves, Boots and Coat) provides protection against Live HV.

Warning: Personal Protective Equipment must be used by First Responders when addressing a damaged Chrysler Pacifica Hybrid.

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Inverted Vehicle Emergency Power-down

When the vehicle is inverted, or hood access is blocked:

1) Access the passenger compartment through the rear lift gate, gate window, or side door if possible.
2) Locate the 12 volt battery access on the driver's-side adjacent to the lift gate in the rear of the vehicle.
3) Open the battery terminal access door.
4) Grab the trim assembly (including upper compartment). firmly through the terminal access opening.
5) Pull outward to dislodge the retaining clips

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Inverted Vehicle Emergency Power-down (cont.)

When the vehicle is inverted, or hood access is blocked:

6) Remove the trim assembly to expose the battery.
7) Cut away or remove all negative battery cables.
8) Locate the Service Disconnect floor well behind and between the front two seats and uncover.
9) Unbolt the inner service disconnect cover.
10) Remove the service disconnect.
11) Replace the cover to protect against water and debris.
12) Wait 5 minutes. *This will disable power to high and low voltage systems. However, under some circumstances the HV Battery System Contactors may not open. In such instance, either or both systems could remain energized.*

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Wet Location Considerations

A vehicle submerged or flooded with water can result in protective system failures.

Excessive heat and electrolysis may take place resulting in byproducts of hydrogen and oxygen. In salt water chlorine is also a byproduct. These byproducts, trapped and concentrated by the passenger compartment, a garage, or other containment, may be in concentrations that could be explosive or corrosive and could have adverse affects on human health. Action should be taken to assure ventilation of a partially submerged vehicle and any space in which it is contained.

A vehicle **without** impact damage has HV contained to within enclosures or insulation and has HV isolated from the chassis, therefore electrical shock hazard risk is minimal. A submerged or flooded undamaged vehicle has a low electrical shock hazard risk.

A vehicle **with** impact damage presents an increased electrical shock hazard risk. If HV is open to the environment you must stay away from damaged HV components.

Warning: First Responders must use proper Personal Protective Equipment when addressing a damaged Chrysler Pacifica Hybrid vehicle.

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Fire Fighting Considerations

Fighting electrified driveline vehicle fires poses unique challenges.

- Never cut, pierce or damage any high voltage component as serious injury may result.
- Chemical extinguishers and oxygen denial are not effective in these fires.
- Deluge with water delivered via fire hose at the maximum possible distance is the recommended practice to contain the fire and cool the reagents, minimizing risk of spread and risk of toxic emissions. This should continue after extinguishment until the pack is cool.
- Application of large amounts of water should begin at the first signs of battery smoke as water may absorb some harmful toxic emissions in the smoke.
- Ventilation of the passenger compartment, if occupied, is essential at the first sign of battery heating, smoke or fire. Batteries should be thermally assessed during initial operations and throughout rescue and remediation efforts.
- Damage, abuse, flooding or exposure to heat (such as from a vehicle fire) can initiate thermal reactions which will advance to a significant fire in lithium ion power systems.
- The Battery thermal reactions become self-sustaining at higher temperatures due to the emission of oxygen from certain constituents.
- Ongoing battery fire or heat production can facilitate the re-ignition of combustible automotive components above and adjacent to the pack.
- Lithium-ion automotive batteries can reignite due to ongoing reactions from internal heat.
- For any battery thermal event, NFPA recommends SCBA be required within fifty feet.

Rescue of persons at risk and containment of the fire with prevention of toxic gas emissions should be the goals of fire-fighting efforts.

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Extrication Considerations

Impact event emergencies can require the extrication of victims from damaged vehicles. Determination of the need to extricate and timing must be made by incident command based on standard response practices and procedures.

When victims can be removed safely from an electrified driveline vehicle, **it may be prudent** as consequences of damage to high voltage components may evolve over time.

Potential related hazards to vehicle occupants, beyond medical condition and typical automotive impact event hazards will include:

- Fire, which is sustained by heat from a damaged battery or shorted wiring
- Exposure of high voltage potentials from damage to the isolated HV system
- Toxic gaseous emissions from a thermally active damaged battery
- Vehicle stability, or the lack there-of. Lift points indicated on page 21 should be used to immobilize the vehicle when possible before extrication activities.

Decisions to extricate must take into account the balance between medical condition and hazard from the state of the vehicle.

Damage to fuel systems, potential hot coolant lines, all high voltage electrical components and cables, the batteries, and potentially active restraint systems must be avoided at all times. See the following pages for location information. (The “Do not cut” illustrations)

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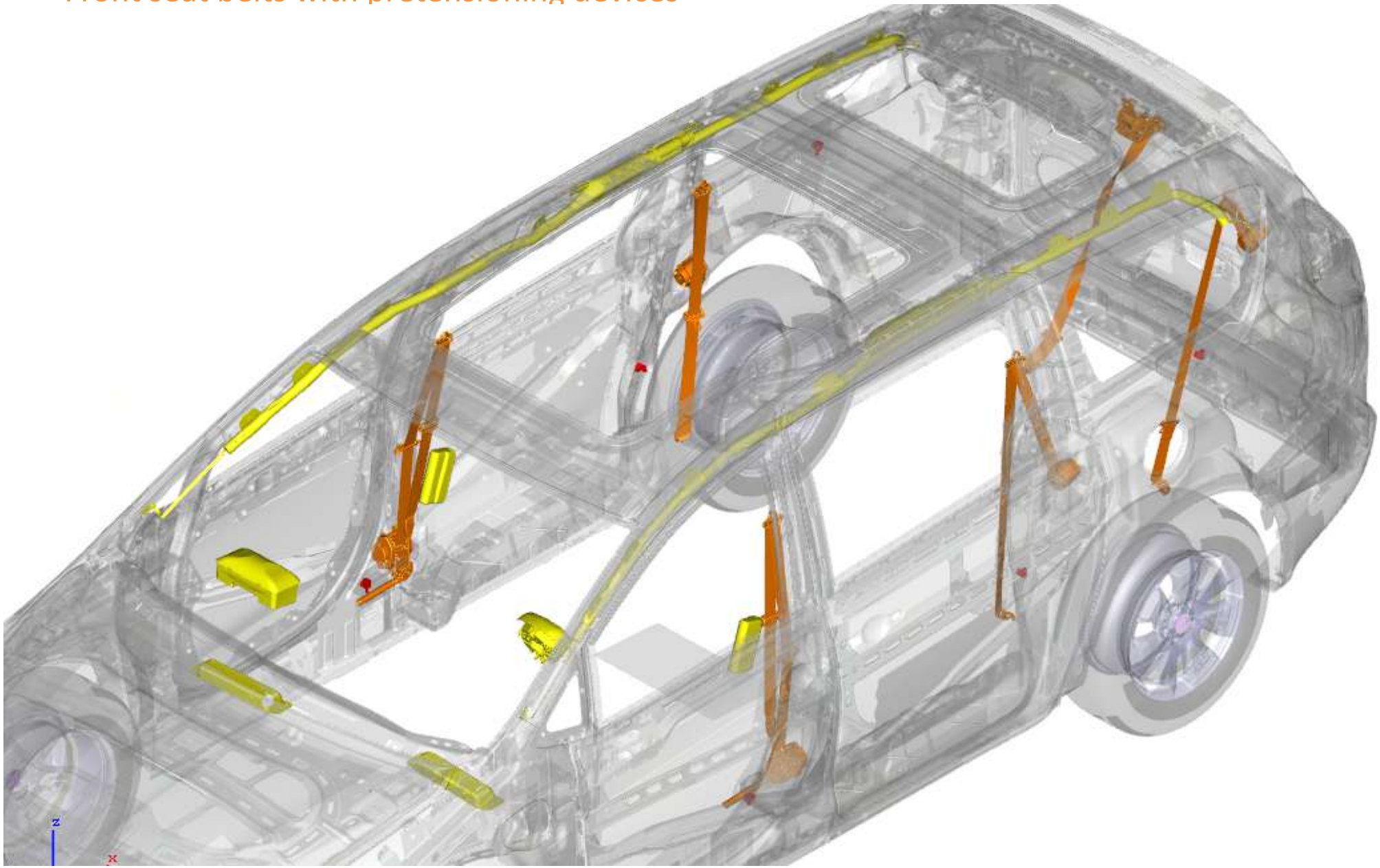
Passive Restraint Device Considerations

Restraint Systems:

- Front seat belts with pretensioning devices



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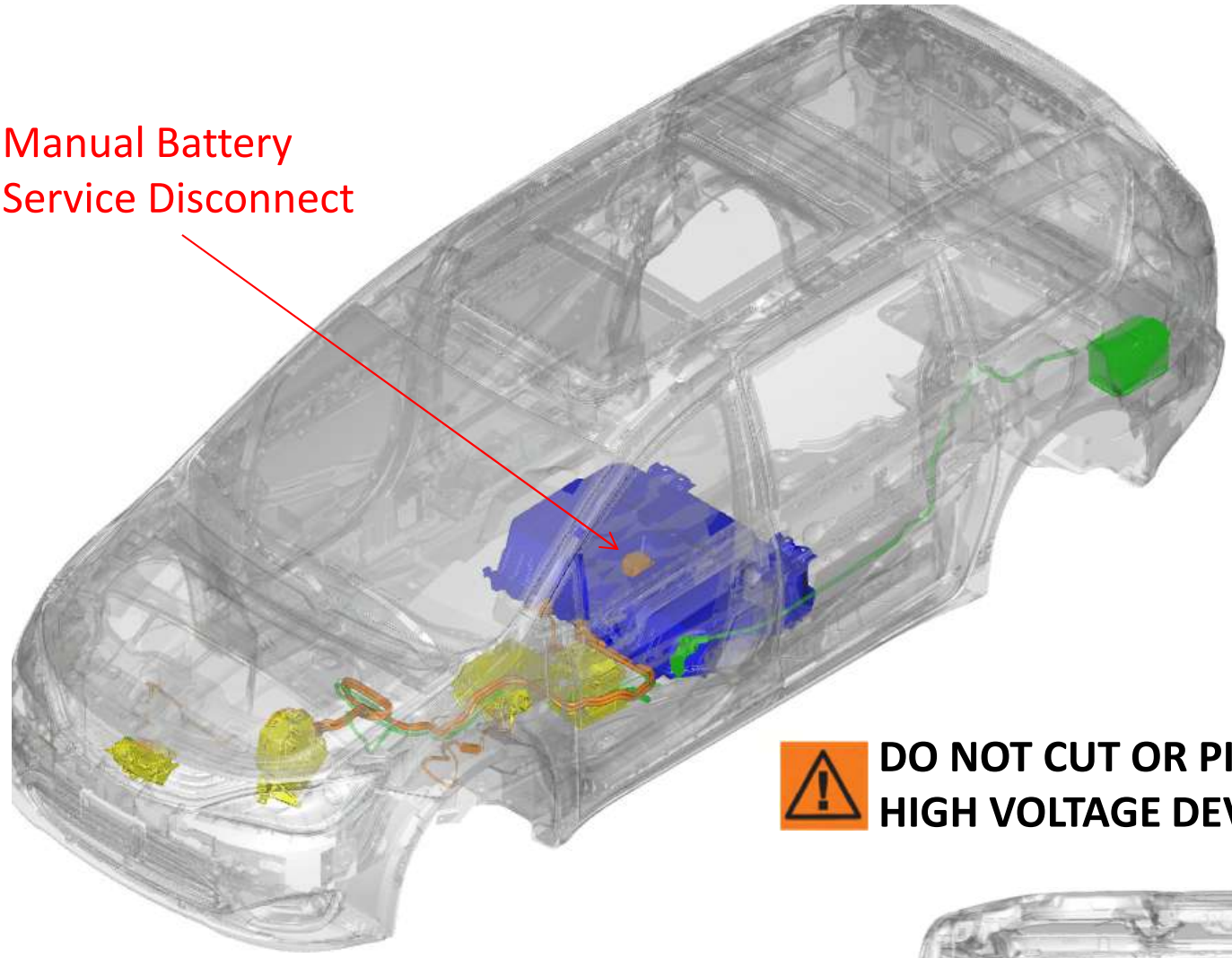
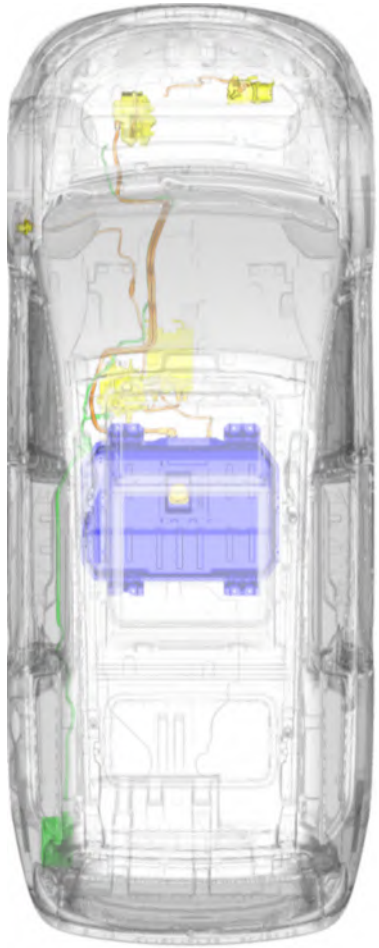
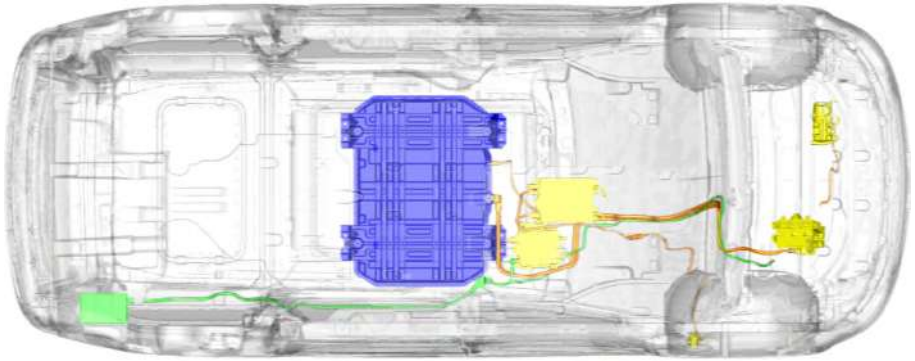
Electrical Considerations

Manual Battery
Service Disconnect





DO NOT CUT OR PIERCE HIGH VOLTAGE DEVICES



High Power Electrical Systems:

- High Voltage Cables
- High Voltage Components
- High Voltage Battery
- Low Voltage (12V) Battery and Cables

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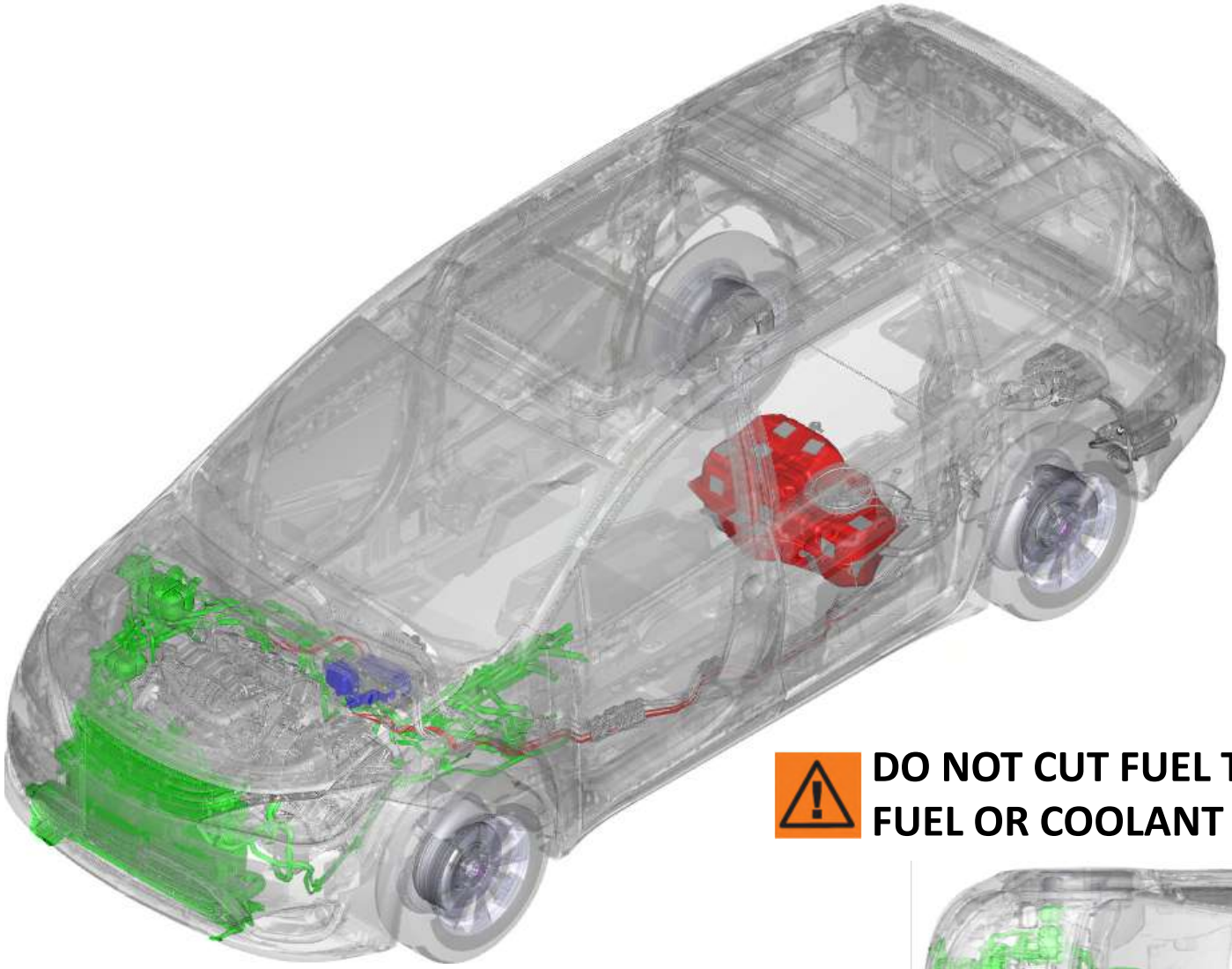
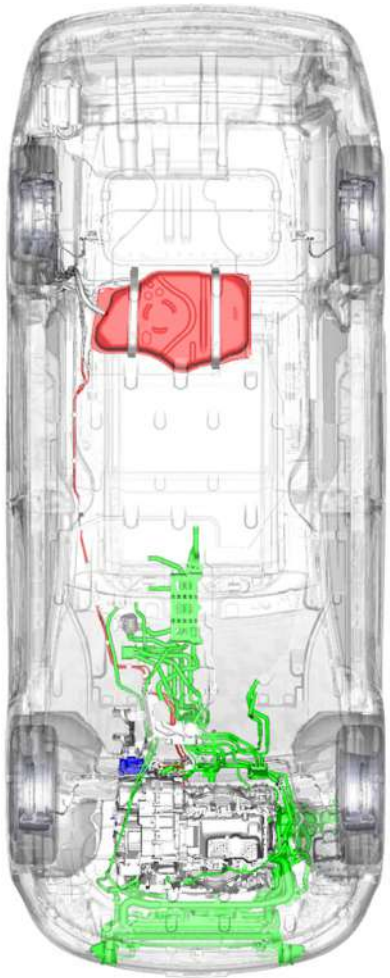
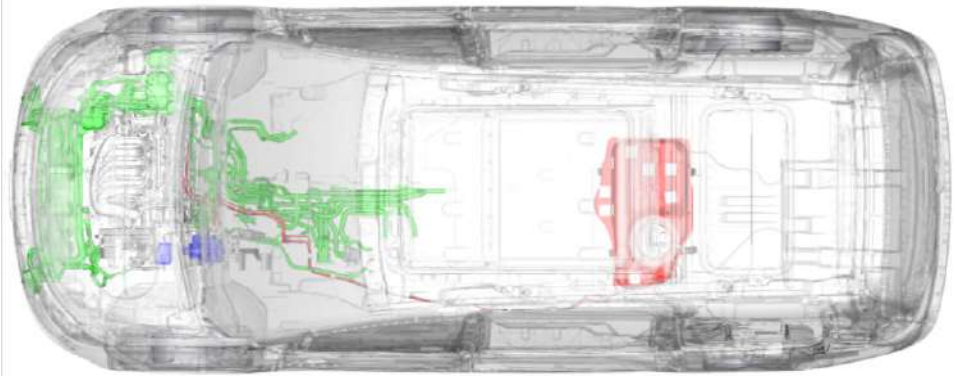
Fuel and Fluid Systems Considerations





DO NOT CUT FUEL TANK, FUEL OR COOLANT LINES



Fuel and other Fluid Systems:

- Gasoline Fuel Tank and Fuel Lines
- Brake and Power Steering Reservoirs
- Radiator and Cooling System

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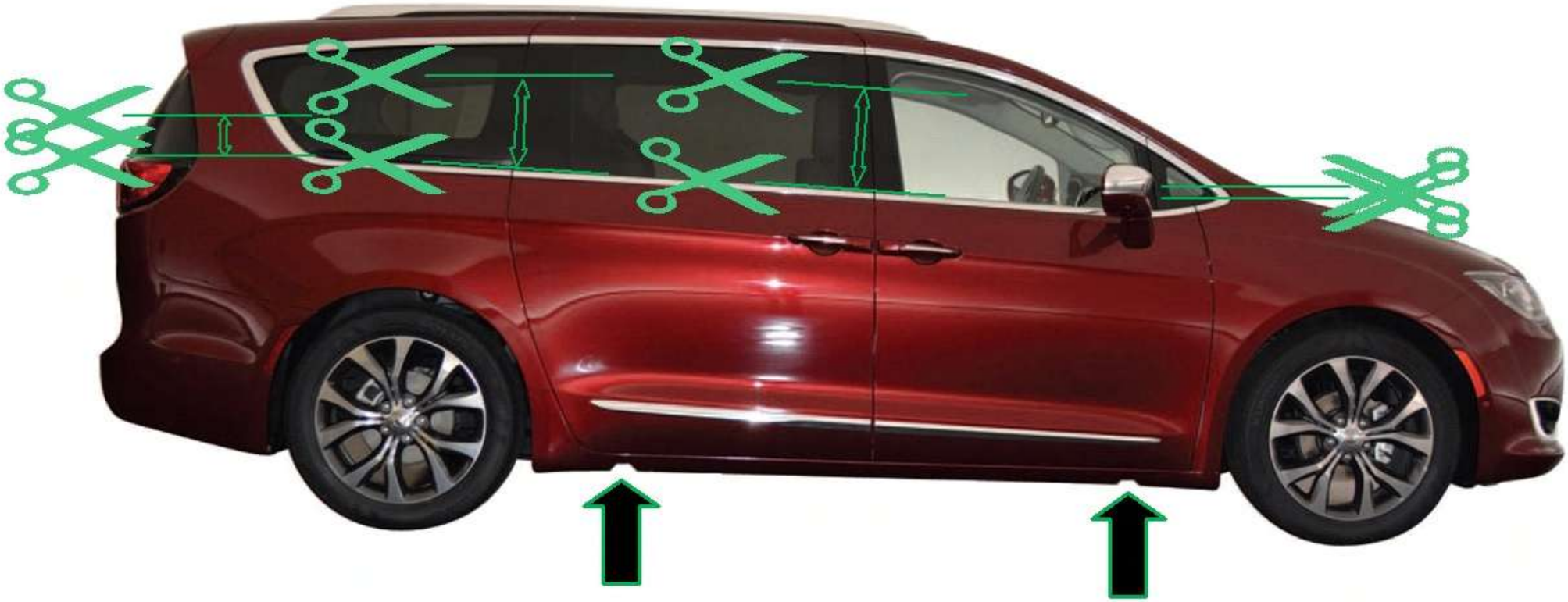
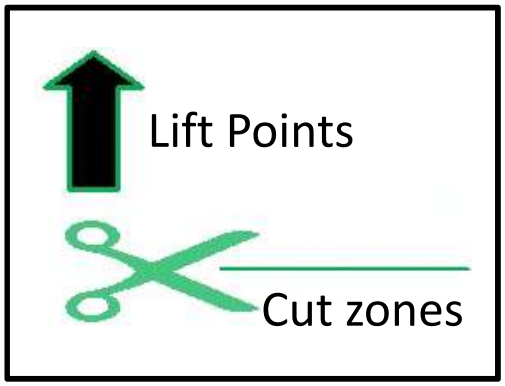
Recommended Lift and Cut Zones



The areas illustrated are recommended lift and cut zones on the vehicle. Determination of actual lift and cut points must be made by incident command based on the unique situational factors such as possible relocation of the hazards illustrated on the preceding pages as a result of impact events. These are only recommendations.



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Post-incident Handling

Following initial response, certain actions and precautions are necessary. If air bags have deployed, the vehicle cannot be driven again until repaired, as air bag protection will not be available to occupants in the event of a collision. After any collision, the vehicle should be taken to an authorized dealer immediately.

While the Pacifica HV battery is designed for safety, industry-wide experience has demonstrated that the unlikely possibility of delayed ignition or re-ignition of a damaged battery must be considered in post-incident handling. Any battery exposed to accident forces sufficient to deploy air bags or to a vehicle fire requires special precautions until verified as undamaged.

- The vehicle or battery pack must not be stored inside an occupied structure.
- Adequate ventilation must be present at the storage location to prevent buildup of any outgassing.
- Batteries to be recycled must be shipped in accordance with regulations governing the transport of damaged lithium-ion batteries (and never by air).
- Thermal monitoring of any damaged, flooded or burned battery should be performed during storage.
- The manual battery Service Disconnect must not be reinstalled by other than an authorized technician.
- The Service Disconnect socket must be covered/sealed to prevent water or debris entering the battery.

The battery pack in this vehicle uses non-spillable lithium-ion cells, and it is unlikely that electrolyte, which is clear, will escape from the pack in the event of damage. Liquid emissions from damaged packs are typically colored battery coolant, which should be addressed in the same manner as spilled engine coolant.

Do not apply chemical neutralizers used for other battery types or take any other action which could result in battery cell contents being aerosolized.

Do not ingest, inhale, or make bare skin contact with any internal material from the battery cells. In the event of accidental contact of this nature, wash exposed skin thoroughly with soap and water for at least 5 minutes and seek medical attention. In the event of ingestion, seek emergency medical care immediately.

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