2021

Mustang Mach-E

EMERGENCY RESPONSE GUIDE

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Introduction

Introduction

About This Manual

The emergency response procedures for the Mustang Mach-E are similar to those for traditional gasoline-powered vehicles with the addition of special considerations for the High Voltage electric system components.

These vehicles use two electric motors to power the vehicle.

- Electricity is stored in a High Voltage battery pack.

The High Voltage system can be plugged into an electric outlet for recharging to optimize the vehicle's extended electrical range. The vehicle system incorporates a generator that charges the High Voltage battery during cruising and braking.

The information in this guide will allow response to emergencies involving these vehicles to be as safe as non-electric vehicles.

These vehicles have been designed with many safety features for your protection. These features help provide safe access to the vehicle under various conditions. However when approaching an electric vehicle in a fire, rescue or recovery situation, always follow one industry standard rule:

ALWAYS ASSUME THE VEHICLE'S HIGH VOLTAGE SYSTEM IS POWERED UP!

Mustang Mach-E Identification — Vehicle Exterior

Mach-E vehicles are identified by the charging port located in the LH front fender.

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Vehicle Identification Number (VIN) Layout

The 5th, 6th and 7th positions of the VIN identify the vehicle.

Sample VINs

- Mach-E – NEED SAMPLE VIN

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Section 1: High Voltage Electrical System Information

Section 1: High Voltage Electrical System Information

High Voltage Electrical Disconnect Features

⚠ WARNING:
ELECTRIC VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BY THE FORD EMERGENCY RESPONSE GUIDE FOR THE VEHICLE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

The following features have been incorporated into these vehicles to allow for either simple or automatic shut-off of the High Voltage electrical systems.

- High voltage fuse — In the event of a High Voltage short circuit, the High Voltage fuse opens, isolating the High Voltage battery from the circuit.
- Ignition in the OFF Position — Any time the ignition is in the off position **AND** charge cable is not connected to the vehicle charge port, the High Voltage system is isolated to the battery pack.
- In the event of a moderate to severe crash, the vehicle shutoff feature deactivates the high voltage system. **PLEASE NOTE** not every crash will cause the vehicle to shutoff or High Voltage system deactivation.

High Voltage Battery Packs

⚠ WARNING:
ELECTRIC VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BY THE FORD EMERGENCY RESPONSE GUIDE FOR THE VEHICLE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
FIRES IN CRASH-DAMAGED ELECTRIC VEHICLES MAY EMIT TOXIC OR COMBUSTIBLE GASSES. SMALL AMOUNTS OF EYE, SKIN OR LUNG IRRITANTS MAY BE PRESENT. WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) AND SELF-CONTAINED BREATHING APPARATUS WHEN WORKING IN CLOSE PROXIMITY OR IN A CONFINED AREA, SUCH AS A TUNNEL OR GARAGE. VENTILATE THE VEHICLE INTERIOR BY OPENING VEHICLE WINDOWS OR DOORS. VENTILATE THE WORKING AREA. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
DEPOWERING THE HIGH VOLTAGE SYSTEM DOES NOT DISSIPATE VOLTAGE INSIDE THE BATTERY, THE BATTERY PACK REMAINS LIVE AND DANGEROUS. CONTACT WITH THE HIGH VOLTAGE BATTERY PACK INTERNALS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

Observe the following precautions when working on or around High Voltage batteries:

- Do not cut the High Voltage battery case. Do not penetrate the batteries or case in any way.
- The High Voltage battery pack is located under the vehicle.
- The total voltage of the vehicle HV battery pack may be up to approximately 450 volts DC.
- The battery case is water resistant.
- The battery cells contain liquid electrolyte absorbed in a porous special polymeric film. The electrolyte will not leak from the battery under most conditions. However, if the battery is crushed, it is possible for a small amount of electrolyte to leak.
- If possible, isolate and avoid contact with any electric vehicle components. If contact with the High Voltage system cannot be avoided, Personal Protective Equipment (PPE) such as a splash shield or safety goggles, gloves (butyl), an apron or overcoat, and rubber boots are required when handling damaged batteries. Exposure to electrolyte could cause skin and/or eye irritation/burns. If exposed, rinse with large amounts of water for 10-15 minutes.

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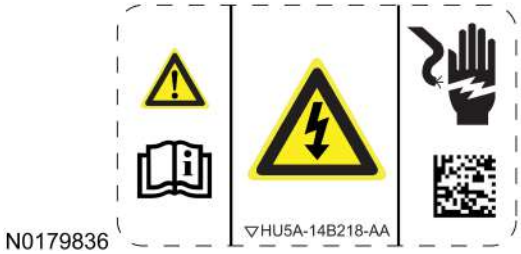
Section 1: High Voltage Electrical System Information

- If the battery is exposed to intense heat (or other extreme conditions), it is possible that flammable gases and liquid (electrolyte) have been released from the cells. Combustible hydrocarbons such as methane, toxic gases such as carbon monoxide, and very small amounts of eye/skin/lung irritants such as hydrofluoric acid could be released from the battery. Take appropriate precautions to make sure the area is properly ventilated. First responders should wear Personal Protective Equipment (PPE) and self-contained breathing apparatus to safeguard against thermal, electrical, respiratory and skin/eye hazards.

High Voltage Warning Decals

- On electric vehicles WARNING decals are located on High Voltage components throughout the vehicle. See the following example.



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Section 1: High Voltage Electrical System Information

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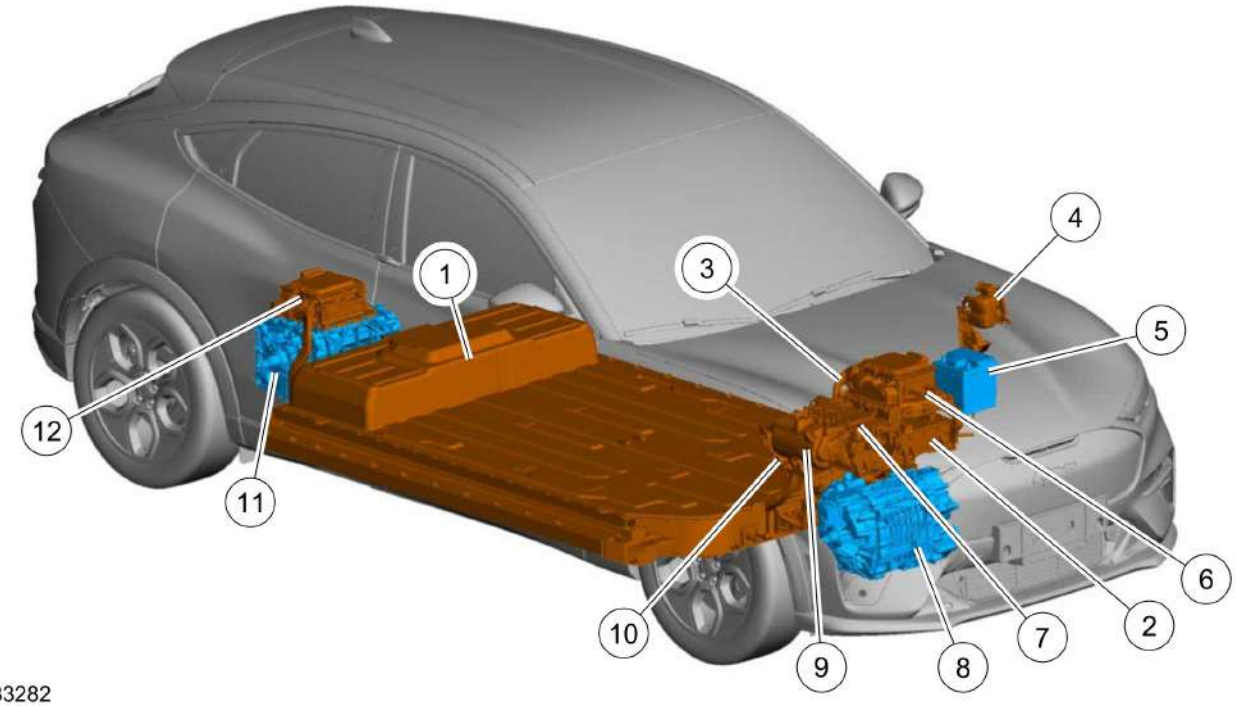
Component Location and Identification — High Voltage Vehicles

The following illustrations provide the location, description and basic function of the High Voltage system components.



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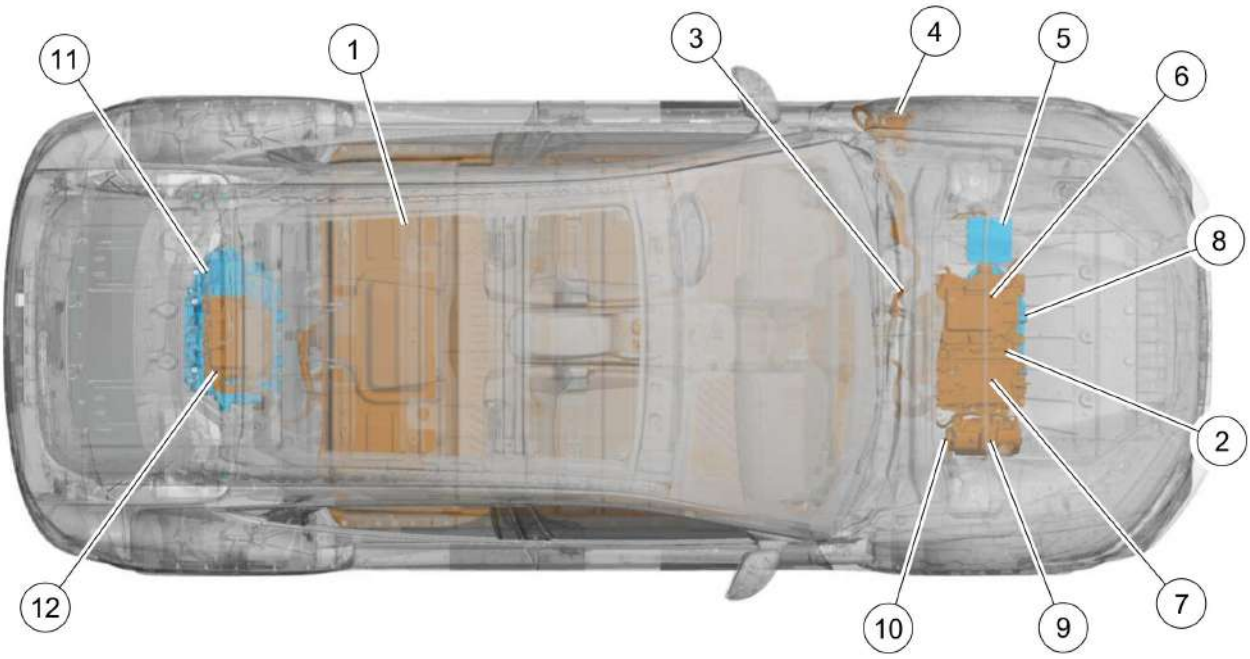
Section 1: High Voltage Electrical System Information



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CALLOUT	COMPONENT	LOCATION / DESCRIPTION	FUNCTION
1	High Voltage Battery — Approximately up to 450 Volts DC	Located under the vehicle. Liquid cooled lithium ion battery.	Provides High Voltage storage for the vehicle electric motors and for the other High Voltage components.
2	Charge Unit	Located under the vehicle directly forward of the high voltage battery.	To charge High Voltage battery.
3	High Voltage Wiring	Runs underneath the vehicle from the rear electric drive assembly to the front electric drive assembly. All High Voltage wiring is orange in color.	Provides High Voltage for the vehicle electric motors and for the other High Voltage components.
4	High Voltage Battery Charging Port	Located in the left hand front fender.	Allows High Voltage battery charging using suitable charging stations.
5	12 Volt Battery	Located in the engine on the left hand side next to the charge unit.	The battery is a 12V DC source connected in a negative ground system and is a voltage stabilizer for the 12V electrical system.
6	Inverter System Controller (ISC).	Located under the hood mounted on top of the charge unit and next to the power converter.	To convert AC power to DC and controls the front electric drive assembly speed.
7	DC/DC Converter	Located under the hood mounted on top of the charge unit and next to the Inverter System Controller (ISC).	Provides 12 volts to charge the 12-volt battery and run vehicle accessories.
8	Front Electric Drive Assembly	Located under the vehicle centered between the front wheels.	To provide power to the front wheels.

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Section 1: High Voltage Electrical System Information

(Continued)

9	Electric A/C Compressor	Located in the engine on the right hand side next to the charge unit. It has an orange high-voltage wire attached to it.	Provides electric A/C operation. Replaces the belt driven A/C compressor.
10	Electric Heater	Located in the engine on the right hand side between the high voltage battery and the charge unit.	Heats the coolant to provide the passenger compartment with consistent heat.
11	Rear Electric Drive Assembly	Located under the vehicle centered between the rear wheels.	To provide power to the rear wheels.
12	Inverter System Controller (SOBDMB).	Located in the rear cargo area.	To convert AC power to DC and controls the rear electric drive assembly speed.

NOTE:
All High Voltage wires and harnesses are orange in color.

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Battery High Voltage System Depower 2-2

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Section 2: Battery High Voltage System Depower

Section 2: Battery High Voltage System Depower

Battery High Voltage System Depower

⚠ WARNING:
THE HIGH-VOLTAGE SYSTEM MAY RETAIN A DANGEROUS LEVEL OF VOLTAGE FOR A SHORT TIME AFTER THE HIGH VOLTAGE SYSTEM IS DEPOWERED. WAIT 5 MINUTES FOR THE VOLTAGE TO DISSIPATE BEFORE BEGINNING SERVICE. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
DEPOWERING THE HIGH VOLTAGE SYSTEM DOES NOT DISSIPATE VOLTAGE INSIDE THE BATTERY, THE BATTERY PACK REMAINS LIVE AND DANGEROUS. CONTACT WITH THE HIGH VOLTAGE BATTERY PACK INTERNALS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
ELECTRIC VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BY THIS SECTION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
TO PREVENT THE RISK OF HIGH-VOLTAGE SHOCK, ALWAYS FOLLOW PRECISELY ALL WARNINGS AND SERVICE INSTRUCTIONS INCLUDING INSTRUCTIONS TO DEPOWER THE SYSTEM. THE HIGH-VOLTAGE SYSTEM UTILIZES VOLTAGE IN EXCESS OF 450 V DC. THIS VOLTAGE IS PROVIDED THROUGH HIGH-VOLTAGE CABLES TO ITS COMPONENTS AND MODULES. THE HIGH-VOLTAGE CABLES AND WIRING ARE IDENTIFIED BY ORANGE HARNESS TAPE OR ORANGE WIRE COVERING. ALL HIGH-VOLTAGE COMPONENTS ARE MARKED WITH HIGH-VOLTAGE WARNING LABELS WITH A HIGH-VOLTAGE SYMBOL. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
SERVICE OF THE HIGH VOLTAGE SYSTEM ON THIS VEHICLE IS RESTRICTED TO QUALIFIED PERSONNEL. THE REQUIRED QUALIFICATIONS VARY BY REGION. ALWAYS OBSERVE LOCAL LAWS AND LEGISLATIVE DIRECTIVES REGARDING ELECTRIC VEHICLE SERVICE. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
DISCONNECT THE 12V BATTERY BEFORE SERVICING THE DIRECT CURRENT TO ALTERNATING CURRENT (DC-AC) INVERTER OR ALTERNATING CURRENT (AC) POWERPOINT TO PREVENT THE RISK OF HIGH VOLTAGE SHOCK. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY.

NOTICE:
Disconnecting the 12v battery alone does not necessarily disable the 12v power in the vehicle. The vehicle must be keyed off (and unplugged, if the vehicle is a plug-in hybrid,) to ensure the DC/DC converter is not powering the 12v system.

High Voltage System Depower — Method 1

1. Ensure the vehicle transmission gear selector is in the PARK position. Check that the vehicle ready light is off to verify the high voltage system is disconnected.
2. If the vehicle ready light is on, press the engineStart/Stop button to turn off the ignition.

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Section 2: Battery High Voltage System Depower

High Voltage System Depower — Method 2

1. Open the hood.

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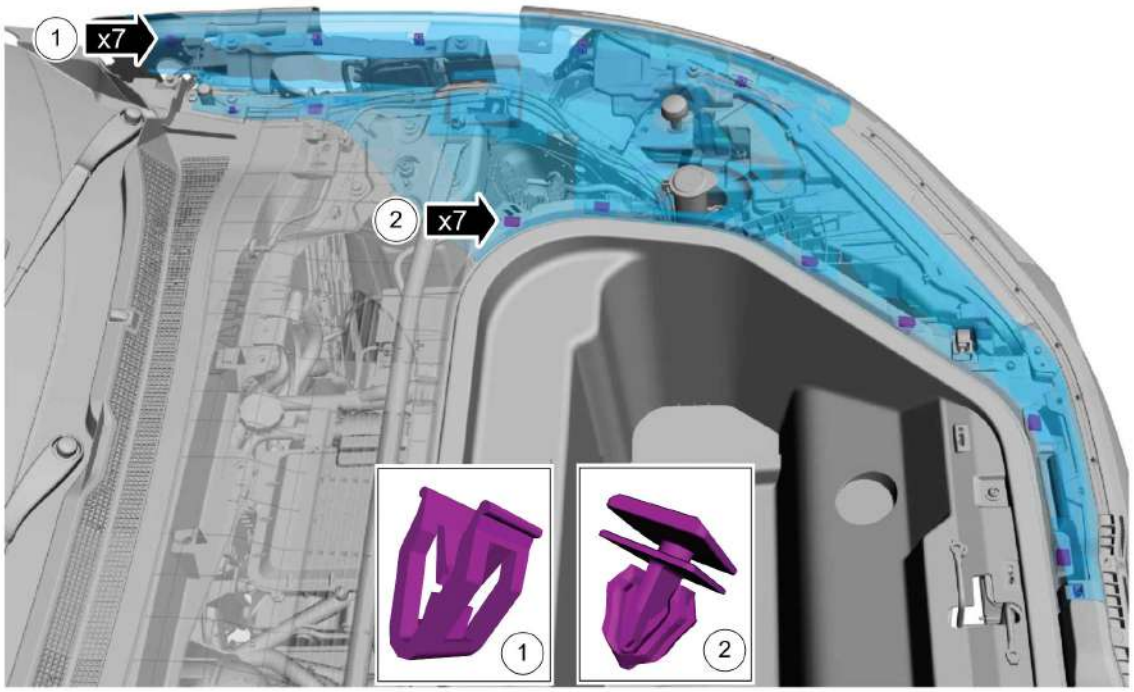
2.



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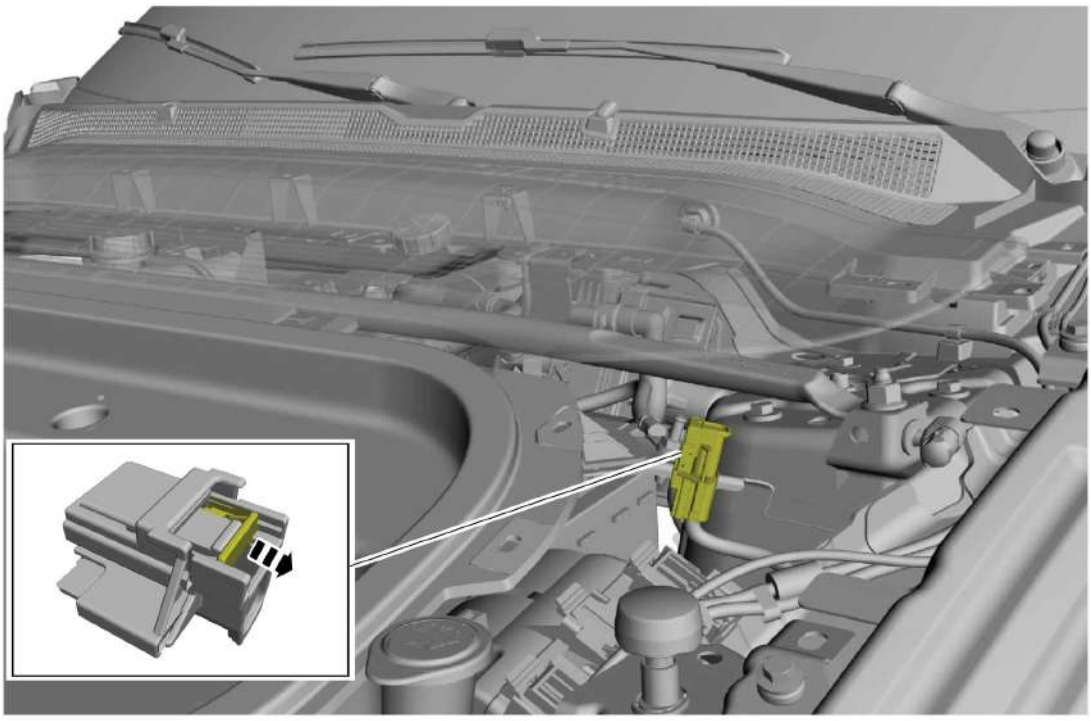
Section 2: Battery High Voltage System Depower

3. Location of the Service Disconnect.



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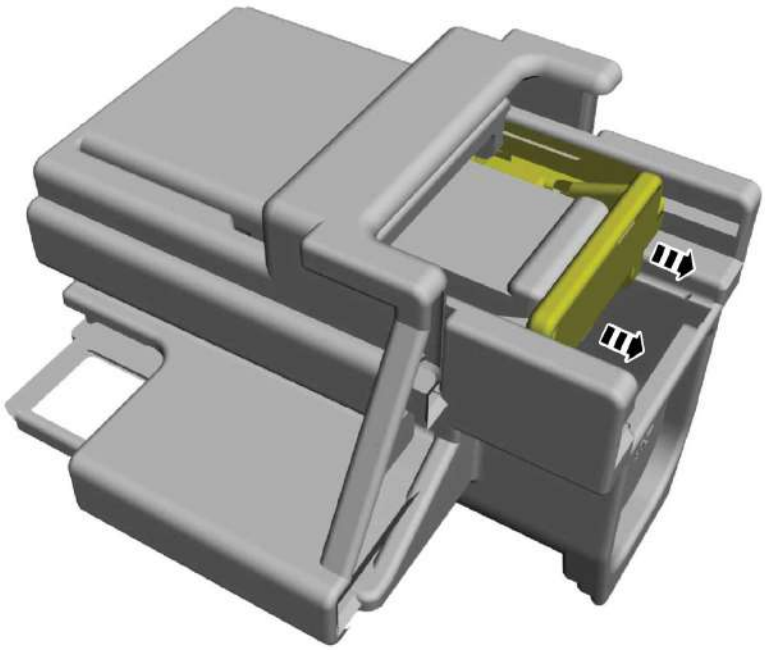

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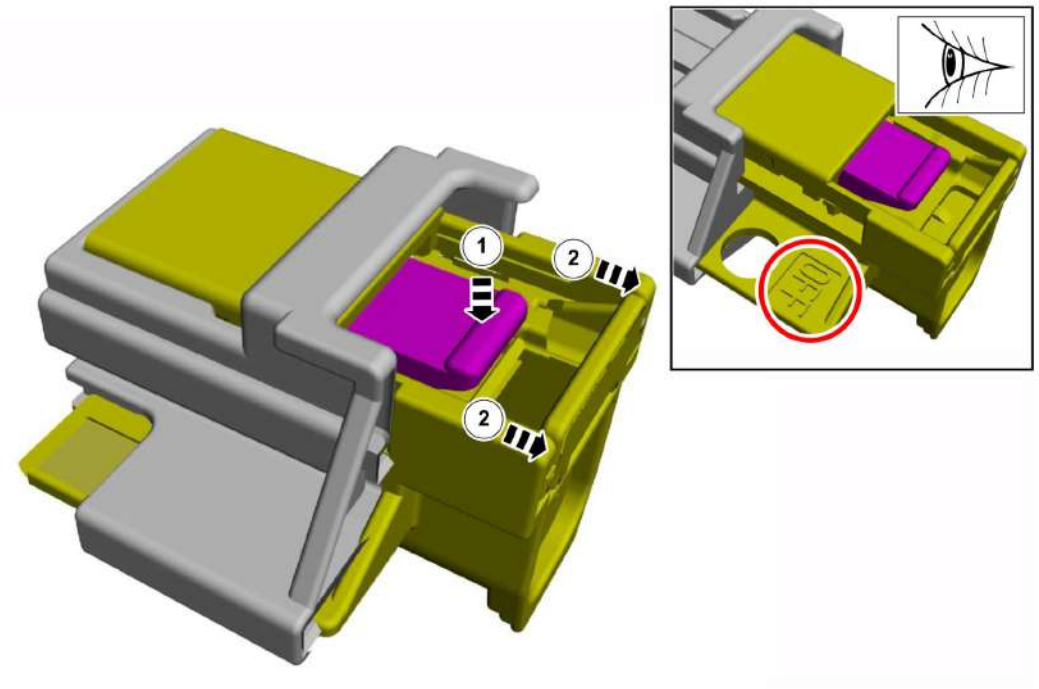
Section 2: Battery High Voltage System Depower

5. Pull the upper part upwards till the OFF writing is visible. It is not possible to remove the sliding part of the header.



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6.

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7. Wait a minimum of 5 minutes.

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High Voltage Charge Cord Lock Manual Release 3-2

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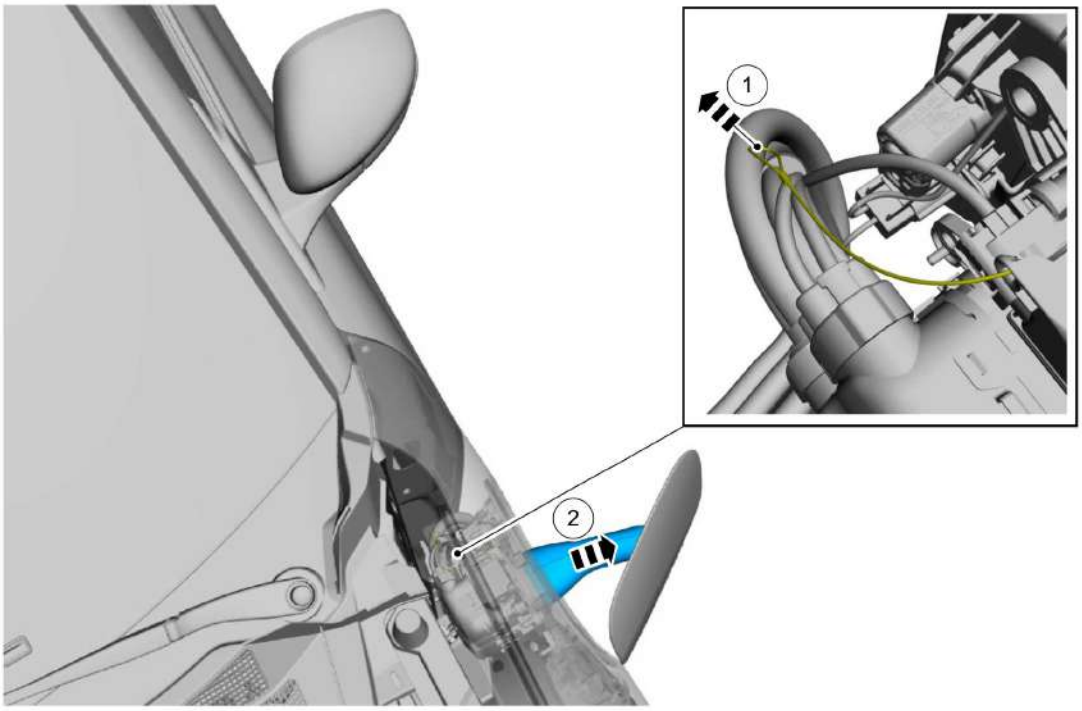
Section 3: High Voltage Charge Cord Lock Manual Release

Section 3: High Voltage Charge Cord Lock Manual Release

High Voltage Charge Cord Lock Manual Release

NOTE:
Some regions (outside of the U.S) have charging stations that engage a safety latch that positively locks the High Voltage charge cord to the vehicle charge port until the latch is released. If this latch fails to release, the cord cannot be removed without special action. Refer to the appropriate Emergency Response Guide for that region.

1. Pull the manual charge cord lock actuator release cord.
2. Disconnect the Electric Vehicle Supply Equipmemt (EVSE) charge cord from the vehicle.



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Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location

Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location

General Warnings for Extraction Procedures

⚠ WARNING:
ALWAYS ASSUME THE VEHICLE'S HIGH VOLTAGE SYSTEM IS POWERED UP! Cutting, crushing, or touching High Voltage components can result in serious injury or death.

⚠ WARNING:
Always use appropriate tools, such as a hydraulic cutter, and always wear appropriate personal protective equipment (PPE) when cutting. Failure to follow these instructions can result in serious injury or death.

Pyrotechnic Device Health and Safety Precautions

⚠ WARNING:
Pyrotechnic components are very hot immediately after deployment and might be covered with pyrotechnic residuals. Do not handle pyrotechnic components immediately after deployment. Always wear protective gloves, safety glasses and breathing protection to prevent skin contact and inhaling of pyrotechnic residuals. Failure to follow this instruction may result in serious personnel injury.

⚠ WARNING:
Always carry a live airbag with the deployment door, trim cover or tear seam pointed away from the body. Do not place a live airbag down with the deployment door, trim cover or tear seam facing down. Failure to follow these instructions may result in serious personal injury in the event of an accidental deployment.

⚠ WARNING:
Always carry a live Safety Canopy or side air curtain assembly with the tear seam pointed away from your body. Failure to follow this instruction may result in serious personal injury or death in the event of an accidental deployment.

⚠ WARNING:
Never disassemble or tamper with seat belt deployable components, including pretensioners, load limiters and inflators. Never back probe deployable device electrical connectors. Tampering or back probing may cause an accidental deployment and result in personal injury or death.

⚠ WARNING:
Never probe the electrical connectors on airbag, Safety Canopy or side air curtain assemblies. Failure to follow this instruction may result in the accidental deployment of these assemblies, which increases the risk of serious personal injury or death.

⚠ WARNING:
Do not handle, move or change the original horizontal mounting position of the restraints control module (RCM) while the RCM is connected and the ignition switch is ON. Failure to follow this instruction may result in the accidental deployment of the Safety Canopy and cause serious personal injury or death.

⚠ WARNING:
Service and handling of Pyrotechnic Components is restricted to qualified personnel. The required qualifications vary by region. Always observe local laws and legislative directives regarding Pyrotechnic Components service and handling. Failure to follow this instruction may result in serious personal injury or death.

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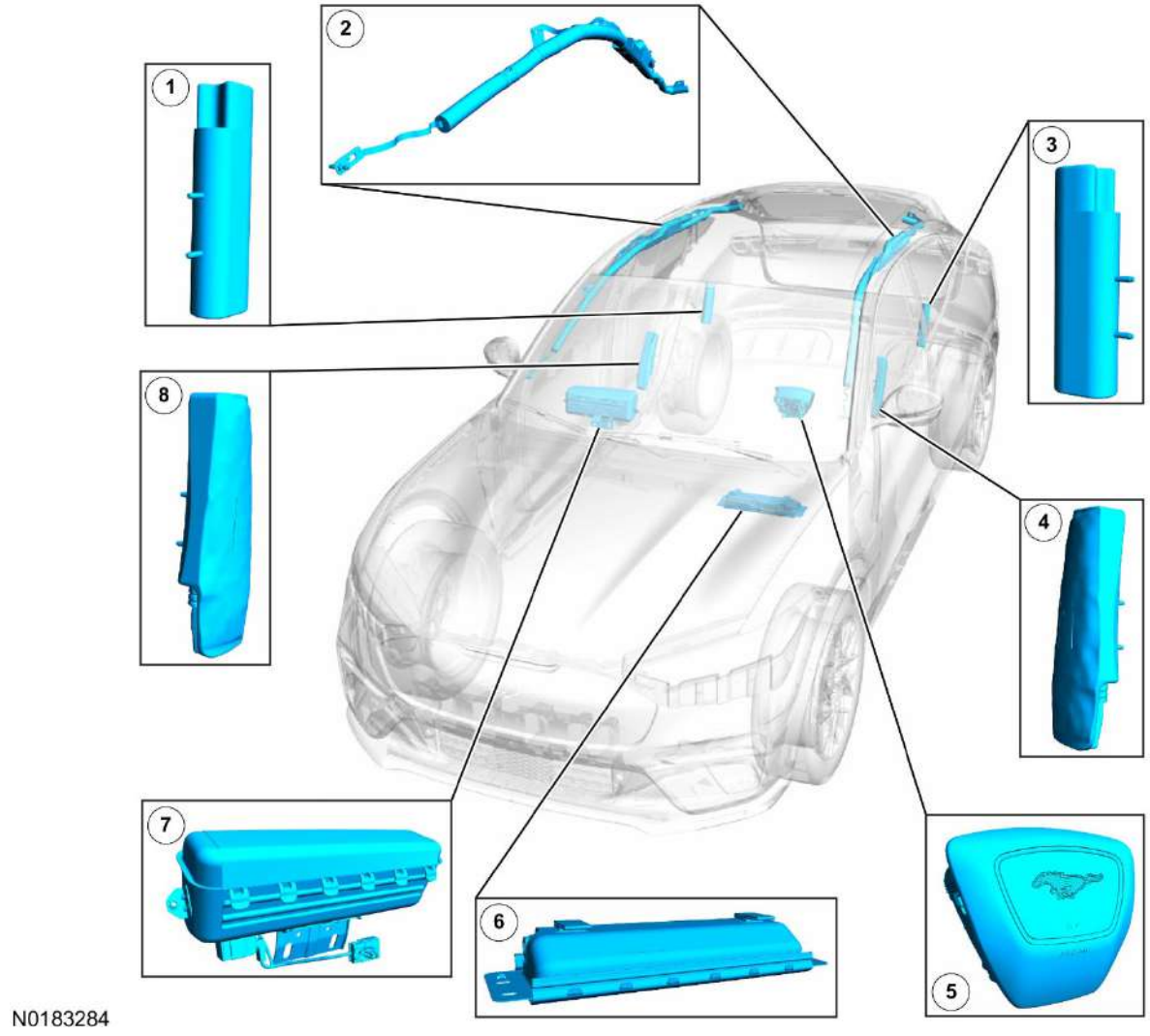
Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location

Supplemental Restraint System Components — Mach-E Vehicles



Item	Description
1	Second row passenger seat side airbag
2	Driver/passenger side curtain airbag
3	Second row driver seat side airbag
4	Driver side airbag
5	Driver airbag
6	Driver knee airbag
7	Passenger airbag (includes canister vent)
8	Passenger side airbag

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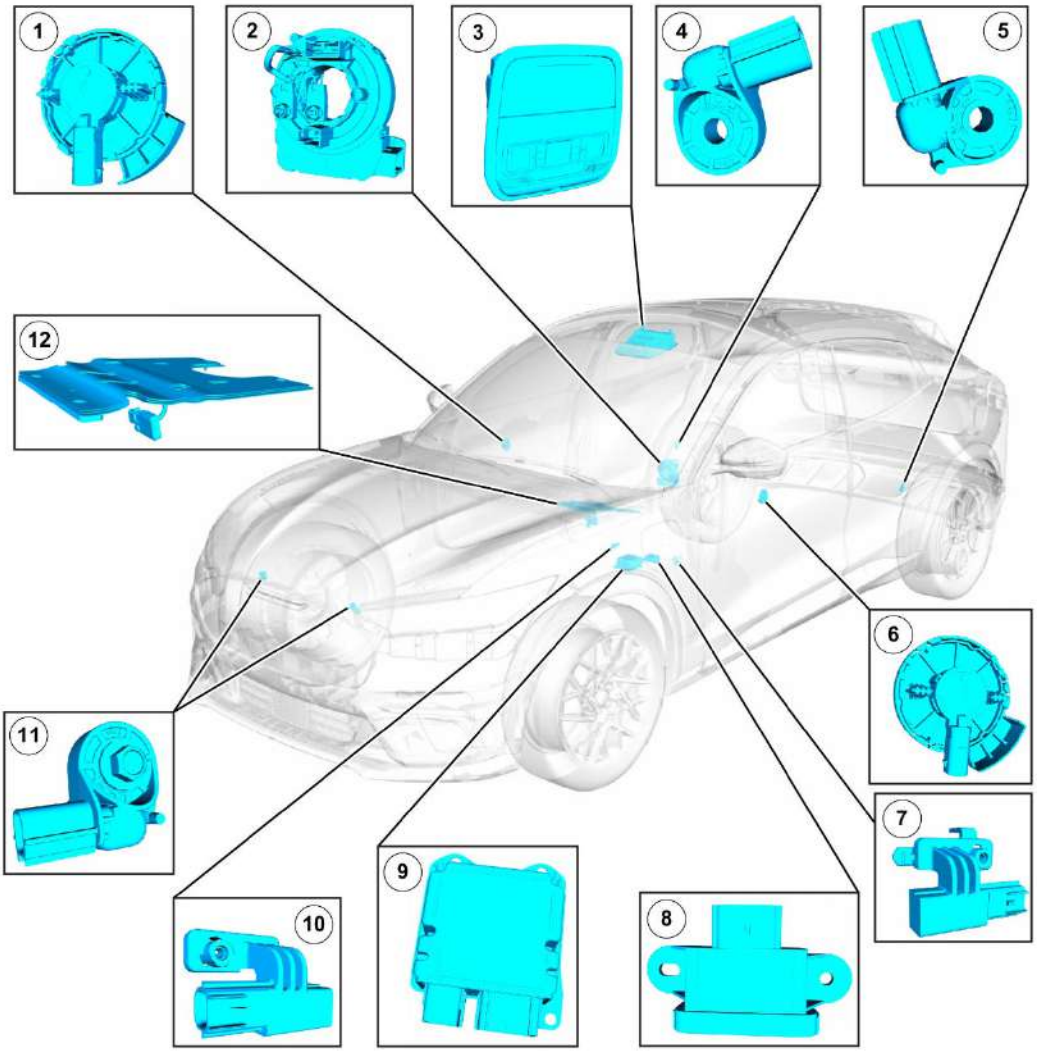
Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location



Item	Description
1	Passenger front door side impact sensor
2	Clockspring
3	PAD (passenger airbag deactivation) indicator
4	Passenger side C-pillar side impact sensor
5	Driver side C-pillar side impact sensor
6	Driver front door side impact sensor
7	Driver seat position sensor
8	BECMB (battery energy control module B)
9	RCM (restraints control module)
10	Passenger seat position sensor
11	Driver and passenger front impact severity sensors
12	OCSM (occupant classification system module) (includes OCS (occupant classification system) sensor and gel-filled bladder)

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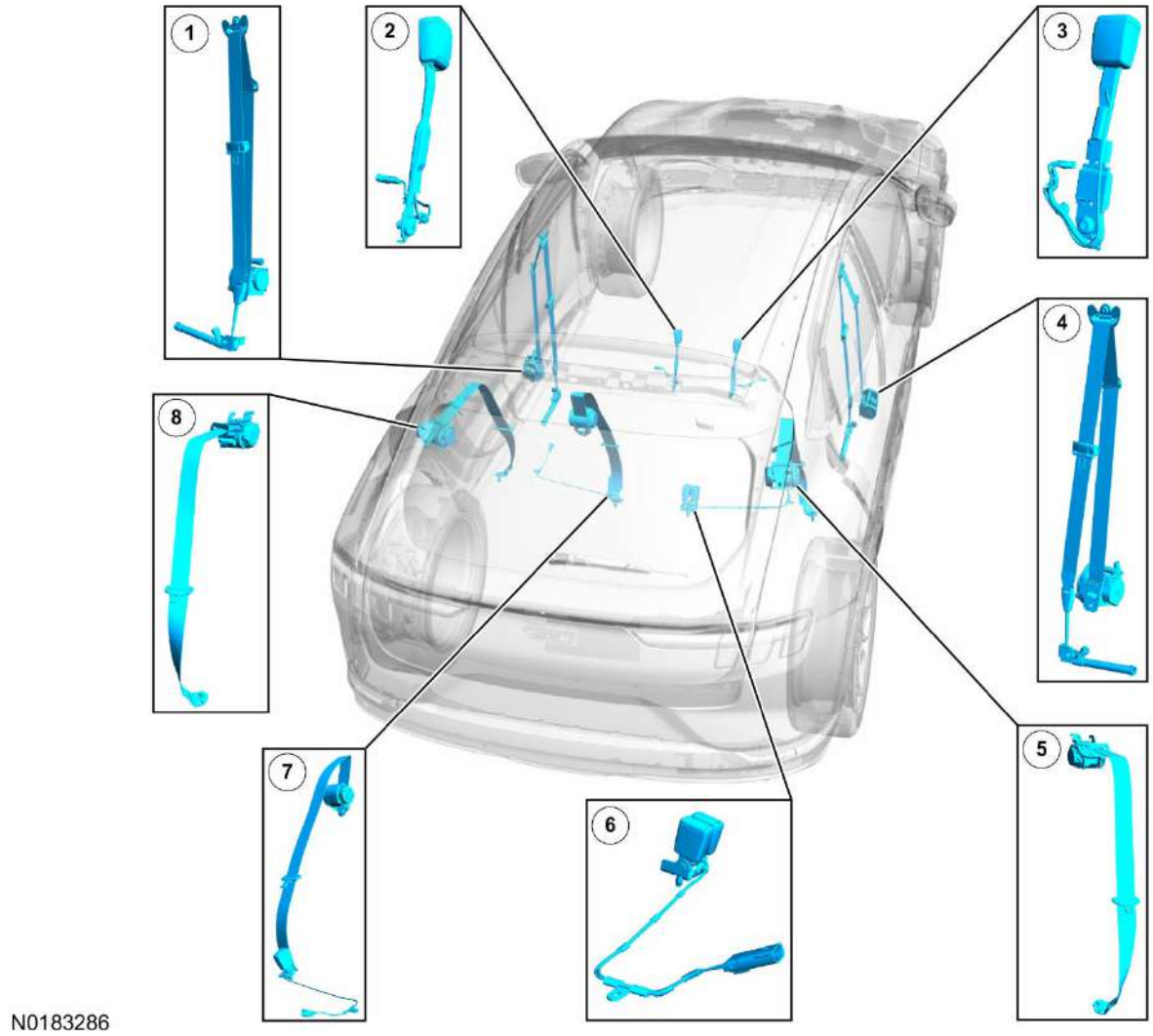
Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location



Item	Description
1	Driver seatbelt retractor (includes retractor pretensioner and anchor pretensioner)
2	Driver seatbelt buckle (includes buckle sensor)
3	Front passenger seatbelt buckle (includes buckle sensor and Belt Tension Sensor (BTS))
4	Front passenger seatbelt retractor (includes retractor pretensioner, retractor load limiter and anchor pretensioner)
5	Rear passenger side outer seatbelt retractor (includes retractor pretensioner)
6	Rear passenger side outer and center seatbelt buckles (includes seatbelt buckle switch)
7	Rear driver side outer seatbelt buckle (includes seatbelt buckle switch)
8	Rear driver side outer seatbelt retractor (includes retractor pretensioner)

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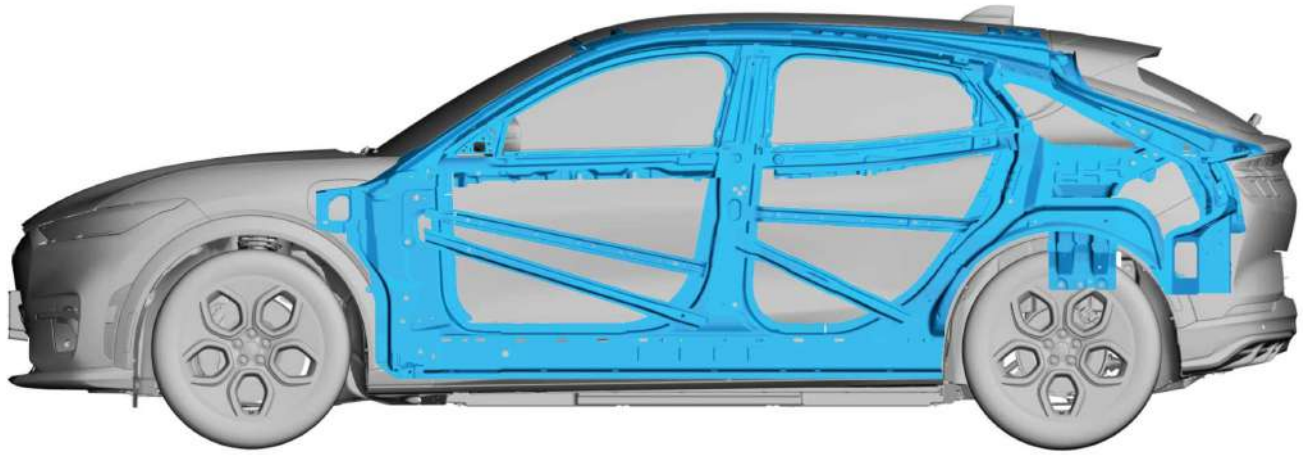
Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location

Reinforcements and High Strength Steel

⚠ WARNING:
ALWAYS ASSUME THE VEHICLE'S HIGH VOLTAGE SYSTEM IS POWERED UP! Cutting, crushing, or touching High Voltage components can result in serious injury or death.

⚠ WARNING:
Always use appropriate tools, such as a hydraulic cutter, and always wear appropriate personal protective equipment (PPE) when cutting. Failure to follow these instructions can result in serious injury or death.

Mach-E shown



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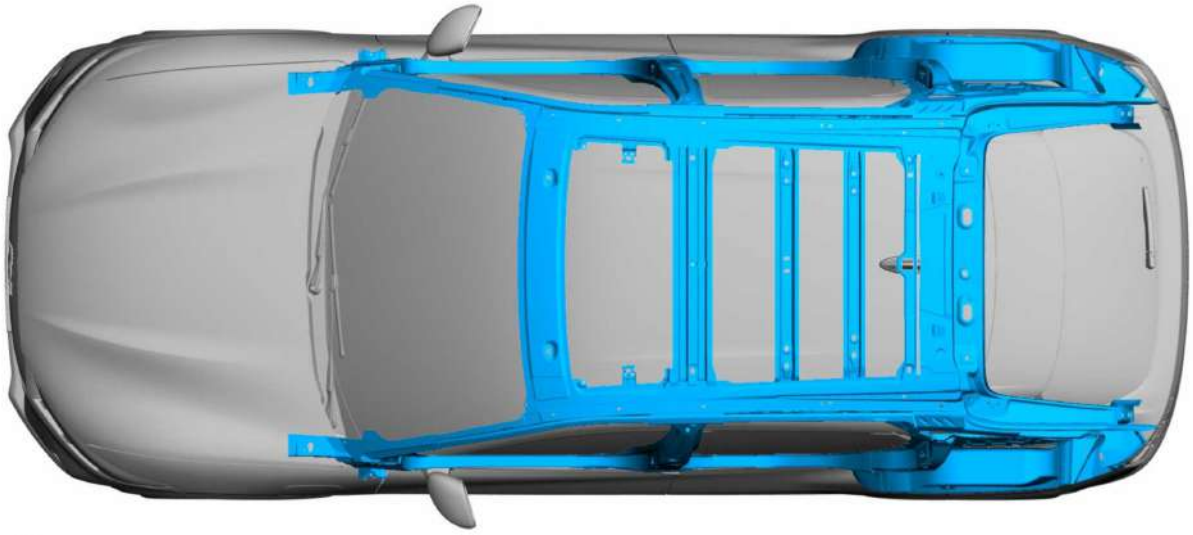
Mach-E without sunroof opening shown



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Section 4: Supplemental Restraint System and Structural Reinforcement — Component Location

Mach-E with sunroof opening shown

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Section 5: Approaching a Damaged Electric Vehicle

Section 5: Approaching a Damaged Electric Vehicle

⚠ WARNING:
HIGH VOLTAGE VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BY THE FORD EMERGENCY RESPONSE GUIDE FOR THE VEHICLE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
DAMAGED ELECTRIC VEHICLES SUBMERGED IN WATER PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. DO NOT ATTEMPT TO EXTRACT THE VEHICLE UNTIL THE HIGH VOLTAGE BATTERY HAS DISCHARGED INDICATED BY THE ABSENCE OF BUBBLING OR FIZZING. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
FIRES IN CRASH-DAMAGED ELECTRIC VEHICLES MAY EMIT TOXIC OR COMBUSTIBLE GASSES. SMALL AMOUNTS OF EYE, SKIN OR LUNG IRRITANTS MAY BE PRESENT. WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) AND SELF-CONTAINED BREATHING APPARATUS WHEN WORKING IN CLOSE PROXIMITY OR IN A CONFINED AREA, SUCH AS A TUNNEL OR GARAGE. VENTILATE THE VEHICLE INTERIOR BY OPENING VEHICLE WINDOWS OR DOORS. VENTILATE THE WORKING AREA. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:
ELECTRIC VEHICLES WITH DAMAGED HIGH VOLTAGE BATTERIES REQUIRE SPECIAL HANDLING PRECAUTIONS. INSPECT THE VEHICLE CAREFULLY FOR LEAKING BATTERY FLUIDS, SPARKS, FLAMES, AND GURGLING OR BUBBLING SOUNDS. CONTACT EMERGENCY SERVICES IMMEDIATELY IF ANY OF THESE PROBLEMS ARE OBSERVED. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A VEHICLE FIRE AND PERSONAL INJURY OR DEATH.

⚠ WARNING:
DEPOWERING THE HIGH VOLTAGE SYSTEM DOES NOT DISSIPATE VOLTAGE INSIDE THE BATTERY, THE BATTERY PACK REMAINS LIVE AND DANGEROUS. CONTACT WITH THE HIGH VOLTAGE BATTERY PACK INTERNALS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

Follow Existing Training and Incident Commander Direction

Emergency responders should use **LARGE** amounts of water if fire is present or suspected and, keeping in mind that fire can occur for a considerable period after the crash, should proceed accordingly.

This guide provides only supplemental information as it pertains to these vehicles. The same rules apply when approaching any potential High Voltage situation. Always follow your High Voltage safety training. Some precautions to observe in a High Voltage situation include:

- Remove all jewelry such as watches, necklaces and earrings. Remove all metal objects that are conductors of electricity.
- Wear the necessary PPEs such as High Voltage rubber gloves, face shield, insulated boots, protective raincoat and apron.

Bring the following equipment:

- Class ABC powder-type fire extinguisher.
- A non-conductive object, about 1.5 m (5 ft) long, to safely push someone away from the vehicle if they accidentally come in contact with a damaged electric vehicle.

Approaching a Damaged Vehicle

Disable the High Voltage electrical system using as many of the following steps as possible:

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Section 5: Approaching a Damaged Electric Vehicle

- **(MANDATORY)** Secure the vehicle: Ensure the vehicle transmission gear selector is in the PARK position. Check that the vehicle ready light is off to verify the High Voltage system is disconnected. If the vehicle ready light is on, press the Start button to turn off the ignition. **PLEASE NOTE: The vehicle high voltage system could still be energized even if the ready light is not on. In accessory mode, the ready light is not present but the high voltage system is energized under normal operation.**
- **(MANDATORY)** First, turn off the charge unit. Then, attempt to remove the High Voltage Charge Cord if connected to the vehicle. If the plug will not release please refer to High Voltage. Charge Cord Lock Manual Release, in Section 3 of this guide.
- **(MANDATORY)** Disconnect the 12 volts battery terminals to isolate the HV system. For additional information, refer to High Voltage System Depower procedures in this manual.
- **(MANDATORY)** If the vehicle is on fire, use a Class ABC powder-type extinguisher to contain and smother the flames. If water is being used, LARGE amounts of water is required to extinguish the flames. A fire-hydrant or dedicated fire hose can supply the needed amount. Water can cause some degree of arcing/shorting across the cell and/or battery terminals; it can also react with the electrolyte from the cells to generate additional combustible gas and other byproducts such as hydrofluoric acid. However, the cooling and smothering effects of flushing the affected article with large amounts of water and/or other fire suppression material is still beneficial for minimizing the severity of the event.
- **(MANDATORY)** If the vehicle has any exposed cables, wear High Voltage rubber gloves and other appropriate PPE. Do not touch any broken or damaged High Voltage orange cables. Treat severed cables as if they contain High Voltage.
- **(MANDATORY)** If the vehicle is submerged in water, varying degrees of arcing/shorting within the battery will take place. Do not touch any High Voltage components or orange cables while removing the occupant(s). Do not remove the vehicle until you are sure the High Voltage battery is completely discharged. A submerged High Voltage battery may produce a fizzing or bubbling reaction to the water. If fizzing or bubbling is observed, the High Voltage battery will be discharged when the fizzing or bubbling has completely stopped. The battery should still be treated as if it is not discharged.
- If necessary, apply the parking brake and/or block the wheels to prevent vehicle movement.
- The vehicle has an electric parking brake. You operate it with a switch instead of a lever. The switch is on the center console or to the left hand side of the steering wheel, on the lower part of the instrument panel.

High Voltage System - Do Not Cut Zones

- If possible, depower the High Voltage system before attempting any removal procedure. Always assume the High Voltage cabling and components are powered up.
- If occupant removal is necessary, always use caution when cutting near the vehicle High Voltage system components. Do not cut any of the High Voltage under vehicle or under hood cabling (all High Voltage cabling is orange). High voltage cabling runs underneath the vehicle, from the High Voltage batteries under the left hand side of the vehicle to the underhood compartments. The vehicle charge port is located on the left front fender. Refer to the diagram below for the no cut zones. **See Section 1 for illustrations.**

If The High Voltage Battery Case Has Been Ruptured

Just like any other battery, hose down the area with **LARGE** amounts of water.

Moving Damaged Vehicles - Tow Truck Drivers

NOTICE:
Do not attempt to pull / tow vehicle with wheels on the ground as this may cause the vehicle to generate electricity and can cause potential damage.

- Disconnect the 12 volts battery terminals to isolate the HV system. For additional information, refer to High Voltage System Depower procedures in this manual.
- Rather than attempt to discharge a High Voltage battery, an emergency responder, tow truck operator, or storage facility manager should contact experts at the vehicle manufacturer.
- Operators of tow trucks and vehicle storage facilities should make sure the damaged vehicle is kept in an open area instead of inside a garage or other enclosed building.

Follow the guidelines in the Wrecker Towing Guide:

- If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping or hissing noises from the High Voltage battery compartment, ventilate the area and call 911.
- Be alert. There is potential for delayed fire with damaged lithium-ion batteries.
- Call an authorized Ford dealer or vehicle manufacturer representative, if necessary, to determine the additional steps to take to safely recover or transport the vehicle.
- Always approach the vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
- Place vehicle into park, set the parking brake, turn off the vehicle, activate the hazard lights, and remove the key fobs to a distance at least 16 feet from the vehicle until loading the vehicle for transport.
- Refer to vehicle manual/recovery guide to locate proper attachment/connection points and transport method.

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Section 5: Approaching a Damaged Electric Vehicle

- Avoid contact with orange High Voltage cabling and areas identified as High Voltage risk by warning labels.

Electric and Hybrid Electric Vehicle Considerations

In the event of damage to or fire involving an electric vehicle.

- Always assume the High Voltage battery and associated components are energized and fully charged.
- Exposed electrical components, wires, and High Voltage batteries present potential HV shock hazards.
- Venting/off-gassing High Voltage battery vapors are potentially toxic and flammable.
- Physical damage to the vehicle or High Voltage battery may result in immediate or delayed release of toxic and/or flammable gases and fire.

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Section 6: Damaged Vehicle Guidance and Storage

Section 6: Damaged Vehicle Guidance and Storage

Damaged Vehicle Guidance for Ford Motor Company Electric and Hybrid-Electric Vehicles Equipped with High Voltage Batteries

(Towing and Recovery Operators and Vehicle Storage Facilities)

In the event of damage or fire involving an Electric Vehicle (EV) or Hybrid-Electric Vehicle (HEV):

- Always assume the High Voltage battery and associated components are energized and fully charged.
- Exposed electrical components, wires and High Voltage batteries present potential High Voltage shock hazards.
- Venting/off-gassing High Voltage battery vapors are potentially toxic and flammable.
- Physical damage to the vehicle or High Voltage battery may result in immediate or delayed release of toxic and/or flammable gases and fire.

Identifying Vehicle for High Voltage System Disabling and Vehicle Shutdown

- Determine if the vehicle is an electric or hybrid-electric vehicle, and if it is, advise your dispatch and all other responders that an electric or hybrid-electric vehicle is involved.
- To identify potential symptoms of a damaged High Voltage system, contact an authorized service center or vehicle manufacturer representative. Refer to the vehicle Owner Manual, Emergency Placard (included in the vehicle Owner Manual) and/or the Emergency Response Guide for appropriate contact information.
- If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping or hissing noises from the High Voltage battery compartment, ventilate the passenger area (such as, roll down windows or open doors) and call 911.
- Be alert. There is a potential for delayed fire with damaged lithium-ion batteries.

Vehicle Recovery/Transportation

- Call an authorized service center or the vehicle manufacturer, if necessary, to determine additional steps that should be taken to safely recover or transport the vehicle.
- Always approach the vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
- Place vehicle into park (P), set the parking brake, turn off the vehicle, activate hazard lights, and remove the keys to a distance at least 5 m (16 ft) from the vehicle until loading the vehicle for transport.
- Refer to the vehicle owner manual/recovery guide to locate proper attachment/connection points and transport method.
- Avoid contact with orange High Voltage cabling and areas identified as High Voltage risk by warning labels.

Post Impact Braking

How Does Post Impact Braking Work

In the event of a moderate to severe crash, the braking system reduces the vehicle’s speed in order to prevent or reduce the ipact of a potential secondary crash.

Post Impact Braking Limitations

Post impact braking does not activate if any of the following occur.

- The anti-lock braking system is damaged during the collision.
- Electronic stability control is disabled.
- Vehicle speed is below 10 km/h.

Overriding Post Impact Braking

You can override post impact braking by pressing the brake or accelerator pedal.

Post Impact Braking Indicators

It flashes when a post impact braking event is occurring.

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Section 6: Damaged Vehicle Guidance and Storage

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Vehicle Storage

- **Contact an authorized Ford or Lincoln Dealer as soon as possible as there may be additional steps necessary to secure, discharge, handle, and/or store the High Voltage battery and vehicle.**
- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 15 m (50 ft) of any structure or vehicle.
- Make sure the passenger and cargo compartments remain ventilated.
- Prior to placing vehicle in storage, and while located in storage area/tow lot, continue to inspect vehicle for leaking fluids, sparks, smoke, flames, gurgling or bubbling sounds from the High Voltage battery and call 911 if any of these are detected.
- Maintain clear access to stored vehicles for monitoring and emergency response if needed.

For specific information and safety preparation regarding the High Voltage system, refer to WWW.MOTORCRAFTSERVICE.COM, select quick guides for the appropriate vehicle emergency response guide.

NOTICE:

Do not attempt to pull / tow vehicle with wheels on the ground as this may cause the vehicle to generate electricity and can cause potential damage.

⚠ WARNING:

ELECTRIC VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. ISOLATE THE HIGH VOLTAGE SYSTEM AS DIRECTED BY THE FORD EMERGENCY RESPONSE GUIDE FOR THE VEHICLE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:

DAMAGED ELECTRIC VEHICLES SUBMERGED IN WATER PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL METALLIC JEWELRY, INCLUDING WATCHES AND RINGS. DO NOT ATTEMPT TO EXTRACT THE VEHICLE UNTIL THE HIGH VOLTAGE BATTERY HAS DISCHARGED INDICATED BY THE ABSENCE OF BUBBLING OR FIZZING. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

⚠ WARNING:

FIRES IN CRASH-DAMAGED ELECTRIC VEHICLES MAY EMIT TOXIC OR COMBUSTIBLE GASSES. SMALL AMOUNTS OF EYE, SKIN OR LUNG IRRITANTS MAY BE PRESENT. WEAR PERSONAL PROTECTIVE EQUIPMENT (PPE) AND SELF-CONTAINED BREATHING APPARATUS WHEN WORKING IN CLOSE PROXIMITY OR IN A CONFINED AREA, SUCH AS A TUNNEL OR GARAGE. VENTILATE THE VEHICLE INTERIOR BY OPENING VEHICLE WINDOWS OR DOORS. VENTILATE THE WORKING AREA. FAILURE TO FOLLOW THIS INSTRUCTION MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

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Section 6: Damaged Vehicle Guidance and Storage

⚠ WARNING:

ELECTRIC VEHICLES WITH DAMAGED HIGH VOLTAGE BATTERIES REQUIRE SPECIAL HANDLING PRECAUTIONS. INSPECT THE VEHICLE CAREFULLY FOR LEAKING BATTERY FLUIDS, SPAR KS, FLAMES, AND GURGLING OR BUBBLING SOUNDS. CONTACT EMERGENCY SERVICES IMMEDIATELY IF ANY OF THESE PROBLEMS ARE OBSERVED . FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A VEHICLE FIRE AND PERSONAL INJURY OR DEATH.

DAMAGED BATTERY ELECTRIC VEHICLE STORAGE PLACARD

- If the vehicle and/or battery High Voltage system is damaged, place a sign indicating that it is a battery electric vehicle with potentially dangerous High Voltage. See example below:

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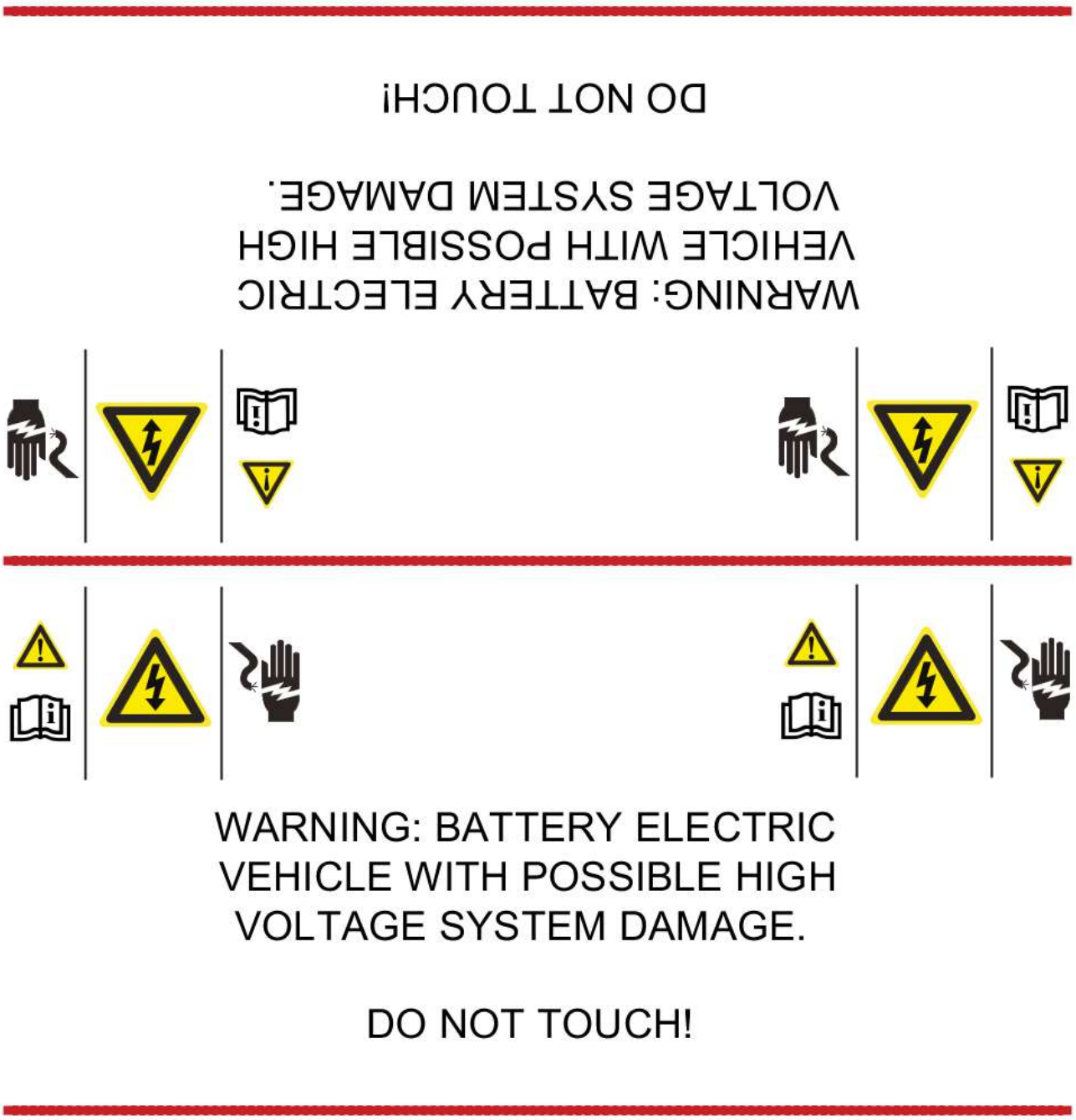
Section 6: Damaged Vehicle Guidance and Storage



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Section 6: Damaged Vehicle Guidance and Storage

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