



2015 FOCUS ELECTRIC VEHICLE (EV)



BATTERY REMOVAL GUIDE

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FOREWORD

The emergency response procedures for the Focus Electric vehicles are similar to those for hybrid electric vehicles with the same considerations for the high-voltage electric system components.

Focus Electric vehicles use an electric motor to power the vehicle. Electricity is stored in high-voltage battery packs.

The system incorporates a generator function in the electric motor that recharges the high-voltage batteries during cruising and braking.

The information in this guide will help provide a safe response to emergencies involving Focus Electric vehicles.

The Focus Electric vehicle has been designed with many safety features for your protection. These features help provide safe access to the vehicle under various conditions however, when approaching a high-voltage 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 !***



ELECTRIC VEHICLE IDENTIFICATION

Focus Electric vehicles can easily be identified by the “Electric” badges located on the left and right front doors. There is an “Electric” nameplate on the trunk lid that also includes the green leaf/blue highway icon.



Electric nameplate and icon on front doors.

Electric nameplate and icon on trunk lid.

ELECTRIC VEHICLE IDENTIFICATION - CONTINUED

- The Focus Electric powertrain can be identified by the orange high-voltage underhood cabling.



Orange high-voltage cabling from the high-voltage battery packs.

- The 5th, 6th and 7th digits of the Vehicle Identification Number (VIN) identify the Focus Electric line.

VIN POSITIONS 5, 6 and 7	VEHICLE
P3R	Focus Electric

SAMPLE VIN

1 F A D P 3 R 1 0 A R 1 0 0 0 0 1

↑ ↑
Focus Electric

HIGH-VOLTAGE ELECTRICAL DISCONNECT FEATURES



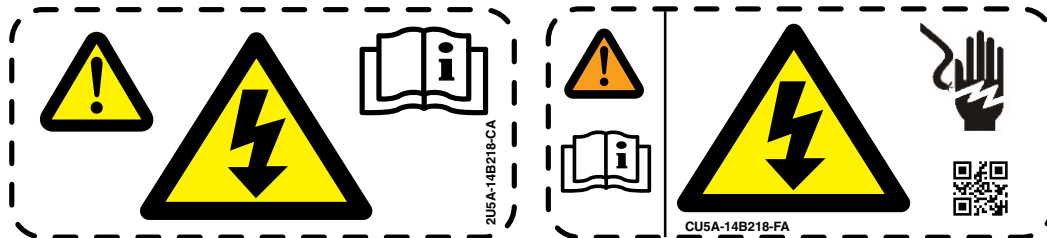
WARNING: ELECTRIC VEHICLES DAMAGED BY A CRASH MAY HAVE COMPROMISED HIGH VOLTAGE SAFETY SYSTEMS AND PRESENT A POTENTIAL HIGH VOLTAGE ELECTRICAL SHOCK HAZARD. EXERCISE CAUTION AND WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) SAFETY GEAR, INCLUDING HIGH VOLTAGE SAFETY GLOVES AND BOOTS. REMOVE ALL 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 list describes certain features that have been incorporated into Focus Electric vehicles that allows 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 will open, isolating the high-voltage system.
- High-Voltage Interlock Circuit — Whenever a high-voltage connector is disconnected, the high-voltage interlock circuit opens and isolates the high-voltage system. The circuit will also open if a high-voltage cable is cut, broken, or severed. This circuit is wrapped around high-voltage cables.
- Ignition is in the OFF Position — Any time the ignition is in the OFF position (and the vehicle is not being charged), the high-voltage system is isolated.
- High-Voltage Service Disconnect — Whenever either of the high-voltage service disconnects are removed, the high-voltage system is isolated. For additional information, refer to Pages 10-12 in this manual.
- Thermal Sensors — If the battery is in extreme hot ambient conditions and/or is being driven extremely aggressively with compromised cooling, power limits will be employed to prevent overheating. However, if the battery is in use and does become too hot, contactors will be opened and the vehicle will shut down.

HIGH-VOLTAGE WARNING DECALS

- On Ford electric vehicles, WARNING decals are located on components in the high-voltage system throughout the vehicle. Please see example below.

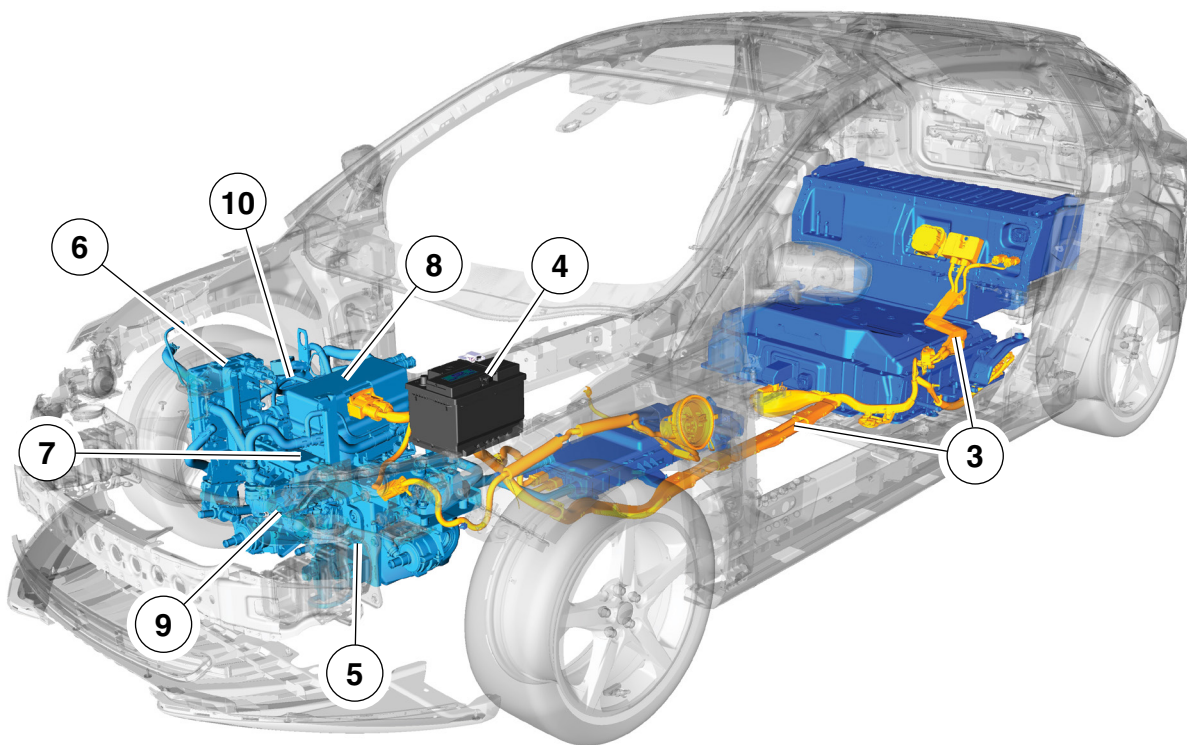
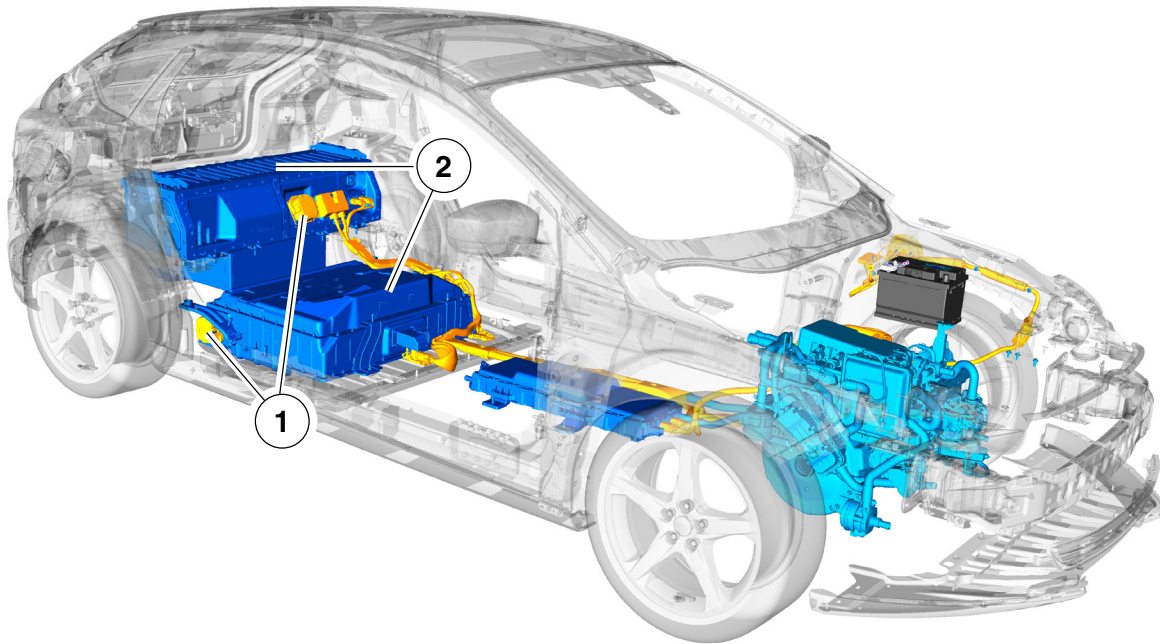


⚠ WARNING: HIGH VOLTAGE VEHICLE ⚠	
TO REDUCE THE RISK OF POSSIBLE SERIOUS INJURY (SHOCK OR BURN) OR DEATH: COMPONENTS MARKED WITH THE HIGH VOLTAGE SYMBOL ⚠ CONTAIN HIGH VOLTAGE AND HIGH TEMPERATURES AND SHOULD BE AVOIDED. SERVICE MUST BE PERFORMED BY QUALIFIED PERSONNEL ONLY. 📖	
⚠ AVERTISSEMENT : CIRCUITS HAUTE TENSION DU VÉHICULE ⚠	
POUR RÉDUIRE LES RISQUES DE BLESSURES GRAVES (CHOCES OU BRÛLURES) OU MORTELLES : LES ÉLÉMENTS ACCOMPAGNÉS DU SYMBOLE HAUTE TENSION ⚠ ONT UNE TENSION ET DES TEMPÉRATURES ÉLEVÉES ET DOIVENT ÊTRE ÉVITÉS. 📖	
LA RÉPARATION ET L'ENTRETIEN DOIVENT ÊTRE EFFECTUÉS PAR UN TECHNICIEN QUALIFIÉ SEULEMENT.	4L8A-14B218-AB

COMPONENT LOCATION AND IDENTIFICATION

The illustrations and defining chart below on Page 8 and 9, provide the location, description and basic function of the Focus Electric system components.

NOTE: All high-voltage wires and harnesses are wrapped in orange-colored insulation.



COMPONENT LOCATION AND IDENTIFICATION - CONTINUED

COMPONENT		LOCATION / DESCRIPTION	FUNCTION
1	High-Voltage Service Disconnects	<ul style="list-style-type: none">• Upper disconnect is located behind the rear seatback. Lower disconnect is below the upper pack near the right hand rear tire.• Orange in color with a square body design. Uses a two stage release tab.	Provides means to disconnect high-voltage batteries for safely servicing vehicle.
2	High-Voltage Battery	<ul style="list-style-type: none">• Located behind the rear seatback and under vehicle.• Liquid cooled/heated lithium ion.	Provides high-voltage storage for vehicle's electric motor.
3	High-Voltage Wiring	<ul style="list-style-type: none">• Runs along the vehicle's floorpan from the high-voltage battery to the underhood compartment.• All high-voltage wiring has orange-colored insulation.	Provides physical connection between high-voltage battery and vehicle's high-voltage equipment.
4	12-Volt Battery	<ul style="list-style-type: none">• Located under the hood on the driver side of the vehicle.• Typical automotive 6-cell lead/acid design.	Provides 12-volts for vehicle accessories.
5	Single Speed Automatic Transmission (Gearbox)	<ul style="list-style-type: none">• Transverse-mounted design, similar to the non-Electric Focus vehicles.• Attached to the traction motor	Provides rotational force to the wheels for vehicle propulsion.
6	DC/DC Converter	<ul style="list-style-type: none">• Located under the hood on the passenger side, next to the washer solvent reservoir.• Has orange high-voltage wires and Motor Electronics Cooling System hoses attached to it.	Provides 12 volts to charge the 12-volt battery and run vehicle accessories.

COMPONENT LOCATION AND IDENTIFICATION - CONTINUED

	COMPONENT	LOCATION / DESCRIPTION	FUNCTION
7	Electric Motor	<ul style="list-style-type: none">• Liquid cooled 3-phase AC permanent magnet motor.• Attached to gearbox, centrally located in the engine compartment.	Turns energy from the high-voltage traction battery into movement that is applied the transmission for vehicle propulsion.
8	Transmission Control Module (TCM)	<ul style="list-style-type: none">• Module located on top of the electric motor.• Hall effect sensor type module.	The TCM controls the motor/ inverters to produce the desired torque output to the wheels.
9	Electric Air Conditioning Compressor	<ul style="list-style-type: none">• Located in front of the motor.• Has an orange high-voltage wire attached to it using an interlock connector.	Replaces the belt driven air compressor.
10	PTC Heater (Cabin Coolant Heater)	<ul style="list-style-type: none">• Located on the RH side of the motor near the DC/DC converter.• Has both low and high voltage electrical connections.	Used to raise the temperature of the coolant to normal operating temperature.

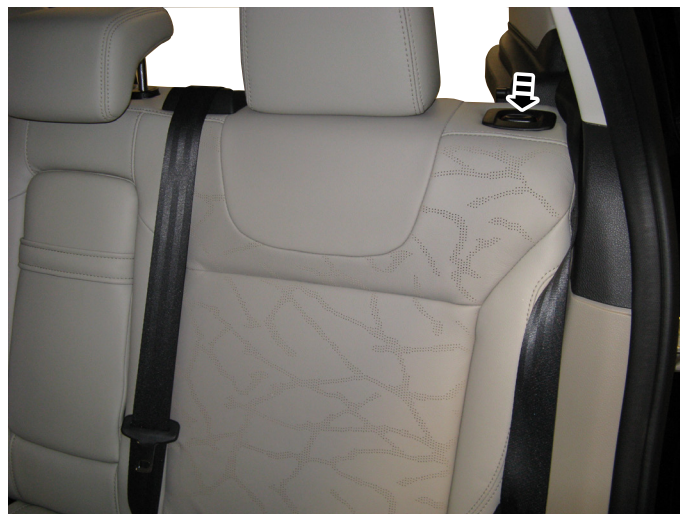
HIGH-VOLTAGE SERVICE DISCONNECTS



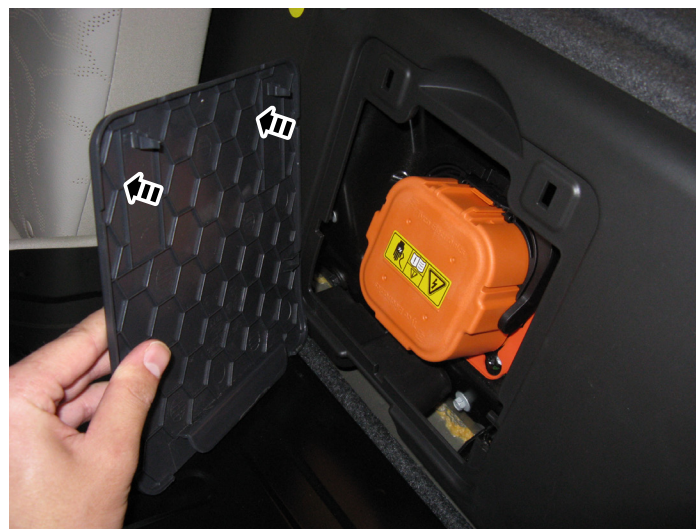
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NOTE : To gain access to the upper battery high-voltage service disconnect, the rear 60% seat backrest must be lowered.

- Locate the seat backrest release lever at the top of the seatback.
- Push the release lever at the top of the seatback.



- Remove the cover to access the upper battery service disconnect.



HIGH-VOLTAGE SERVICE DISCONNECTS - CONTINUED

- Depress the release tab at the top of the service disconnect and rotate the release handle down approximately 45 degrees.



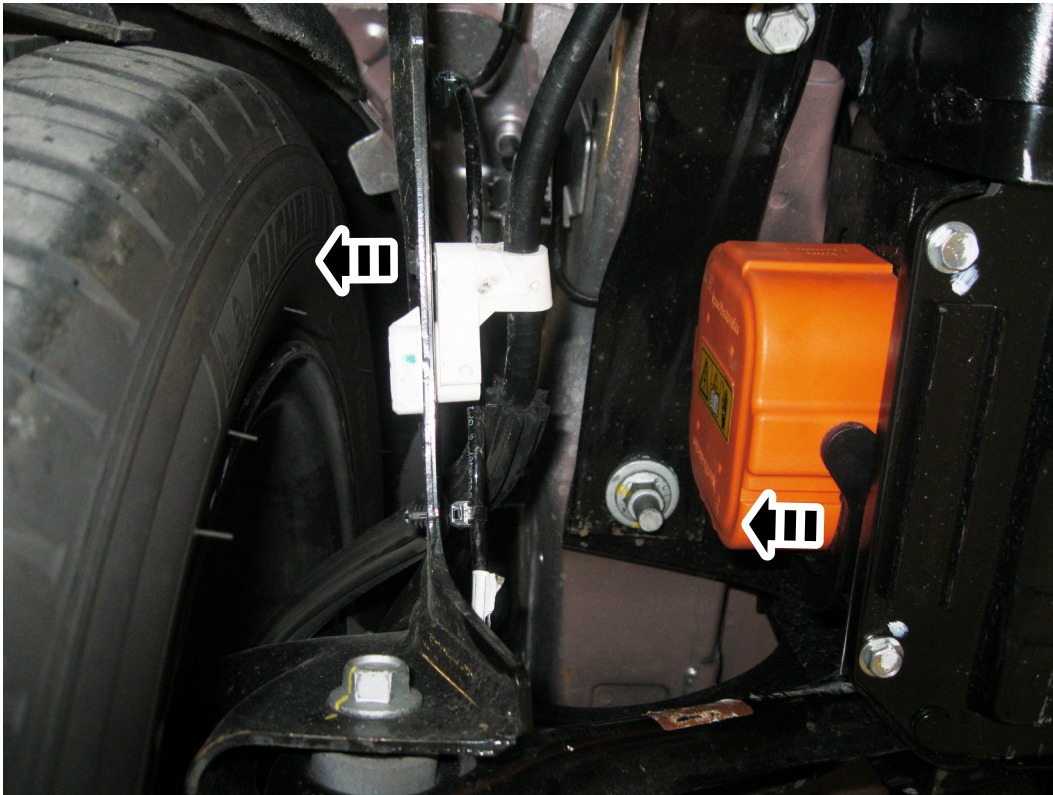
- Depress the release tab again, and rotate the handle another 45 degrees to the fully released position. Pull out on the handle to remove the upper service disconnect.



HIGH-VOLTAGE SERVICE DISCONNECTS - CONTINUED

NOTE : The lower service disconnect is removed in the same fashion as the upper. To gain access to the lower battery high-voltage service disconnect, raise the rear of the vehicle using a suitable jack.

- The lower battery high-voltage service disconnect is located on the passenger side of the vehicle near the rear tire.
- Remove the retainer from the parking brake cable bracket, and position the parking brake cable and bracket aside. Depress the release tab at the rear of the service disconnect, and rotate the release handle approximately 45 degrees towards the front of the vehicle. Depress the release tab again, and rotate the release handle another 45 degrees to the fully released position. Pull out on the handle to remove the lower service disconnect.



HIGH-VOLTAGE BATTERY PACKS



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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.

- Do not cut the high-voltage battery case. Do not penetrate the batteries or case in any way.
- The high-voltage battery packs are located behind the rear seatback, and under the vehicle beneath the upper battery pack location.
- Removing the high-voltage service disconnects will isolate the high-voltage from the vehicle. The battery pack will remain live and dangerous.
- The total voltage of the battery pack is approximately 325 volts DC.
- The battery case is designed to be water resistant.
- The battery cells contain a base electrolyte, consisting of lithium hexafluorophosphate and organic solvents as the dominant active ingredient, that is absorbed in 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.

HIGH-VOLTAGE BATTERY PACKS - CONTINUED

- If possible, isolate and avoid contact with high-voltage vehicle components. If contact with the high-voltage system cannot be avoided, Personal Protective Equipment (PPE) such as splash shield or safety goggles, gloves (latex, rubber or Nitrile), 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.
- If the battery is exposed to intense heat (or other abusive conditions), it is possible that flammable gases and liquid (electrolyte) have been released from the cells. The gases include 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. Appropriate precautions should be taken to make sure the area is properly ventilated, such as opening the vehicle's windows or doors. First responders should wear Personal Protective Equipment (PPE) and self contained breathing apparatus to safeguard against thermal, electrical, respiratory, and skin/eye hazards.

APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE





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) SAFETY GEAR, 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) SAFETY GEAR, 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.

APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE - CONTINUED

 **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.

1.____ 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 Focus Electric vehicles. The same rules apply when approaching any potential high-voltage situation. Always follow your high-voltage safety training. Some precautions to take in a high-voltage situation include:
 - Remove all jewelry: Watches, necklaces and earrings. Remove any metal objects that are conductors of electricity.
 - Wear the necessary PPEs: 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. This can be used to safely push someone away from the vehicle if they accidentally come in contact.

APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE - CONTINUED

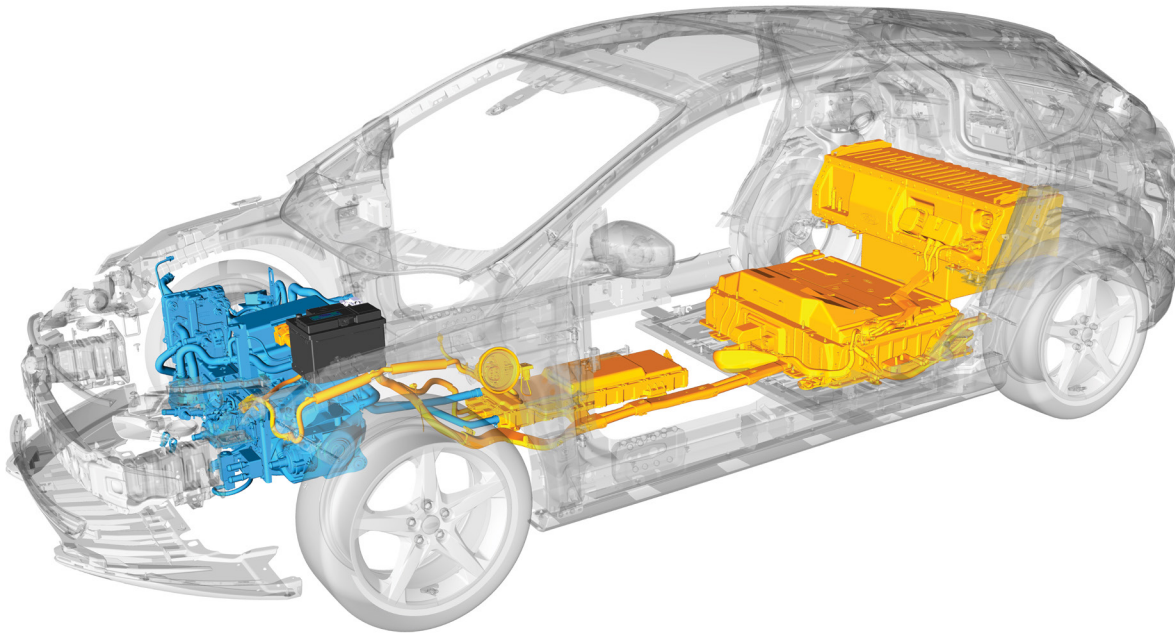
2. APPROACHING A DAMAGED VEHICLE

- Disable the high-voltage electrical system using as many of the following steps as possible:
 - Secure the vehicle: Place the shift lever into the PARK position. Place the ignition in the OFF position to disconnect the high-voltage system. Block the wheels, if necessary.
 - Disconnect the negative cable from the 12-volt battery.
 - If possible, remove the high-voltage service disconnect(s). For additional information, refer to pages 10-12 in this manual. If the service disconnects cannot be removed, avoid the high-voltage system components, and wear all appropriate PPE as outlined on page 13 of this guide.
- 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 will be 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 by-products 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.
- If the vehicle has any exposed cables, make sure to 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.
- 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 extricating 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, however, still treat it as if it was not discharged.

APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE - CONTINUED

3. High-Voltage System - Do Not Cut Zones

- If possible, remove the high-voltage battery service disconnect(s) before attempting any extrication procedure. Always assume the high-voltage cabling and components are powered up.
- If occupant extrication 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 in color). High-voltage cabling runs from the high-voltage batteries under the left hand side of the vehicle to the under-hood compartment, and the vehicle charge port located on the left front fender. Refer to the diagram below for no cut zones in orange



APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE - CONTINUED

4. IF THE HIGH-VOLTAGE BATTERY CASE HAS BEEN RUPTURED

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

5. MOVING DAMAGED VEHICLES — WRECKER DRIVERS

- **Do not attempt to pull / tow vehicle with all four wheels on the ground as this may cause the vehicle to generate electricity and can cause potential damage.**
- If possible, remove the high-voltage service disconnects. For additional information, refer to pages 10-12 in this manual.
- Rather than attempt to discharge a propulsion battery, an emergency responder, tow truck operator, or storage facility manager should contact experts at the vehicle manufacturer on that subject.
- Operators of tow trucks and vehicle storage facilities should ensure 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 Manual.
 - Front Tow: Wheel Lift (FWD)
 - Rear Tow: Wheel Lift with Dolly (FWD)
 - Flatbed: (FWD)
- 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 (i.e., roll down windows or open doors) 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 additional steps that you should take to safely recover or transport the vehicle.
- Always approach 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.

APPROACHING A DAMAGED HIGH-VOLTAGE VEHICLE - CONTINUED

MOVING DAMAGED VEHICLES — WRECKER DRIVERS (CONTINUED)

- 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.
- Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels.

6. ELECTRIC AND HYBRID-ELECTRIC VEHICLE CONSIDERATIONS

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

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

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)

For questions contact Ford USA 1-800-392-3673 / Ford Canada 1-800-565-3673

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

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

Vehicle Shutdown and High-Voltage System Disabling Identify Vehicle

- 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 HV battery compartment, ventilate the passenger area (i.e., roll down windows or open doors) and call 911.
- Be alert. There is a potential for delayed fire with damaged lithium-ion batteries.

Recovering/Transporting Vehicle

- Call an authorized service center or vehicle manufacturer representative, if necessary, to determine additional steps that you should 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 hazard lights, and remove keys 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.
- Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels.


Storing Vehicle


- **For vehicles in the United States, notify Ford Motor Company 1-800-392-3673 (then follow the prompts on the voice response menu) or an authorized Ford Dealer as soon as possible as there may be additional steps necessary to secure, discharge, handle, and/or store the HV battery and vehicle.**
- **For vehicles in Canada, notify Ford Motor Company 1-800-565-3673 (then follow the prompts on the voice response menu), or an authorized Ford dealer as soon as possible as there may be additional steps necessary to secure, discharge, handle, and/or store the HV battery and vehicle.**
- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 50 feet of any structure or vehicle.
- Ensure that passenger and cargo compartments remain ventilated.
- Prior to placing and while located in storage area/tow lot, continue to inspect vehicle for leaking fluids, sparks, smoke, flames, gurgling or bubbling sounds from the HV 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: Never attempt to tow the vehicle with its drive wheels on the ground.

 **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) SAFETY GEAR, 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) SAFETY GEAR, 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.

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:

**WARNING:
BATTERY ELECTRIC VEHICLE WITH
POSSIBLE HIGH VOLTAGE SYSTEM
DAMAGE. DO NOT TOUCH!**

**WARNING:
BATTERY ELECTRIC VEHICLE WITH
POSSIBLE HIGH VOLTAGE SYSTEM
DAMAGE. DO NOT TOUCH!**


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High Voltage Upper Battery - Removal

Special Tools / General Equipment

303-050 Lifting Bracket, Engine

Hydraulic Jib Crane

 **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 APPROXIMATELY 300 VOLTS DC, 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.

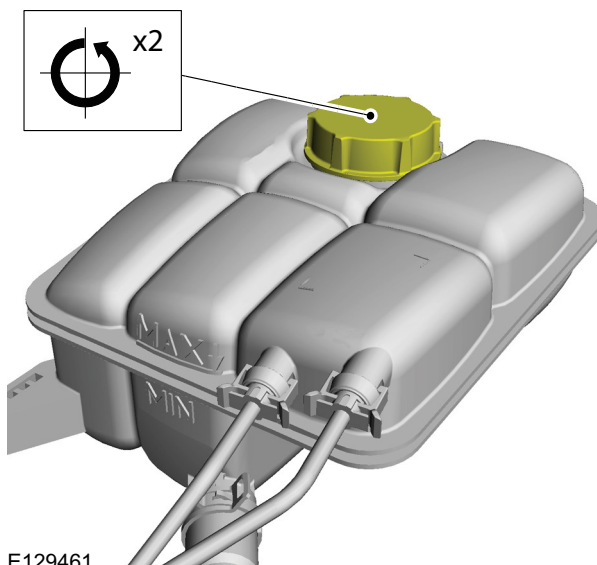
1. With the vehicle in NEUTRAL, position it on a hoist.

NOTE: Wait 5 minutes after the service disconnect plug is removed before continuing service. This allows any residual voltage in the high-voltage system to dissipate.

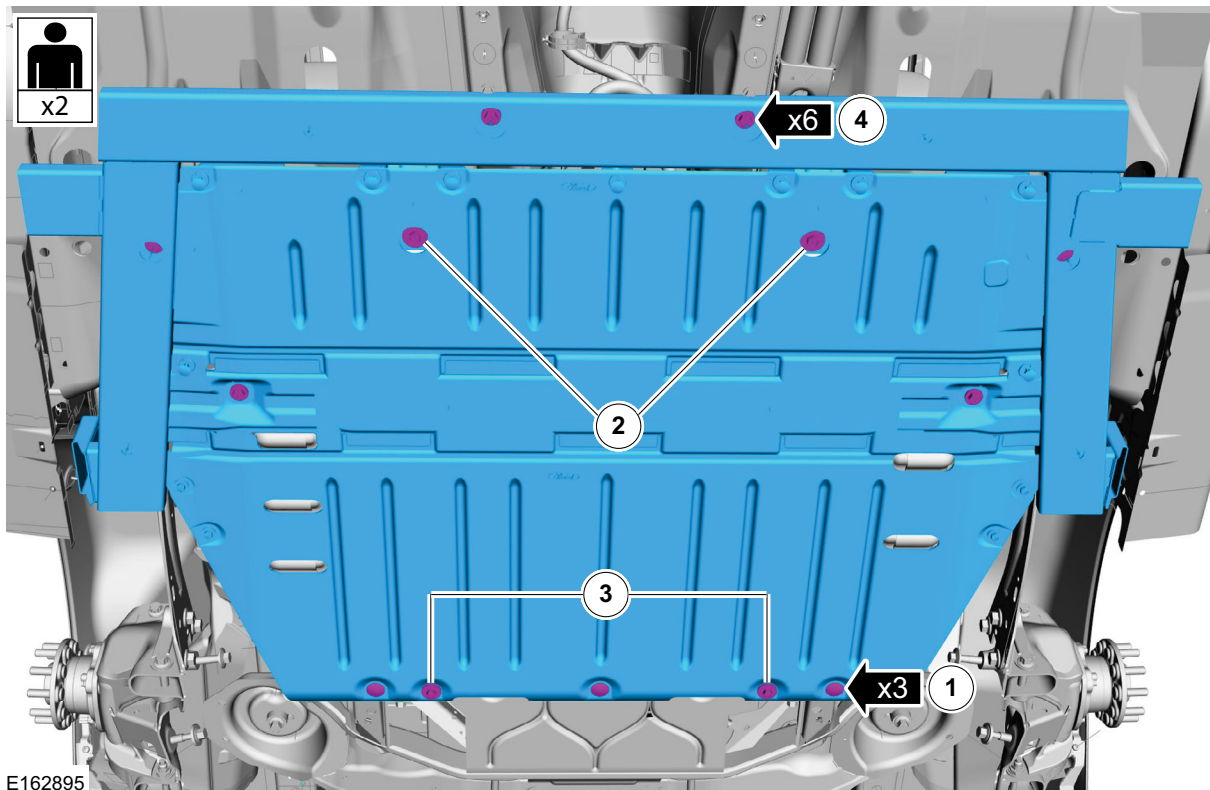
NOTE: Depowering the high-voltage system does not dissipate the high-voltage inside the battery. The battery pack will remain live and dangerous.

2. Depower the High-Voltage (HV) system. Refer to high-voltage service disconnects on page 10.

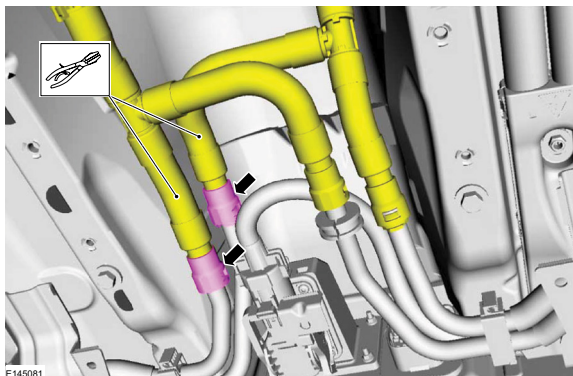
3. Remove the cooling system degas bottle cap.



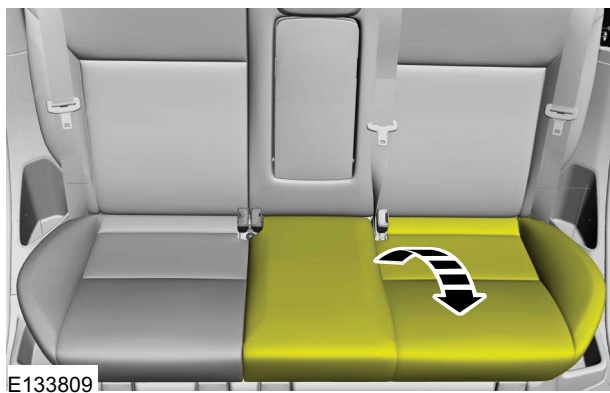
4. Remove the lower HV battery cover retainers and then the lower cover.



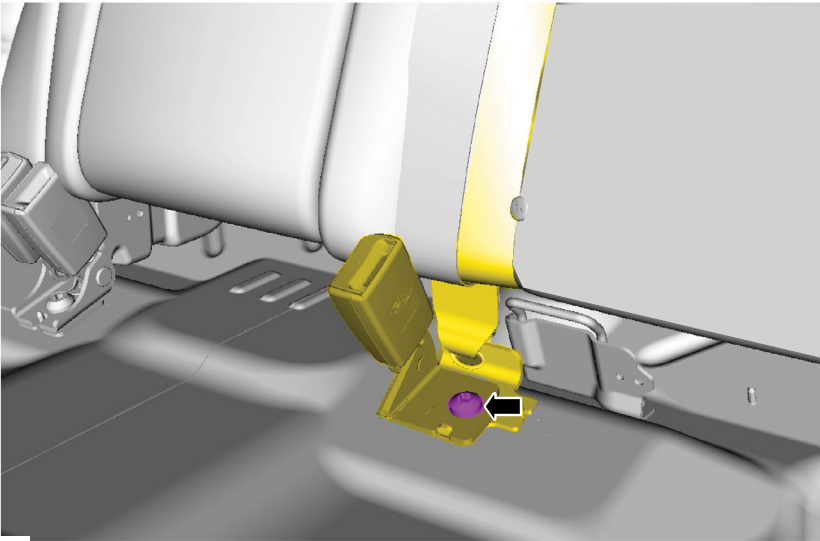
5. Disconnect the two upper HV battery cooling hoses and drain the coolant.



6. Position the drivers side rear seat cushion up.



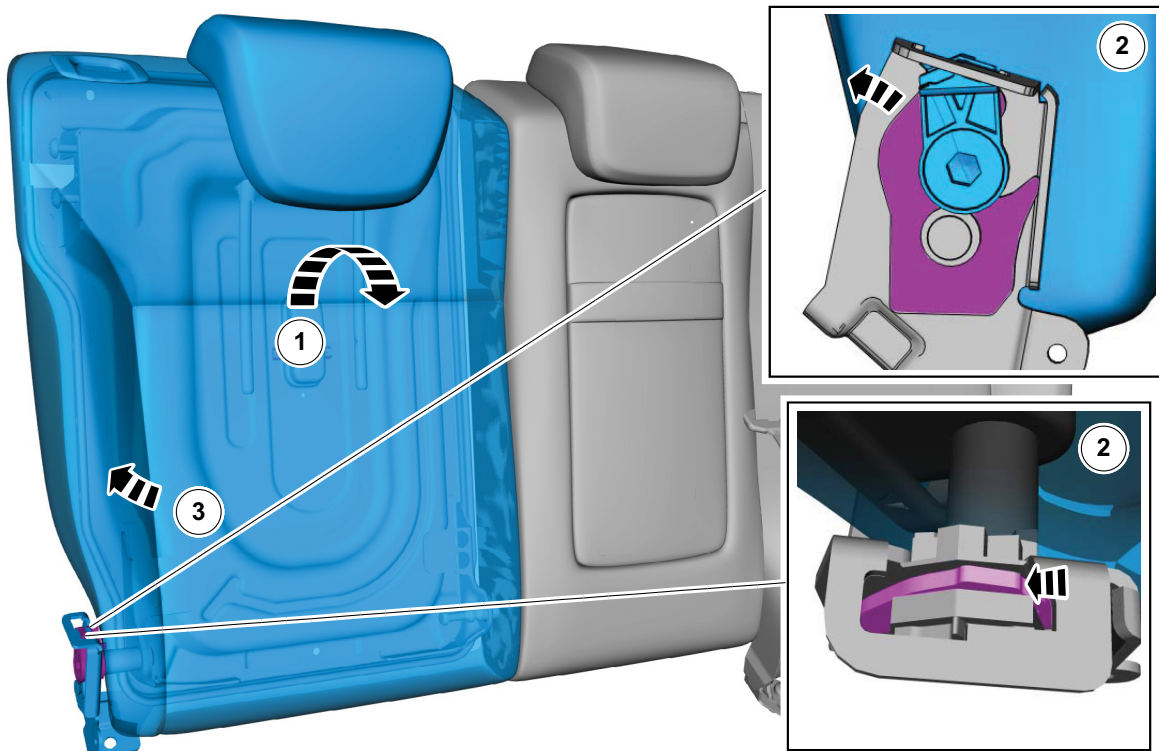
7. Remove the safety belt buckle retainer and position the buckle aside.



E161434

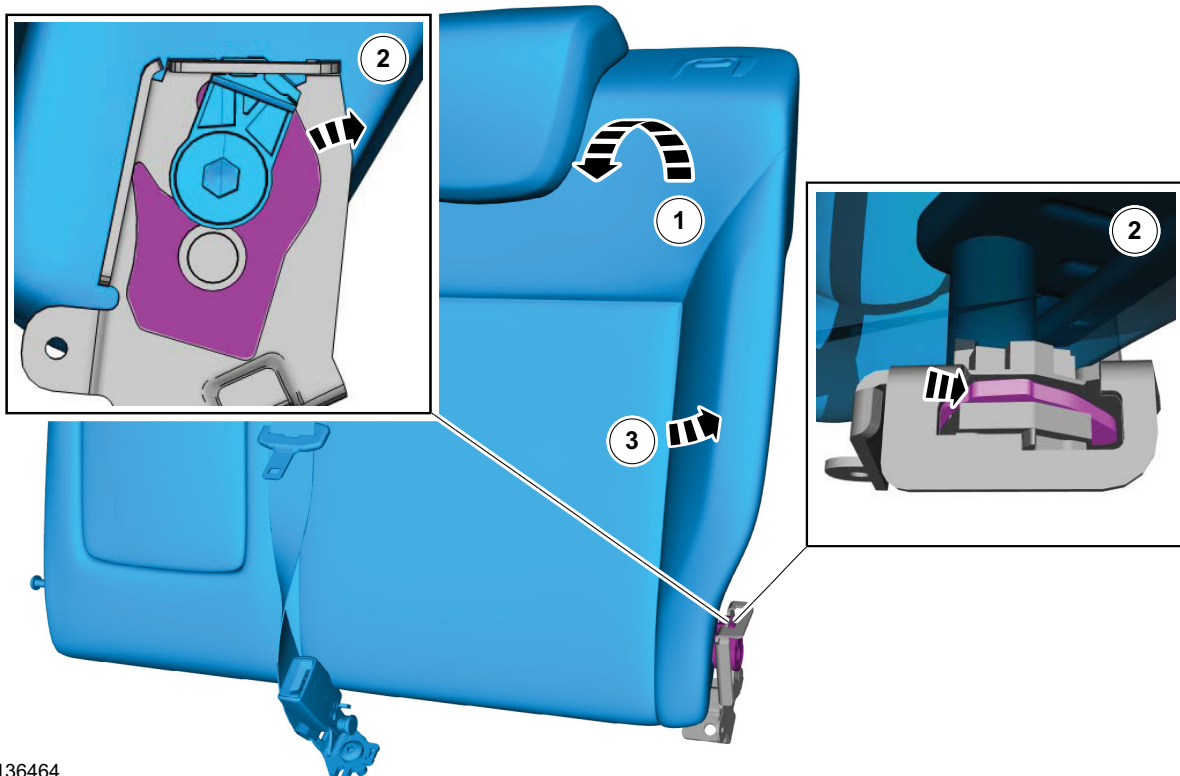
8. Release the seatback latch mechanism and remove the RH seatback.

GENERAL EQUIPMENT: Flat headed screwdriver

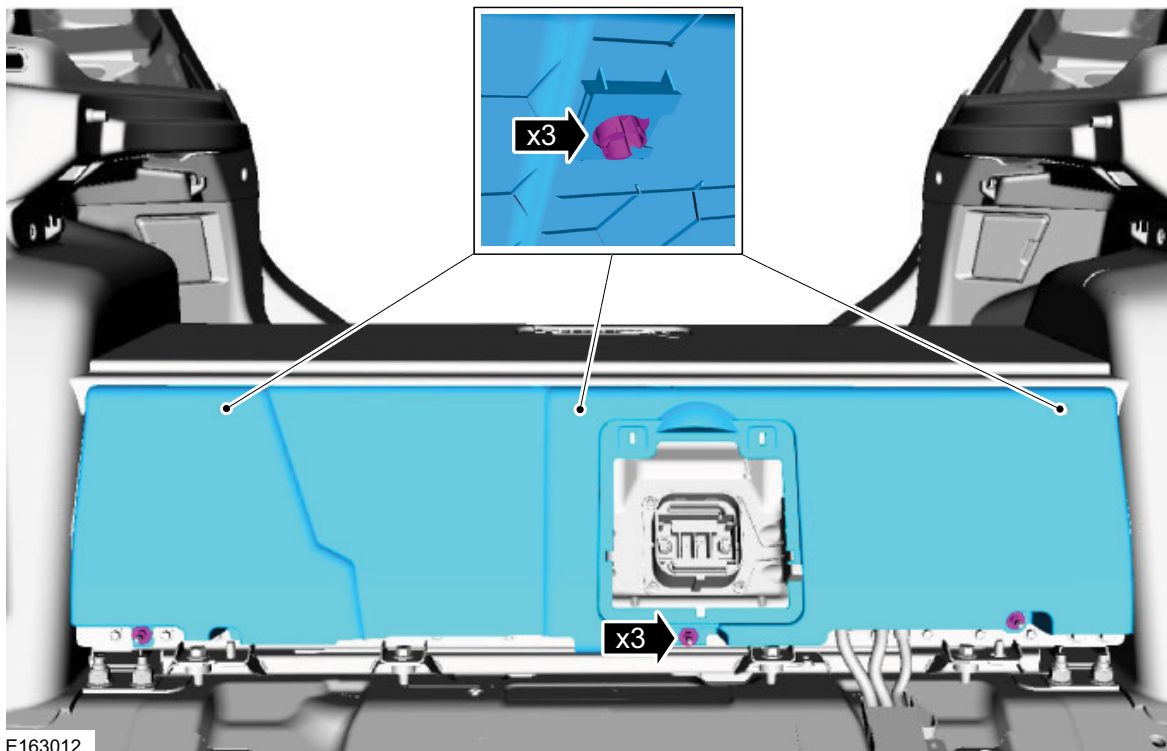


E134966

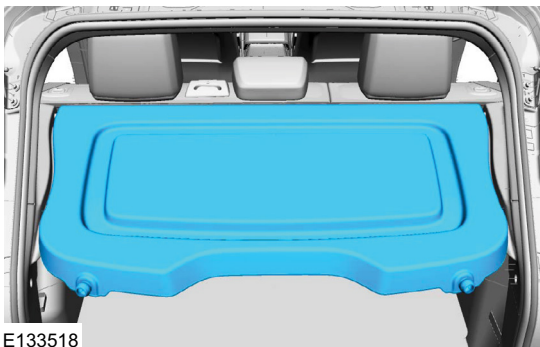
9. Release the seatback latch mechanism and remove the LH seatback.



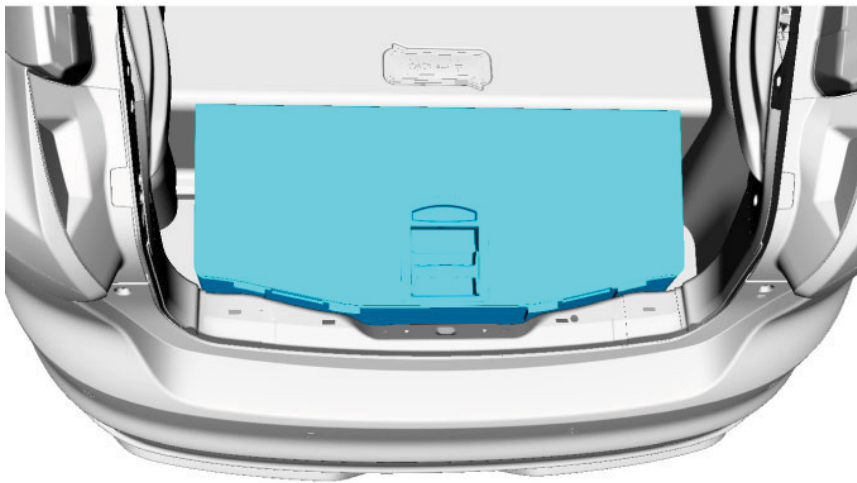
10. Remove the 6 retainers and the upper HV battery cover.



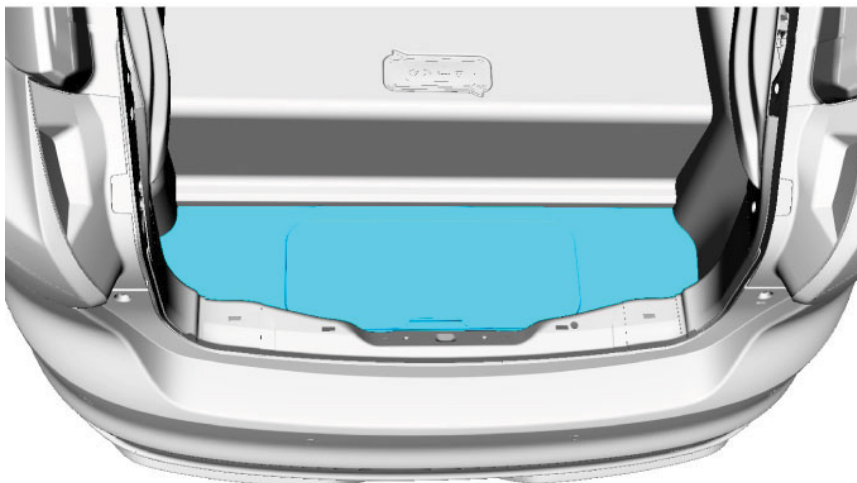
11. Remove the luggage compartment cover.



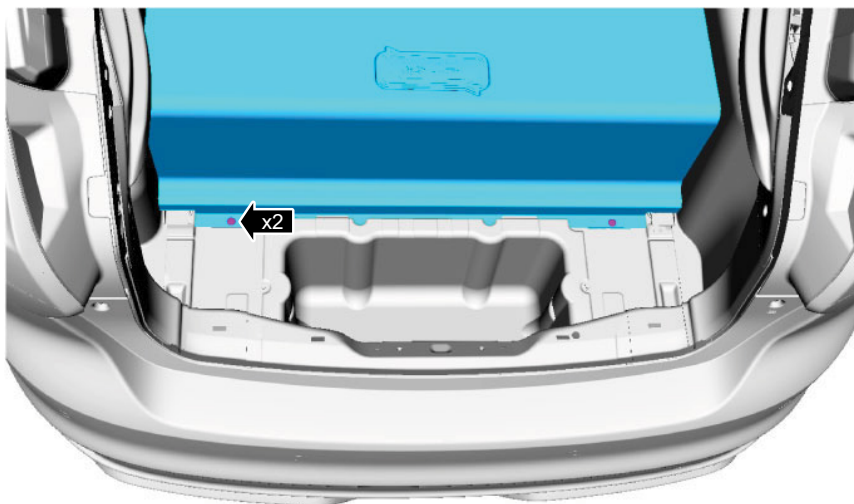
12. Remove the floor trim cover.



13. Remove the spare tire cover.

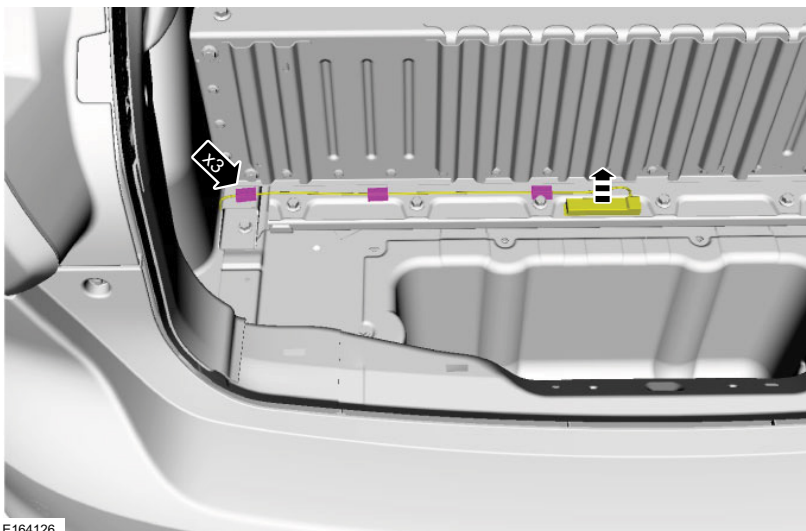


14. Release the two push-pin retainers and the upper battery cover.



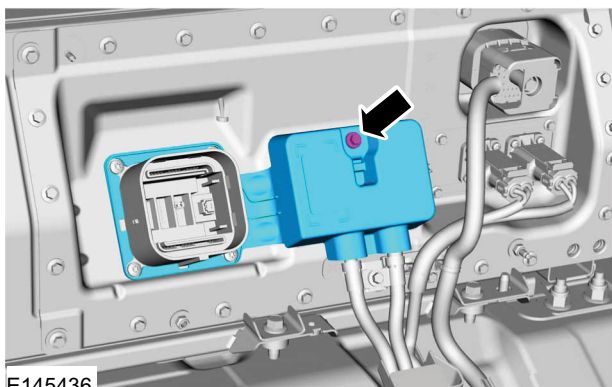
E163011

15. Unclip the keyless rear vehicle antenna from the upper HV battery and position the antenna aside.



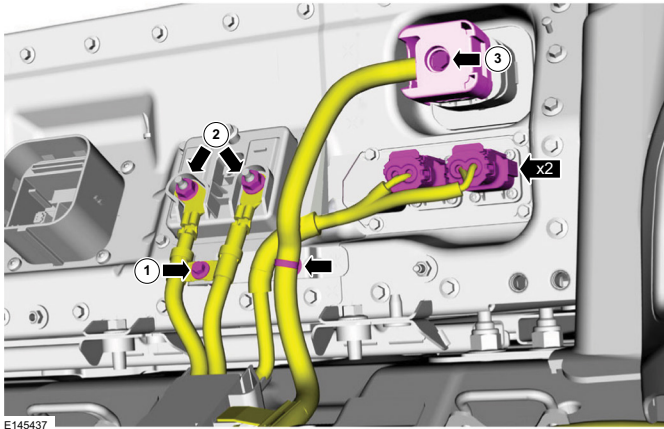
E164126

16. Remove the bolt and the HV battery junction box cover.



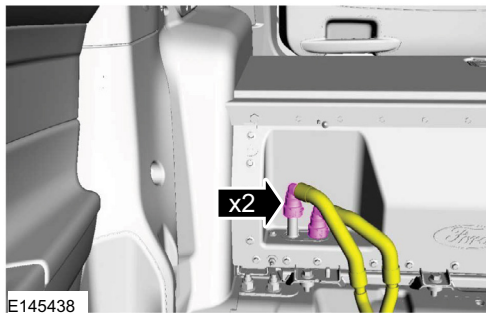
E145436

17. Fully loosen the low-voltage wire connector captured bolt and disconnect the electrical connector. Disconnect the two HV connectors. Remove the two nuts at the HV battery junction box and the wire retainer bolt. Disconnect the wire harness retainer from the upper HV battery.

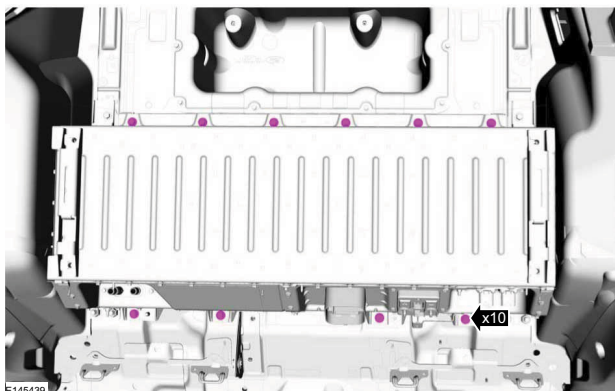


18.  **CAUTION:** To avoid spillage, position a shop towel around the coolant hose to HV upper battery connections before disconnecting. Plug the battery's coolant openings after the hoses are disconnected.

Disconnect the HV battery coolant connections.



19. Remove the HV battery fasteners.



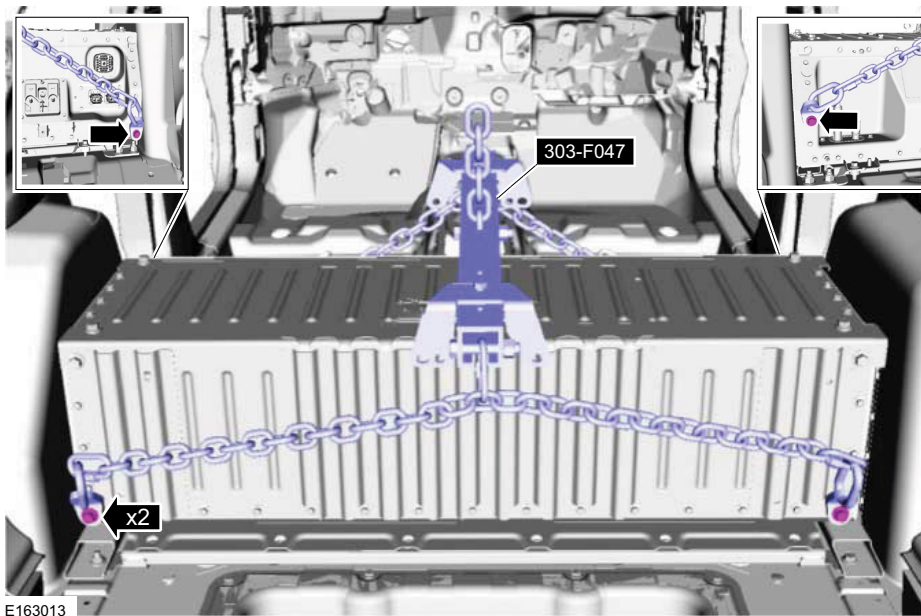
20.  **CAUTION:** Position a shop towel on top of the lift arm to avoid damage to the roof opening panel.

Special Tool(s): Lifting Bracket, Engine 303-F047

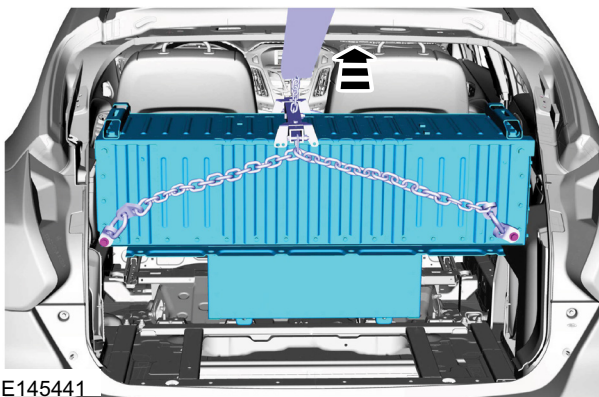
Special Tool(s): Lifting Brackets, 303-050

General Equipment: Hydraulic Jib Crane

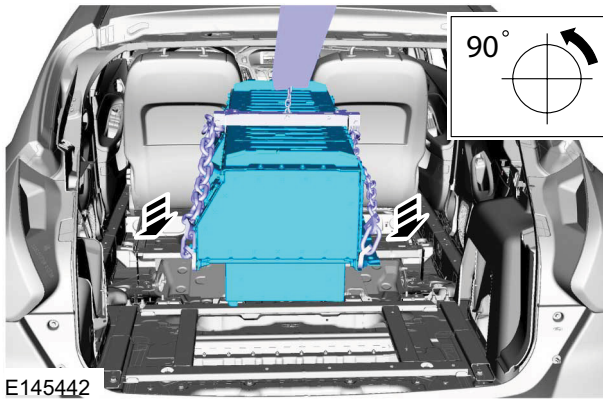
Install the four lift brackets (303-050) to the upper HV battery, attach a chain between the lift brackets and the Engine Lifting Bracket 303-F047 to the floor crane (300-OTC1819E) or equivalent.



21. Raise the upper HV battery above the floor opening. Position the upper HV battery forward until it can rotate.




22. Rotate the upper HV battery 90 degrees counterclockwise and remove the battery from the vehicle.



High Voltage Lower Battery - Removal

General Equipment

Transmission Jack

 **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 APPROXIMATELY 300 VOLTS DC, 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.

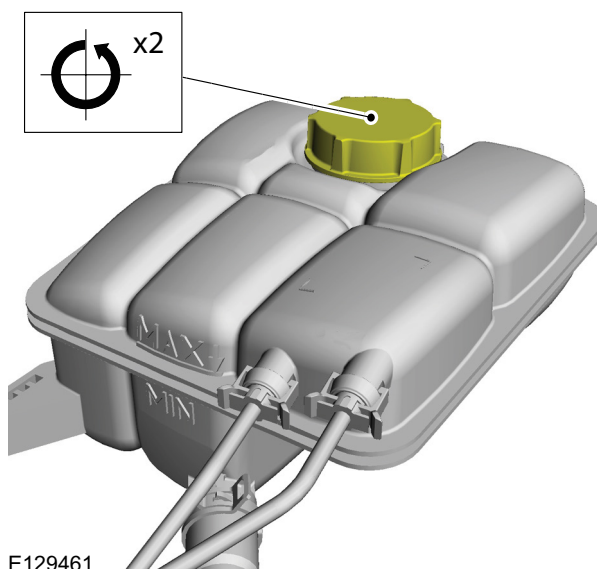
1. With the vehicle in NEUTRAL, position it on a hoist.

NOTE: Wait 5 minutes after the service disconnect plug is removed before continuing service. This allows any residual voltage in the high-voltage system to dissipate.

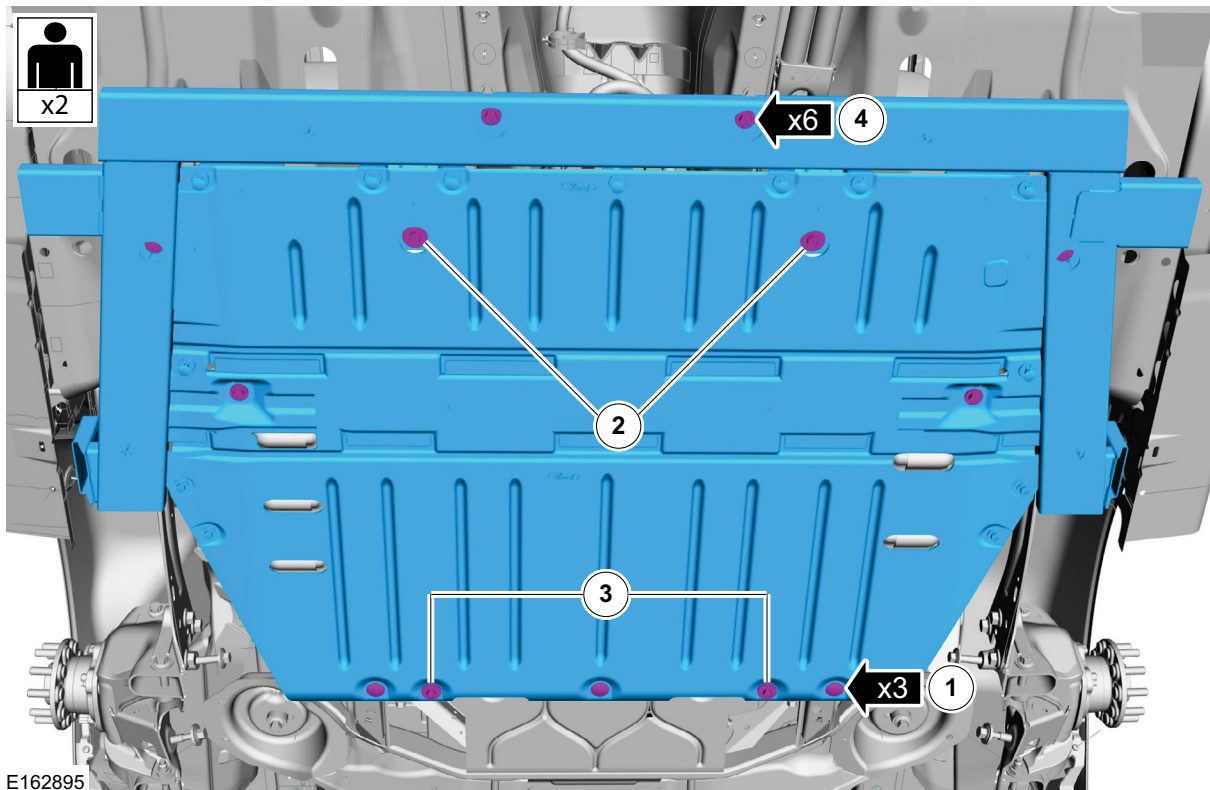
NOTE: Depowering the high-voltage system does not dissipate the high-voltage inside the battery. The battery pack will remain live and dangerous.

2. Depower the high-voltage (HV) system. Refer to high-voltage service disconnects on page 10.

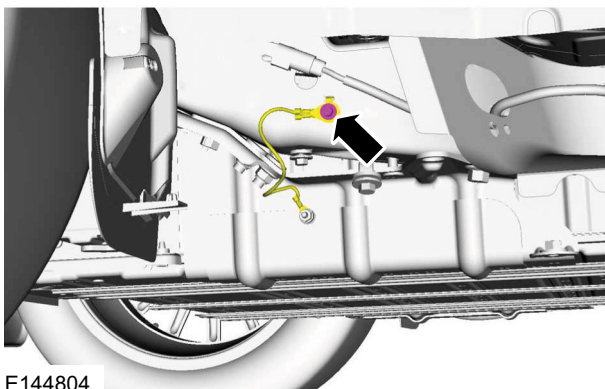
3. Remove the cooling system degas bottle cap.



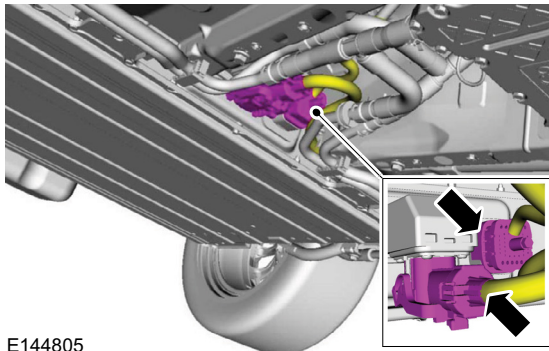
4. Remove the lower HV battery cover retainers and then the lower cover.



5. Remove the ground bolt from the RH side of the lower HV battery.

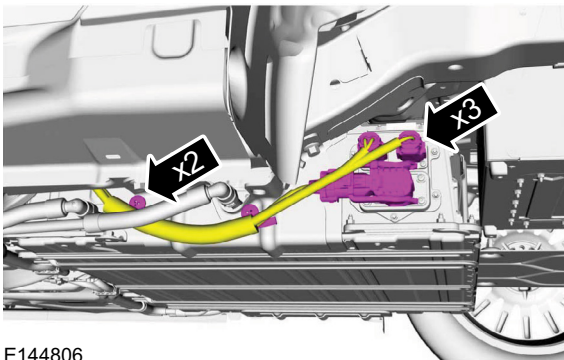


6. Disconnect the HV wire connector at the front of the lower HV battery. Fully loosen the low-voltage wire connector captured bolt at the front of the lower HV battery and disconnect the electrical connector.



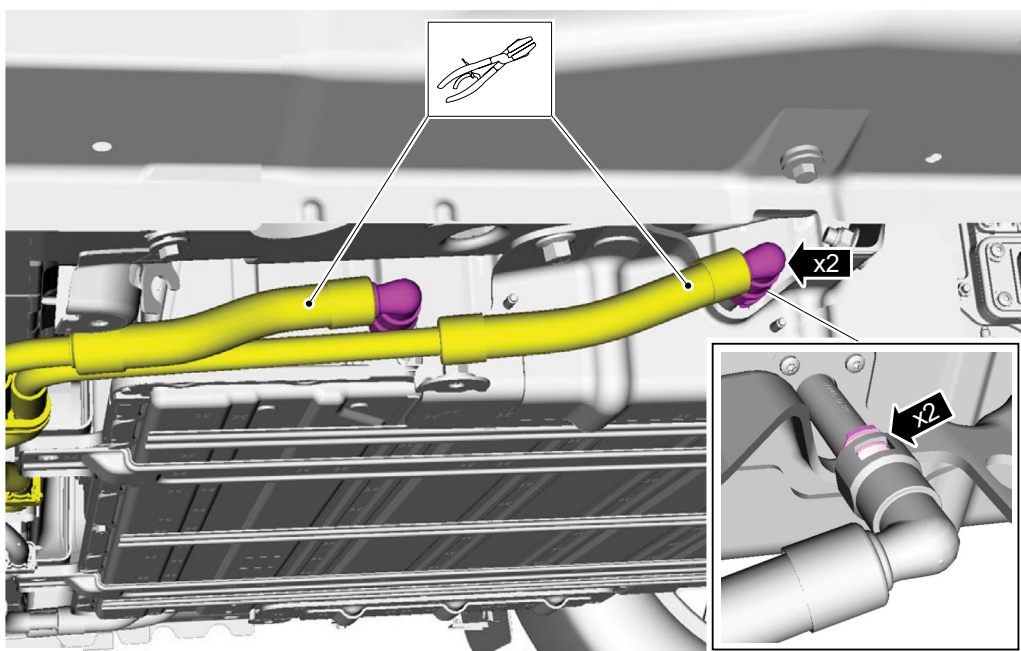
E144805

7. Disconnect the three HV wire connectors and the two wire retainers at the LH side of the lower HV battery.



E144806

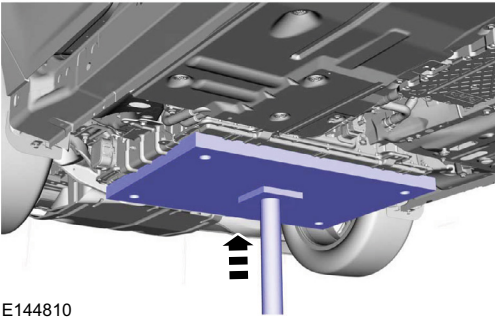
8. Disconnect the two coolant hoses and drain the coolant at the LH side of the lower HV battery.



E144807

9. Position a lift table under the lower HV battery.

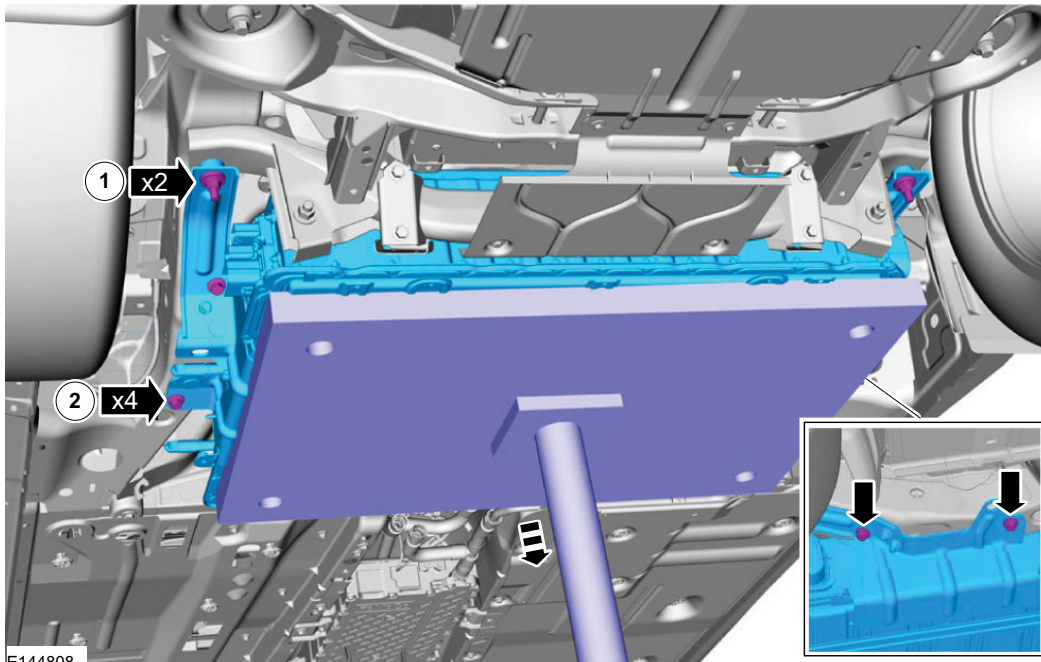
GENERAL EQUIPMENT: Transmission Jack



E144810

10. Remove the six bolts and the lower HV battery.

NOTE: The two rear bolts are longer than the other bolts.



E144808

SPECIAL NOTE TO SALVAGE YARDS

If a vehicle with a high-voltage battery is to be scrapped, the high-voltage battery must be disposed of following all local, state/provincial and federal guidelines.

Focus electric vehicles' upper and lower Lithium-Ion high-voltage battery pack (Li-Ion HVB) are fully recyclable and should be shipped to a permitted recycling facility. The guidelines below are for Li-Ion HVBs which have been removed from the vehicle and discharged.

General Guidelines

Once the battery has been removed from the vehicle and discharged:

1. Store the battery's components in a building or under shelter so that batteries are kept dry and not exposed to high temperatures.
2. Protect battery's components from being damaged (e.g. crushed or punctured).
3. It is recommended to ask about the specific packaging requirements for battery shipments to the recycler who will be receiving the battery components in order to avoid inappropriate repacking/stacking of the batteries.
4. Batteries should be sorted by type. Keep lead acid batteries, NiMH batteries, and Li-Ion batteries separated from each other (e.g. separate pallets or storage locations).

Applicable Laws/Regulations

The following is a general explanation of certain applicable laws; however, these laws change from time to time, additional regulations are under development and Ford makes no representation that this is a complete summary.

Packaging and Transport

The U.S. Department of Transportation (DOT) outlines packaging and shipping requirements for Li-Ion batteries. Certain exceptions on packaging and transportation regulations for large format Li-Ion batteries may be found in 49 CFR 173.185 (d) and (g).

Make sure that the shipping paperwork is filled out correctly and that the shipment is properly labeled per federal, state, and local laws and regulations.

Check to make sure that you are complying with any recordkeeping requirements. Only certified hazardous material shippers should offer transport of a hazardous material.

Generally, under U.S. DOT regulations, Li-Ion batteries are usually considered a dangerous good and regulated as hazardous materials when transported. Li-Ion batteries are classified as Class 9 hazardous material.

Batteries for recycling should be shipped by ground or vessel only. Do not ship batteries for recycling by air.

SPECIAL NOTE TO SALVAGE YARDS - CONTINUED

NOTE: A damaged battery (one that is leaking electrolyte from the battery pack) might need to be shipped as a hazardous waste. Check your yellow pages (e.g. waste, rubbish and garbage removal, recyclables, recycling) to locate a company that specializes in transporting or managing hazardous wastes.

Recycling

40 CFR 261 states that manufactured articles that yield extracts which exceed one or more of the concentration limits of regulated listed constituents, or meets the definition of ignitability, corrosivity or reactivity are defined as hazardous wastes and must be disposed of in accordance with federal and state regulations. Since there are many variations in the specific chemistry of Li-Ion batteries, additional classifications may be necessary and is the responsibility of the generator. Generally, under federal and state law, sealed, Li-Ion batteries may be considered dry cell batteries and therefore may be managed as a universal waste; damaged or leaking Li-Ion batteries may be regulated as hazardous waste under federal and state regulations.

Though Ford Motor Company makes no representations or endorsements, there are companies that have the capability to accept, consolidate and recycle Li-Ion HVBs, and a few are listed below. Contact the appropriate battery manufacturer for additional information.

North America Battery Recyclers

Kinsbursky Brothers, Inc.

125 E. Commercial
Anaheim, CA 92801
Phone: 714-738-8516
Fax: 714-773-4830

RETRIEV Technologies, Inc.

9384 Highway 22A
P.O. Box 232
Trail, B.C. Canada V1R 4L5
Phone: 877-GOTOXCO (877) 468-6929
Fax: 250-367-9875