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High Voltage Battery Depowering

⚠ WARNING:
THE HIGH-VOLTAGE SYSTEM MAY RETAIN A DANGEROUS LEVEL OF VOLTAGE FOR A SHORT TIME AFTER THE SERVICE DISCONNECT HAS BEEN OPENED. 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:
REMOVING THE BATTERY HIGH VOLTAGE SERVICE DISCONNECT DOES NOT DISSIPATE VOLTAGE INSIDE THE BATTERY PACK. 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 THE FORD EMERGENCY RESPONSE GUIDE FOR THE VEHICLE. 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 TOTAL VOLTAGE OF THE VEHICLE HV BATTERY PACK MAY BE UP TO APPROXIMATELY 450 VOLTS 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:
NEVER CONNECT THE SERVICE DISCONNECT WHEN A HIGH-VOLTAGE COVER IS REMOVED. ALWAYS INSTALL THE COVER PRIOR TO CONNECTING THE SERVICE DISCONNECT. THE COVER PREVENTS INADVERTENT CONTACT WITH THE HIGH VOLTAGE WHICH IS PRESENT AT SEVERAL POINTS UNDER THE COVER. FAILURE TO FOLLOW THESE INSTRUCTIONS 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:
Do not backprobe, splice or repair the high voltage (orange) wiring. Voltage in the system is approximately 450 volts DC. Damage may occur to equipment added to the system.

NOTICE:
None of the High Voltage Traction Battery (HVTB) wiring should be tapped or spliced to check for battery voltage (power), ground or signals.

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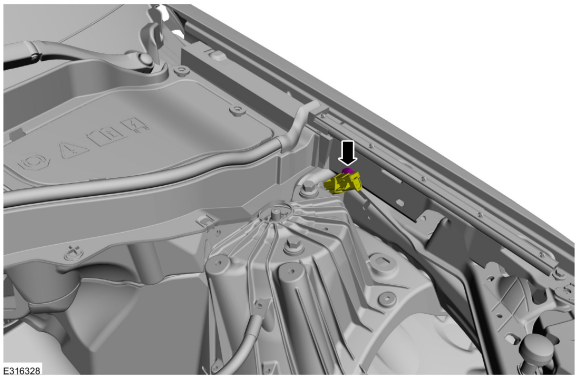
NOTICE:
Modification of Low-Voltage (LV) power & control wires connecting to the High-Voltage (HV) battery system can damage or disable the HV Battery system. Do not open or modify High Voltage battery pack

High Voltage Battery Depowering using FDRS

⚠ WARNING:
Before beginning any service procedure in this manual, refer to health and safety warnings in Workshop Manual (WSM) Section 100-00 General Information. Failure to follow this instruction may result in serious personal injury.

⚠ 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 450 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. Using the FDRS CARRY OUT the Zero Voltage Confirmation routine and follow the on-screen instructions.
2. Detach the pin-type retainer and position the electrical connector and wiring harness aside.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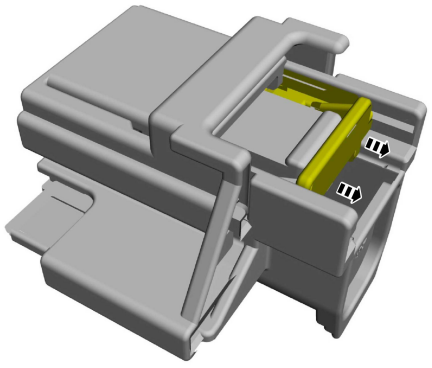
3. Release the Connector Position Assurance (CPA) clip.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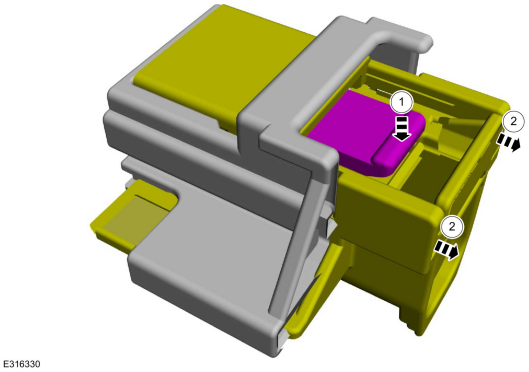
Section 2: High Voltage Battery Depowering

4. **NOTE:**
   The tab must be depressed prior to pushing the connector back in or damage to the connector may result.

   Depress the tab while pulling the connector until the hole is completely visible on the top of the connector.



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5. Insert a suitable tool inside the connector hole to prevent the connector from closing.


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6. Using the FDRS COMPLETE the Zero Voltage Confirmation routine and verify the High Voltage System has been de-energized.

Manual De-Energizing

⚠ 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 450 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

⚠ WARNING:
Before beginning any service procedure in this manual, refer to health and safety warnings in WSM Section 100–00 General Information. Failure to follow this instruction may result in serious personal injury.

NOTICE:
Manual De-energization should only be performed when a Ford-specific diagnostic tool is not available.

NOTICE:
Excessive use of this method may cause damage to electrical connectors.

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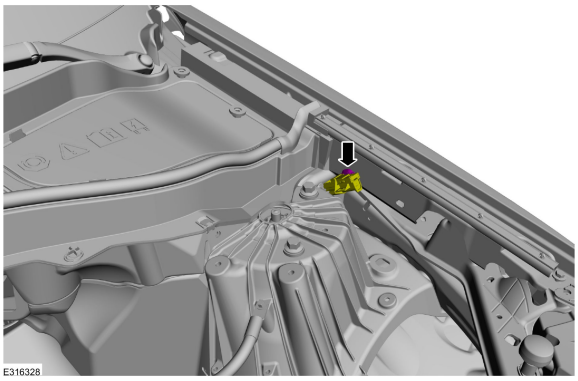
NOTICE:
To prevent the risk of high voltage shock, the high voltage battery cover must not be removed if any of the following condition exist:

- **BECM DTC P0AA6:00 that has been diagnosed to be an internal fault with the high voltage Battery.**
- **BECM Diagnostic Trouble Codes (DTCs) P0AA1:00 AND P0AA4:00 are present.**
- **BECM Diagnostic Trouble Codes (DTCs) P0D0F:00 AND P0AA4:00 are present (PHEV only).**

1. Disconnect the Electric Vehicle Supply Equipment (EVSE) from the vehicle charge port. (PHEV only).
2. Turn the ignition ON without depressing the brake pedal (Accessory mode).
3. **NOTE:**
   A scan tool that is capable of performing a self-test on the BECM is required.

   Using a scan tool perform BECM self test and record the Diagnostic Trouble Codes (DTCs).
   • If BECM Diagnostic Trouble Codes (DTCs) P0AA1:00 AND P0AA4:00 are present. Refer to WSM procedures in section 414-03 High Voltage Battery, Mounting and Cables, Diagnosis and Testing.
   • If BECM Diagnostic Trouble Codes (DTCs) P0D0F:00 AND P0AA4:00 are present (PHEV only). Refer to WSM Procedures in section 414–03A High Voltage Battery, Mounting and Cables - Plug-In Hybrid Electric Vehicle (PHEV).
4. Turn the ignition OFF.
5. Detach the pin-type retainer and position the electrical connector and wiring harness aside.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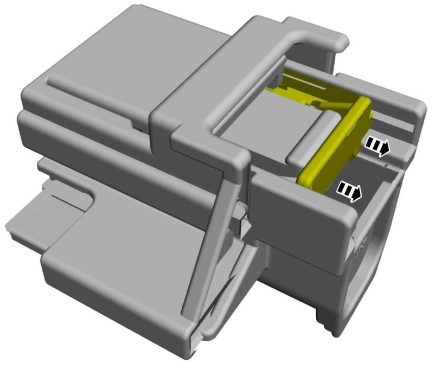
6. Release the Connector Position Assurance (CPA) clip.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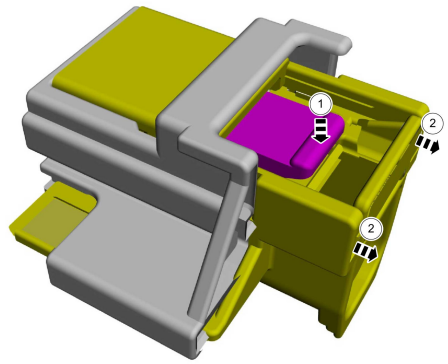
7. **NOTE:**
   The tab must be depressed prior to pushing the connector back in or damage to the connector may result.

   Depress the tab while pulling the connector until the hole is completely visible on the top of the connector.



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8. Insert a suitable tool inside the connector hole to prevent the connector from closing.


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9. Disconnect the low voltage electrical connector at the High Voltage Battery.
10. Disconnect the high voltage electrical connector at the High Voltage Battery.
11. Wait a minimum of 5 minutes.

