

August 2022

Dealer Service Instructions for:

Customer Satisfaction Notification Z27 PHEV Battery Replacement

Remedy Available

2021 (JL) Jeep® Wrangler PHEV

NOTE: This campaign applies only to the above vehicles equipped with a 2.0L engine (sales code ECX).

NOTE: Some vehicles above may have been identified as not involved in this campaign and therefore have been excluded from this campaign.

IMPORTANT: Some of the involved vehicles may be in dealer new vehicle inventory. Dealers should complete this campaign service on these vehicles **before retail delivery**. Dealers should also perform this repair on vehicles in used vehicle inventory and those vehicles in for service. Involved vehicles can be determined by using the VIP inquiry process.

Subject

The Plug-in Hybrid Electric Vehicle (PHEV) battery on about 20 of the above vehicles may develop internal resistance which sets a Diagnostic Trouble Code (DTC). When the DTC is set, the PHEV system is inoperative, and the vehicle reverts to Internal Combustion Engine (ICE) propulsion only.

Repair

Replace the PHEV battery.

Parts Information

<u>Part Number</u>	<u>Qty.</u>	<u>Description</u>
68488244AA	1	400V Battery
68163848AB	1	Coolant
06512293AA	3	Split Seat - Screw & Washer

Use standard ordering through STAR for the battery.

Parts Return

Return instructions for the old battery are included in the container with the new battery. There is a \$2500.00 core charge for this battery.

NOTE: If the HV battery is missing its return instructions, contact the UPS Call Center 800-567-9989.

Special Tools

The following special tools are required to perform this repair:

- NPN wiTECH MicroPod II
- NPN Laptop Computer
- NPN wiTECH Software
- 2035100082 Covers, HEV Battery Terminal
- 2035203080 Eyebolt, 10mm
- 2035200080 Lift Straps, HV Battery
- 126-1587 Meter, Multi –
Originally Shipped In Kit Number(s) 10389.
- 10441 Cone, Safety
Originally Shipped In Kit Number(s) 10420.
- 10442 Barriers, Safety
Originally Shipped In Kit Number(s) 10420.
- 10152-1 Protective Glove Set – Small
Originally Shipped In Kit Number(s) 10075A-
CHR, 10075A-DOD, 10075-CHR, 10075-
CHRYSLER, 10075-DOD, 10075-DODGE,
10389.
- 10152-2 Protective Glove Set – Medium
Originally Shipped In Kit Number(s) 10075A-
CHR, 10075A-DOD, 10075-CHR, 10075-
CHRYSLER, 10075-DOD, 10075-DODGE,
10389.
- 10152-3 Protective Glove Set – Large
Originally Shipped In Kit Number(s) 10075A-
CHR, 10075A-DOD, 10075-CHR, 10075-
CHRYSLER, 10075-DOD, 10075-DODGE,
10389.
- 10440 Hard Hat and Face Shield
Originally Shipped In Kit Number(s) 10420.

Special Tools [Continued]

- 10452 Sign, Danger High Voltage
 Originally Shipped In Kit Number(s) 10420.
- 10443 Cards, Windshield and Dash Placement
 Originally Shipped In Kit Number(s) 10420.
- 10451 Crate
 Originally Shipped In Kit Number(s) 10420.

Service Procedure

Only individuals with high voltage training and repair qualifications should be allowed to handle, troubleshoot or repair High Voltage or Hybrid components or systems.

Always wear safety glasses.

The following service information can be found in High Voltage Safety Procedures in Service Library section 08, Standard Procedures.

NOTE: When performing any repairs that involve contact with high voltage components or systems, the technician performing repairs on the vehicle must verify that the system remains powered down during high voltage repairs.

This must be done by removing the test points access cover.

The high voltage power down procedure must also be performed to ensure that the vehicle is properly powered down.

The technician must know the whereabouts of the test points access cover throughout the repair.

The technician must ensure that no one reinstalls the test points access cover while service is being performed.

The technician must recheck that the test points access cover has not been reinstalled in cases where the vehicle was unattended.

Failure to comply with all of these warnings may result in personal injury including: **BURN, SHOCK OR FATAL INJURY.**

WARNING: Before performing any diagnostic or service procedure, you must thoroughly read and follow all applicable High Voltage Safety Procedures. You must perform the High Voltage Battery Power Down procedure before performing any repairs (Refer to 12 - Electrified Powertrain System/High Voltage Battery/Standard Procedure).

Service Procedure [Continued]

Personal Protection Equipment

WARNING: Be sure to utilize the proper Personal Protection Equipment (PPE) when working on any high voltage system. Failure to do so may result in serious or fatal injury.

- Safety Glasses
- Natural Fiber clothing
- Hand tools HV rated with a dielectric barrier of not less than 1000 volts
- Rated and non-expired rubber insulating gloves with leather protectors



Personal Protection Equipment (PPE)

Service Procedure [Continued]

WARNING: Do not use leather protectors alone for protection against electric shock. Serious injury or fatal injury will result. Always use rubber insulating gloves in the proper voltage class.

- Proper use and care of rubber insulating gloves and sleeves are essential to user safety. Do not wear rings, watches, jewelry and sharp objects on your hands or arms, they will cause damage to the rubber gloves and sleeves.
- Wear leather protectors over rubber insulating gloves to protect the gloves from physical damage.
- To maintain an adequate flashover distance between the end of the protector cuff and the end of the rubber glove cuff, the rubber glove should be longer than the protector by at least one inch multiplied by the rubber glove's Class number, but not less than one-half inch for Class 00 and 0 gloves.
- Where the finger dexterity needed to manipulate small equipment and parts requires use of rubber insulating gloves without leather protectors, extra care must be taken by the user to prevent puncture, abrasion and other damage to the gloves.
- Except for Class 00 and Class 0 gloves, rubber insulating gloves used without leather protectors must be one Class higher than that required for the voltage involved, and must not be used at the higher voltage until given an inspection and electrical retest using the procedures in the most recent edition of ASTM Standard F496 (Specification for In-Service Care of Insulating Gloves and Sleeves), document can be obtained at www.astm.org.



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Service Procedure [Continued]

WARNING [Continued]:

- **To assure their continued integrity, rubber insulating gloves and sleeves must be inspected on their inside and outside surfaces at least once a day, and more frequently when used without leather protectors or if the user suspects that the rubber glove may have been snagged or otherwise damaged while in use.**
- **Inspections should be performed using the inspection procedures describe in the latest edition of ASTM Standard F1236 (Guide for Visual Inspection of Electrical Protective Rubber Products) looking for physical damage (punctures, cuts and abrasions), chemical deterioration (swelling, softness, hardness, stickiness) ozone deterioration and other irregularities. Document can be obtained at www.astm.org.**
- **Do not use rubber gloves or sleeves showing any irregularities. Their ability to protect against electric shock has been compromised, exposing the user to the risk of serious or fatal injury.**
- **Leather protectors must also be inspected when inspecting the rubber gloves. Metal particles, imbedded wire, abrasive material or any substance that could physically damage the rubber glove must be removed before using the protector.**

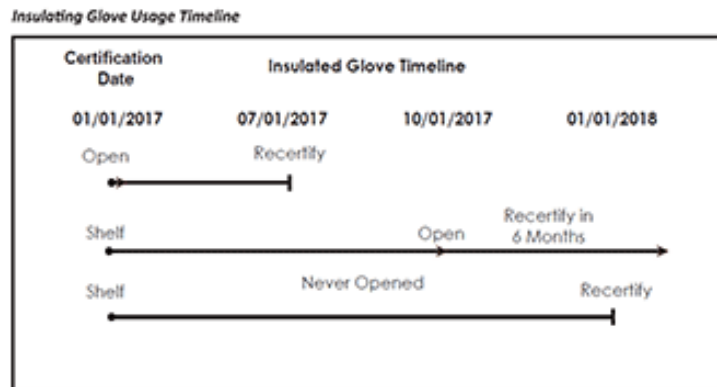


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Inspect Gloves

Service Procedure [Continued]

WARNING [Continued]:



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Insulating Glove Usage Timeline

- **Rubber insulating gloves must be retested electrically at least once every six (6) months (and rubber insulating sleeves at least once every twelve (12) months) using the test procedures described in the most recent edition of ASTM Standard F496, document can be obtained at www.astm.org.**
- **Rubber insulating gloves can be damaged by many chemicals, especially petroleum-based products (oils, gasoline, hydraulic fluid) solvents, hand creams, pastes and salves. If contact is made with these or other chemical products, the contaminant should be wiped off immediately.**
- **To clean, rubber-insulating gloves should be washed with a mild soap, rinsed thoroughly with clean water and air-dried.**
- **Rubber insulating gloves and sleeves should be stored in a protective bag when not being used.**

Service Procedure [Continued]

Safety Equipment

WARNING: Be sure to utilize the proper safety equipment found in **Kit, Safety Service - HEV** when working on any high voltage system. Failure to do so may result in serious or fatal injury.

The Kit, Safety Service - HEV includes the following:

- **Cone, Safety 10441 (six required)**
- **Barriers, Safety 10442 (six required)**
- **Protective Glove Set - Small 10152-1**
- **Protective Glove Set - Medium 10152-2**
- **Protective Glove Set - Large 10152-3**
- **Hard Hat and Face Shield 10440**
- **Sign, Danger High Voltage 10452 (two required)**
- **Cards, Windshield and Dash Placement 10443 (set of four)**
- **Crate 10451 (storage)**

Cards, Windshield & Dash Placement consist of:

- **Powered Up Signs**
- **Powered Down Signs**
- **400 Volts HYBRID Electric Vehicle Signs**

Service Procedure [Continued]

Test Equipment

WARNING: Be sure to utilize the proper test equipment when working on any high voltage system. Failure to do so may result in serious or fatal injury.

When taking electrical measurements, high voltage must never be allowed to “escape” beyond the article under test. This assures:

- **That those taking measurements will not come into contact**
- **That others in other areas will not come into contact**
- **That equipment will not be damaged**
- **That measurements will be accurate**

For electrical measurements, there are three forms of separation:

- **Non-contact measurement or indirect sensing of high voltage current (in amps) using a clamp-on type current probe**
- **Isolating voltage probes or differential probes with galvanic separation between the input probes and the measurement device**
- **Isolation of the test equipment from the building using a Isolation Transformer or a battery-powered device**

The Fluke Meter, Multi 126-1587 is specifically rated for use measuring high voltage sources and has been the default choice for testing the PHEV high voltage electrical system.

Service Procedure [Continued]

Prepare the Work Area

Assemble the six Cone, Safety 10441 and six Barriers, Safety 10442 around the vehicle/hoist area.

Position the two Sign, Danger High Voltage 10452 within the assembled safety cones and barriers.

Place the four Cards, Windshield and Dash Placement 10443 within the vehicle.

Battery Recycling

The Hybrid vehicles contain a High Voltage 400 Volt Lithium-Ion (Li-ion) battery. It is important to understand that these batteries can be recycled. Prior to doing so, refer to federal, state, local and provincial laws and regulations governing the recycling, handling, and shipping of such batteries and materials.

Li-ion batteries contain several components, including iron, copper, nickel and cobalt, each of which has value as recycled materials. Dealers should follow the Service Information Procedures for proper disconnecting, removing and handling of the Li-ion battery packs.

Since Li-ion batteries contain less toxic metals than other types of batteries which may contain lead or cadmium they are generally categorized as non-hazardous waste.

Service Procedure [Continued]

WARNING: Before performing any diagnostic or service procedure, you must thoroughly read and follow all applicable high voltage safety procedures. You must perform the high voltage power down procedures.

Loss of Isolation (LOI) must be performed before high voltage power up in cases where service has been performed on a high-voltage component or when diagnosing a LOI condition.

Be sure to use the proper safety equipment when working on any high voltage system or component. Failure to do so may result in serious or fatal injury.

Wait a minimum of two minutes after performing the high voltage battery disconnect procedure safety procedures before attempting to access the high voltage system, failure to do so may result in serious or fatal injury.

CAUTION: Do not allow coolant to come in contact with any high voltage component electrical connections. Engine coolant will create a conductive path and cannot be effectively removed resulting in a loss of isolation and replacement of the contaminated high voltage component.

NOTE: If the High Voltage (HV) battery is missing its return instructions, contact the UPS Call Center 800-567-9989.

Service Procedure [Continued]

NOTE: Observe the following precautions when handling the HV battery pack:

- **DO NOT touch the high voltage terminals.**
- **Always use the battery pack four lift points when moving the battery pack.**
- **Keep the battery pack in the same orientation as when installed in the vehicle.**
- **Store in a clean and dry environment.**
- **Store at a temperature of 10-30°C (50-86°F) with relative humidity between 30-70%.**
- **Always store at a State Of Charge (SOC) of around 30%.**
- **Always store on an electrically nonconducting (insulated) material.**
- **Store with spatial gap of at least 50 cm (20 in.).**
- **DO NOT store the battery pack near any environmental condition involving liquid, heat, strong magnetic field, electricity or that can generate heat (for example: transformers).**

NOTE: The HV battery pack weighs 167 kg (368 lb.).

Service Procedure [Continued]

1. Using the wiTech tool, scan for set DTCs. If a code is present for stuck contactors, special handling procedures are required.
 - P0AA1-00 - HYBRID/EV BATTERY POSITIVE CONTACTOR “A” STUCK CLOSED
 - P0AA4-00-HYBRID BATTERY NEGATIVE CONTACTOR CIRCUIT STUCK CLOSED

See “**HV Battery Servicing with Welded Contactor(s)**” at the beginning of the PHEV Battery removal procedure in Service Library.

A. Power Down the High Voltage System

2. Power down the high voltage system. If the HV battery will not power down or the vehicle has a welded contactor DTC active that will not clear, stop and perform the “**HV Battery Servicing with Welded Contactor(s)**” at the beginning of the PHEV Battery removal procedure in Service Library.

NOTE: When performing any repairs that involve contact with high voltage components or systems, the technician performing repairs on the vehicle must verify that the system remains powered down during high voltage repairs.

- **This is done by removing the test points access cover.**
- **The high voltage power down procedure must be performed to ensure that the high voltage battery is properly powered down.**
- **The technician must know the whereabouts of the test points access cover throughout the repair.**
- **The technician must ensure that the test points access cover is not reinstalled while service is being performed.**
- **The technician must recheck that the test points access cover has not been reinstalled in cases where the vehicle was unattended.**

Service Procedure [Continued]

3. Prepare the work area and familiarize yourself with all HIGH-VOLTAGE SAFETY PROCEDURES related to personal safety and vehicle safety associated with working on a Plug-In Hybrid Electric Vehicle (PHEV). See **High Voltage Safety Procedures** in Service Library section 08, Standard Procedures.
4. Inspect all orange high-voltage cables, and high-voltage components labeled with the high-voltage symbol for physical damage. If damage is present, extra caution must be taken to avoid contact with unprotected high-voltage. Do not insert probes, tools, objects or fluids into damaged high-voltage cables or components.
5. Disconnect any charging equipment. Do not plug in the EVSE Recharge Coupler when working on the vehicle.
6. Turn the ignition to Off by pressing the keyless go button (1) and move keys away from the car a minimum of 20 feet (Figure 1).



Figure 1 – Keyless Go Button

NOTE: If the READY indicator is NOT illuminated in instrument cluster, the vehicle is already shut off. DO NOT push the start/stop button as the vehicle may start.

7. **Wait five minutes** to allow the high-voltage system to shut down without setting a fault code.
8. Disconnect the IBS wire harness connector. Remove and isolate the negative battery cable using Covers, HEV Battery Terminal 2035100082.

Service Procedure [Continued]

9. Remove the F09 (5 amp) fuse from the Power Distribution Center (PDC).

NOTE: This removes the fused B+ power supply to the IDCM. Disabling the IDCM disables the DC/DC conversion between the HV battery and the charging output to the low voltage side of the system.

10. Verify the multi-meter is operating correctly by measuring voltage from a known good power source, such as the vehicle's 12-volt battery. If at any point during the procedure, the multi-meter settings are changed, or the probes are repositioned in the meter, verification with a known good power source must be repeated.
11. Using a multi-meter, check for voltage at the PDC fused B+ terminal to verify the low voltage system is powered down. The 12 volt electrical system is now powered down. There should be no voltage present with the IDCM disabled and the 12 volt battery disconnected.
12. The high voltage service test points access cover is located on the battery pack, under driver side rear seat cushion (Figure 2).
13. Remove the M6 Torx screws from the high voltage service test points access cover (Figure 2).
14. Carefully remove the test points access cover and set in a protected location such that the cover plate alignment and HVIL pins are not damaged (Figure 2).

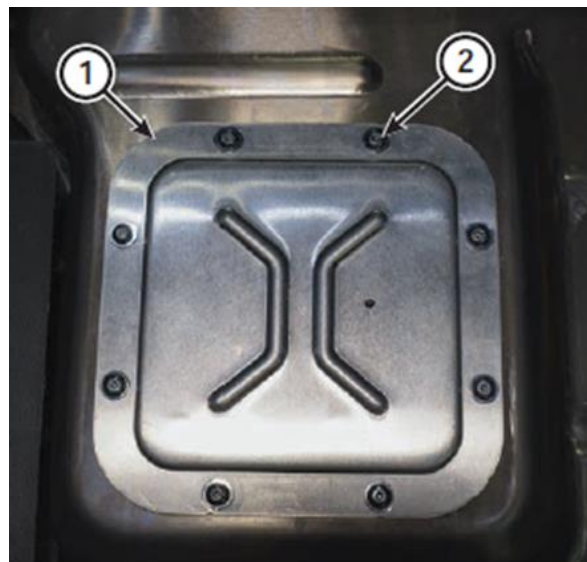


Figure 2 – High Voltage Test Point Access Cover

NOTE: Lift the cover straight up to avoid bending or damaging the pin on the cover that is used to engage the HVIL switch.

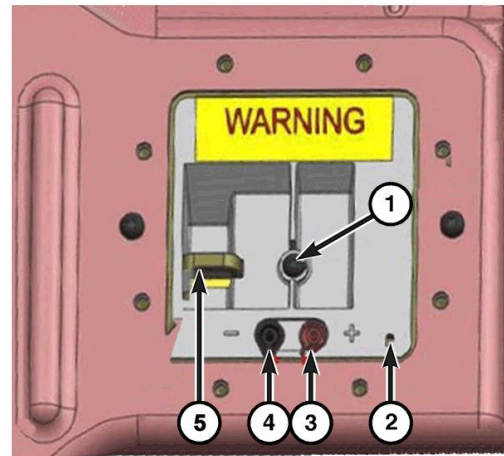
Service Procedure [Continued]

15. Removal of the test points access cover will affect the following:
- Disables the High Voltage Battery System by disengaging the internal High Voltage Interlock (HVIL) pin from the switch.
 - Provides access to the high voltage positive and high voltage negative test points.

NOTE: These circuits are a sense circuit connected through large resistors inside the high voltage battery to the high voltage bus cables after the contactors. These circuits are safe even when high voltage is present on the circuits due to the large resistors reducing these circuits to milliamperes.

- Provides access to the fuse cover screw.
- Allows access to a service lockout loop.

16. Install a lockout-tagout padlock to the service lockout loop (5) to prevent test points access cover installation and re-engaging HVIL pin (Figure 3).



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Figure 3 – Service Lockout Loop

- 1 - Fuse Cover Screw
- 2 - Switch
- 3 - High Voltage (+) Test Port
- 4 - High Voltage (-) Test Port
- 5 - Service Lockout Loop

Service Procedure [Continued]

17. Use of an insulation tester such as the Fluke Meter, Multi 126-1587 is recommended for PHEV circuit testing. Perform the multi-meter functionality tests per the manufactures directions. Verify the multi-meter is operating correctly by measuring voltage from a known good power source, such as the vehicle's 12-volt battery. If at any point during the procedure, the multi-meter settings are changed, or the probes are repositioned in the meter, verification with a known good power source must be repeated (Figure 4).



Figure 4 – Fluke Meter, Multi 126-1587

NOTE: Always observe these precautions prior to taking a high-voltage measurement:

- **Be sure to utilize the proper Personal Protection Equipment (PPE) when working on any high voltage system.**
- **Rated and non-expired rubber insulating gloves with leather protectors.**
- **Have known good test leads.**
- **Verify the multi-meter leads are rated “CAT III 1,000V”. This should be printed on the multi-meter leads.**
- **Install the multi-meter leads in the BLACK and RED sockets on the right side of the Fluke 1587 (VΩ (RED) and COM (BLACK)).**
- **Switch the FLUKE 1587 to the DC Volts selection and press the RANGE button until the 500V range is selected - just one digit (a zero) is displayed.**
- **Test the multi-meter operation by measuring the voltage across the 12 volt Battery.**

Service Procedure [Continued]

18. Using the Fluke multi-meter, measure the voltage at the high voltage positive and high voltage negative test points (Figure 5):

- Measure for voltage between the positive and negative high voltage test points.
- Measure for voltage between positive test point and chassis ground.
- Measure for voltage between negative test point and chassis ground.



Figure 5 – Measuring at High Voltage Test Points

19. The voltage reading should be 0 volts. (Some residual voltage may be present, up to 2.0 volts may be normal) (Figure 5).

- If the voltage measured is below 2 volts, it is safe to work on the high-voltage components with the exception of the high-voltage battery internal components.
- If the voltage is greater than 60 volts, an internal condition exists within the high voltage battery such as stuck contactors, that are preventing it from being powered down. This should be accompanied by contactor stuck DTCs. Do not attempt to carry out testing on any of the vehicle's high-voltage components or wiring. The HV Battery Pack requires replacement. Reference the HV BATTERY SERVICING WITH WELDED CONTACTOR(S) procedure at the top of the HV PHEV BATTERY REMOVAL AND INSTALLATION procedure for safely removing a high voltage battery that will not power down (Refer to 08 - Electrical/Battery System/BATTERY/Removal and Installation).

Service Procedure [Continued]

- If the voltage is between 2.0 volts and 60 volts, the HV system is safe to work on, however there is a problem that should be diagnosed. Disconnect each of the following HV modules one at a time and check the voltage at the test points. If the voltage drops to 2.0 volts or less, the faulted module has been found. Reconnect each module before continuing to the next.
 - Integrated Dual Charger Module (IDCM)
 - Electronic A/C Compressor (EAC)
 - Battery Coolant Heater
 - HV Coolant Heater
 - Power Inverter Module (PIM)
20. After confirming that the high voltage battery is powered down and locked out it is safe to power up the 12-volt system if needed to perform diagnostics or repairs.

B. HV Battery Removal

21. Loosen the cap on the high voltage cooling reservoir.
22. Raise and support the vehicle.
23. Position a drain pan under the coolant hoses (Figure 6).
24. Remove the coolant hoses from the coolant line and drain the power electronics cooling system (Figure 6).
25. Once the system is completely drained, reinstall the coolant hose to the coolant line (Figure 6).

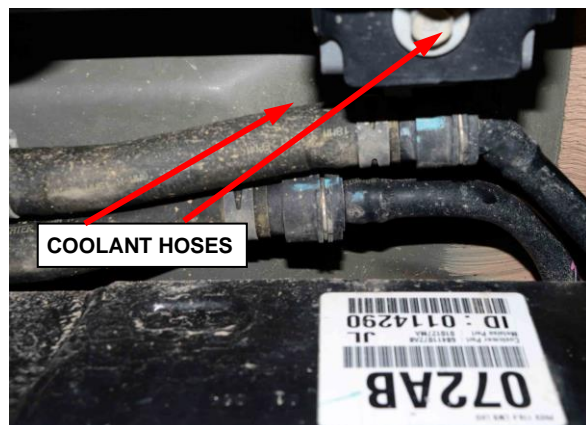


Figure 6 – Coolant Hoses

Service Procedure [Continued]

26. Remove the fasteners (1) and the skid plate (2) from the vehicle (Figure 7).

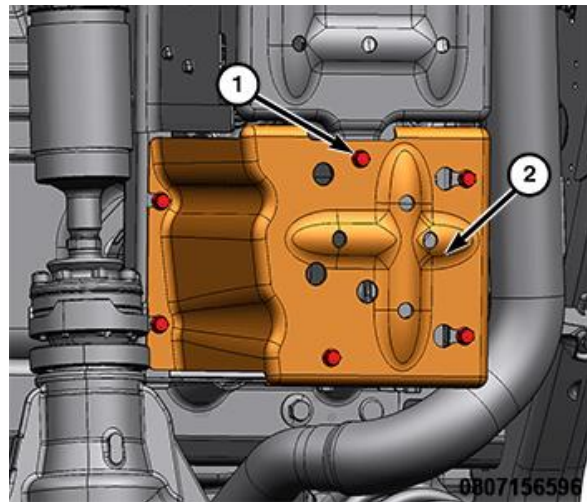


Figure 7 – Skid Plate

27. Disconnect the HV wire harness connectors (1) and (2) from the HV battery (Figure 8).
28. Cap the HV cables using Covers, HEV Battery Terminal 2035100082.

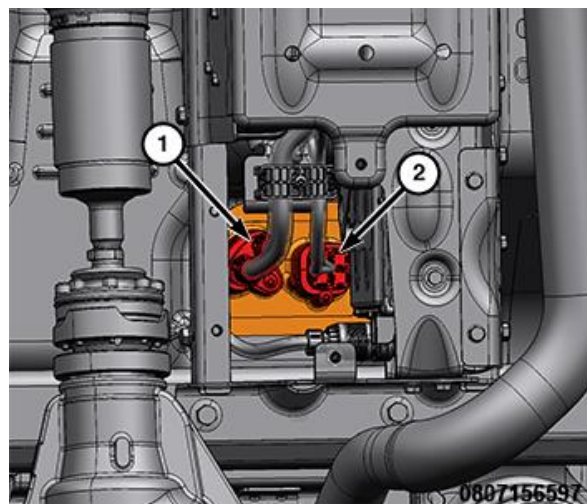


Figure 8 – HV Battery Wiring Connectors

NOTE: A Plug-in Hybrid Electric Vehicle (PHEV) HV Battery Cover/Plug Kit is also available from Mopar® Parts.

29. Remove the support and lower the vehicle.
30. Using a trim stick, release and remove the B-pillar trim cover (1) (Figure 9).

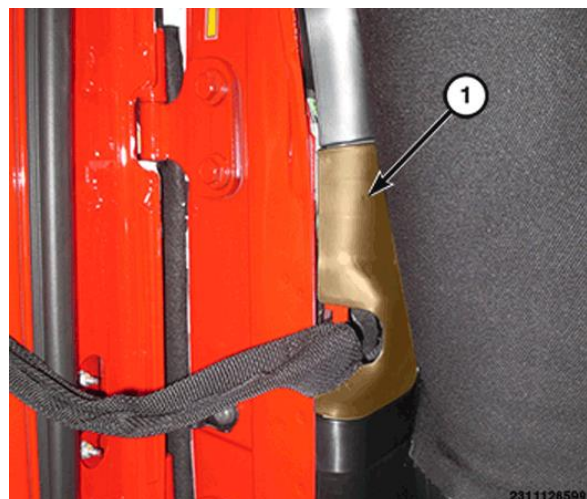


Figure 9 – B-pillar Trim Cover

Service Procedure [Continued]

31. Disconnect the wire harness connector (2) and release the door tether from the support bracket (1) (Figure 10).



Figure 10 – Harness to Support Bracket

32. Remove the bolt (2) securing the door check (1) (Figure 11).

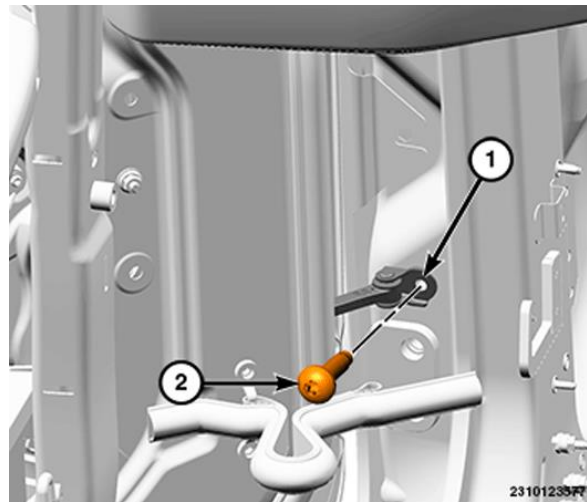


Figure 11 – Door Check Bolt

Service Procedure [Continued]

33. Remove the nuts (3) and lift the door up off hinges (1) and remove (Figure 12).

34. Raise the rear seat cushion.

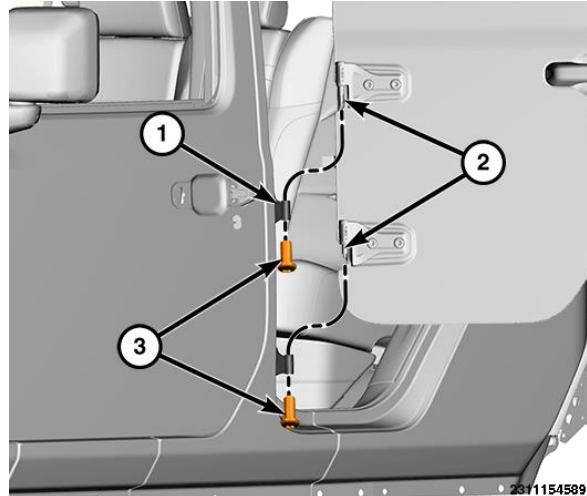


Figure 12 – Hinge Pin Nuts

35. Remove the fasteners (1) from the side high voltage battery trim panels (2) (Figure 13).

36. Using a trim stick or equivalent, remove the high voltage trim panel upward to release the retainers and remove the trim panel. Repeat for the passenger side.

37. Lower the rear seat cushion.

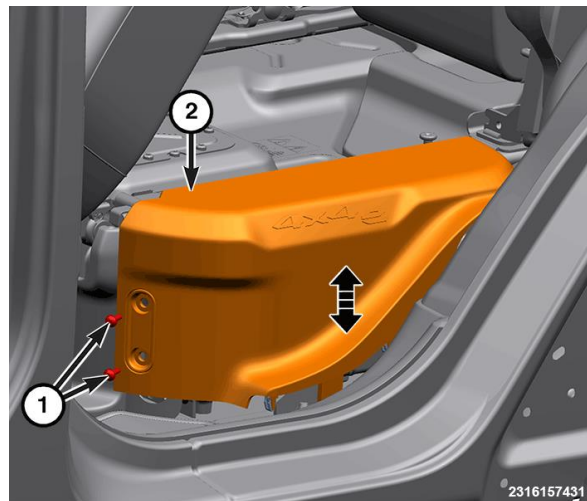


Figure 13 – HV Battery Side Trim

Service Procedure [Continued]

38. Using a trim stick or equivalent, release the retainers from the front high voltage battery closeout and remove from vehicle (Figure 14).

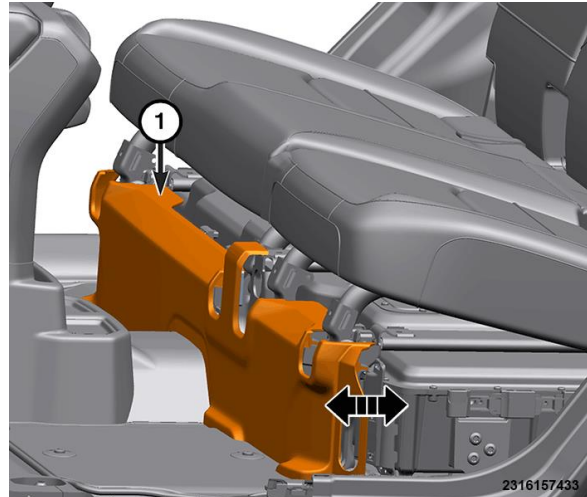


Figure 14 – HV Battery Front Trim

39. Remove the rear seat to load floor gap hider (Figure 15).



Figure 15 – Gap Hider

Service Procedure [Continued]

- 40. Disconnect the wire harness connectors, if equipped (4) (Figure 16).
- 41. Remove the nut for the center seat belt anchor (6). Remove the seat belts from the floor stud (Figure 16).
- 42. Remove the rear seat fasteners (2) at the rear of the seat (Figure 16).

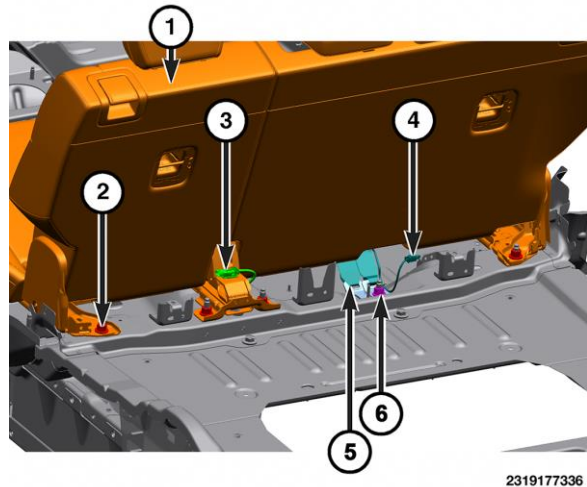


Figure 16 – Rear Seat Components

- | | |
|----------------------------|---------------------------------|
| 1 - Rear Seat | 4 - Wire Harness Connector |
| 2 - Rear Seat Nuts | 5 - Seat Belts |
| 3 - Wire Harness Connector | 6 - Center Seat Belt Anchor nut |

- 43. Disconnect the wire harness connectors (3), if equipped (Figure 17).
- 44. Remove the bolts (1) at the front of the rear seat. Discard the old bolts. (Figure 17).

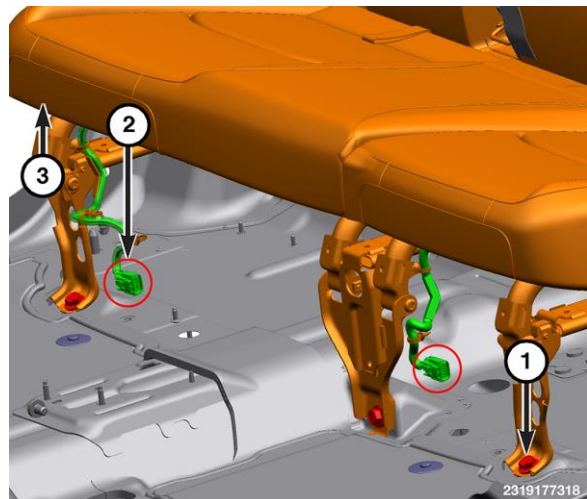


Figure 17 – Rear Seat Components

- 1 - Rear Seat Bolts
- 2 - Wire Harness Connectors
- 3 - Rear Seat

Service Procedure [Continued]

- 45. Remove silencer pad (Figure 18).
- 46. Remove the seat from the vehicle.

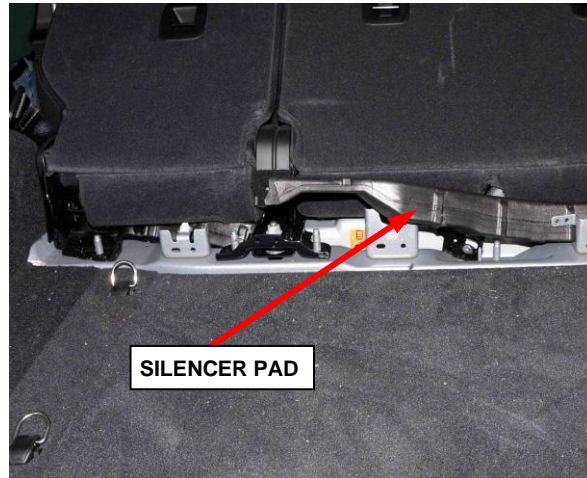
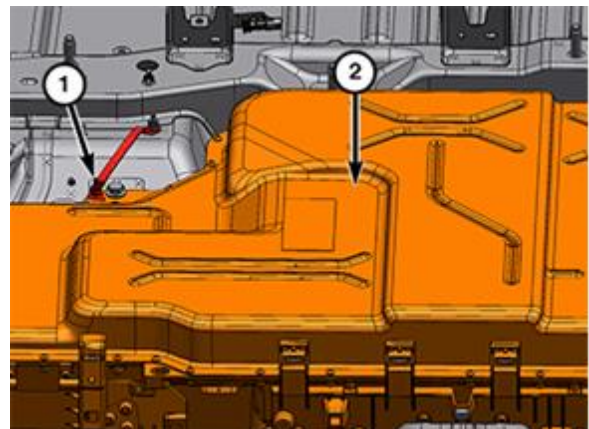


Figure 18 – Silencer Pad

- 47. Remove the fastener (1) and the chassis ground cable from the HV battery (2) (Figure 19).



**Figure 19 – HV Battery Fastener and
Ground Cable**

Service Procedure [Continued]

48. Disconnect the HV wire harness connectors (1) (Figure 20).

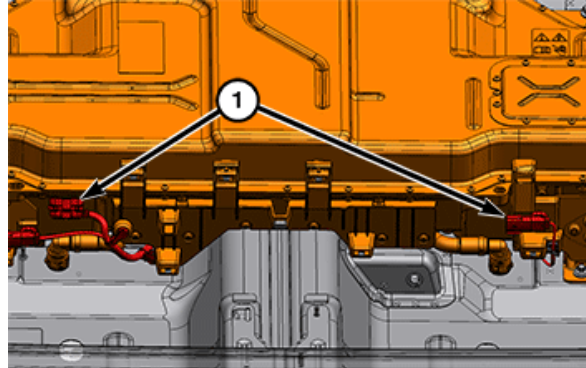


Figure 20 – HV Wire Harness Connectors

NOTE: Use an absorbent pad to collect any coolant that may leak from the battery into the interior of the vehicle.

49. Disconnect and plug the HV battery coolant line connectors (1) (Figure 21).

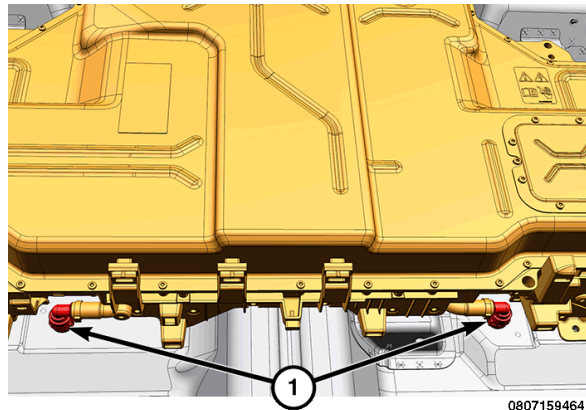


Figure 21 – HV Battery Coolant Connectors

Service Procedure [Continued]

NOTE: The HV battery pack weighs 167 kg (368 lb.).

50. Remove the bolts (1) securing the HV battery to the vehicle (Figure 22).

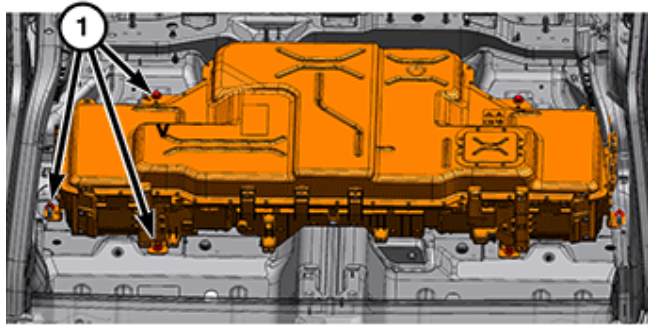


Figure 22 – HV Battery Bolts

51. Install two Eyebolt, 10mm 2035203080 with the nuts to the front support mounting holes (1) (Figure 23).

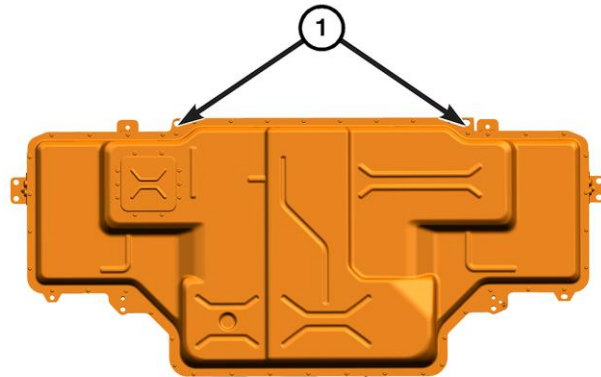


Figure 23 – Support Mounting Holes

52. Thread the other two Eyebolt, 10mm 2035203080 (1) into the threaded holes next to the HV battery pack mounting bolt holes (2) on the rear side of the HV battery pack (Figure 24).

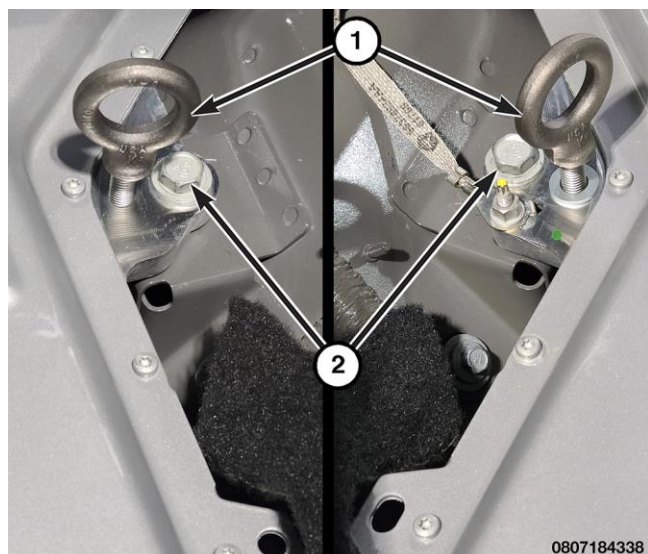


Figure 24 – Eyebolt Installation

Service Procedure [Continued]

53. Connect the Lift Straps, HV Battery 2035200080 to the eyebolts and the lifting device. Adjust the straps so that the battery will be level during lifting as shown in the picture (Figure 25).
54. Remove the HV battery pack from the vehicle.



Figure 25 – Lift Straps

NOTE: When the HV battery pack is being replaced:

- **Refer to the information supplied with the NEW battery. I-sheets for the HV batteries, how to open the containers and handle the batteries, can be found on DealerCONNECT on the PARTS tab under RETURNS.**
- **All coolant must be removed from the battery. Use a shop air supply hose connected to the battery coolant inlet port. Adjust the air pressure regulator to not exceed 100 kPa (15 psi) and force the coolant from the battery coolant outlet port.**
- **All coolant ports and electrical connections must be capped.**
- **Place the HV battery pack in the shipping container or on the containers lid attached foam pads to prevent damage to the underside of the battery.**
- **The battery terminals shall be covered with protection caps while handling to avoid short circuits and other electrical hazards and to protect the terminals from dust, dirt and moisture.**
- **Operate this Li-Ion cell based high voltage battery system only if you are fully acquainted with all the controls/connections and the safety procedures/instructions.**

Service Procedure [Continued]

- **Keep the battery system always in position equivalent to the mounting position in the car (note: slight tilting of the HVBS while moving by a fork-lift trolley is OK).**
- **Never place the HVBS on any surface, such as a table or the ground, other than the supplied crate/dunnage, or the designed vehicle position.**
- **Do not store the battery system together with metal or other heavy objects which can fall onto or hit the HVBS possibly leading to electrolyte leakage, overheating, smoke, burst and/or ignition.**
- **SDI storage requirements:**
 - **Storage temperature minimum -40 °C**
 - **Storage temperature maximum 70 °C**
 - **Racks & dunnage: store in shipping dunnage with covers**
 - **Stacking (racks): 3 high (maximum)**
 - **State of Charge (SOC): 30% or less**
 - **Warehouse temperature: 10 C - 25 C**
 - **Warehouse humidity: 35% - 65% non-condensing**
 - **Storage time: 6 months (maximum) First in First out to be followed.**
 - **All the batteries should be segregated with a fire suppression system to allow for individual battery type response to a thermal event.**

55. Place the suspect HV battery pack onto the foam on the inside of the top cover (Figure 26).



Figure 26 – HV Battery on Top Cover

Service Procedure [Continued]

WARNING: Do not place the suspect HV BATTERY PACK on any surface other than the foam on the top cover. Damage will occur to the coolant duct and relief valve assemblies (underneath HV Battery Pack) leading to coolant leakage if this is not followed. This damage may void warranty and core return (Figure 27).

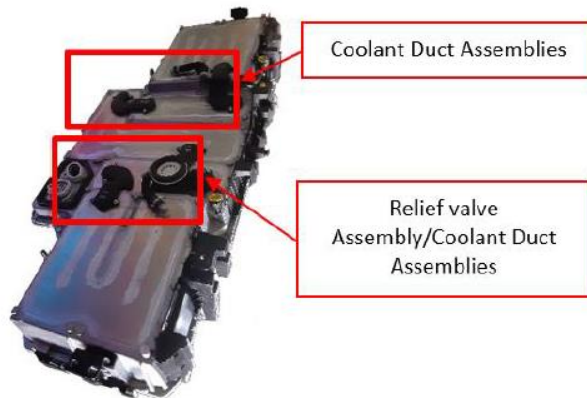


Figure 27 – HV Battery Bottom View

Note: If coolant hoses w/quick connect have been damaged, contact Star Center by creating a Star Case.

NOTE: Leave replacement HV BATTERY PACK in the crate until ready to install in vehicle. Damage will occur to the coolant duct and relief valve assemblies (underneath HV Battery Pack) leading to coolant leakage if the HV BATTERY PACK is placed on any surface other than the foam in the dunnage.

Service Procedure [Continued]

B. HV Battery Installation

1. Attach the Eyebolt, 10mm 2035203080 to the new HV battery pack in the same locations that were used for the removal. Connect the Lift Straps, HV Battery 2035200080 on the front and rear eyelets.
2. Secure the HV battery pack to the lifting device.
3. Install the HV battery pack in the vehicle making sure that the mounting holes align with the bolt holes in the body.
4. Remove the lifting strap and eyebolts.
5. Install the HV battery pack bolts (1) and tighten to (Figure 28):
 - High Voltage Battery to Chassis M10 Bolts tighten to 45N·m (33 ft. lbs.).
 - High Voltage Battery to Chassis M8 Bolts tighten to 21N·m (15 ft. lbs.).
6. Install the chassis ground cable to the HV battery ground stud (1) and tighten to 9N·m (80 in. lbs.) (Figure 25).
7. Connect the HV battery coolant line connectors (1) (Figure 21).
8. Connect the three HV wire harness connectors (1) (Figure 20).
9. Install the silencer pad (Figure 18).
10. Install the rear seat to the vehicle.
11. Install **NEW** bolts at the front of the rear seat and tighten to 70N·m (52 ft. lbs.).
12. Connect the wire harness connectors, if equipped (Figures 16 and 17).
13. Install the rear seat fasteners at the rear of the seat and tighten to 70N·m (52 ft. lbs.).
14. Install the seat belts from the floor stud.

Service Procedure [Continued]

15. Install the nut for the center seat belt anchor and tighten to 70N·m (52 ft. lbs.).
16. Raise the rear seat cushion.
17. Install the rear seat to load floor gap hider.
18. Align and install the retainers from the front high voltage battery closeout to the vehicle (Figure 14).
19. Install the high voltage trim panel and press downward to seat the retainers (Figure 13).
20. Install the fasteners to the side high voltage battery trim panels and tighten securely.
21. Lower the rear seat cushion.
22. Set the door into place on the hinges and install the door hinge pivot nuts. Tighten the nuts to 6N·m (53 in. lbs.) (Figure 12).
23. Install the door check strap bolt securing the door check and tighten to 9N·m (80 in. lbs.) (Figure 11).
24. Connect the wire harness connector and secure the door tether to the support bracket (Figure 10).
25. Align and install the B-pillar trim cover (Figure 9).
26. Raise and support the vehicle.

NOTE: When connecting the High Voltage connection verify that the connectors are clean and seated properly.

27. Remove the battery port covers and transfer them to the old battery. Connect the HV wire harness connectors (1) and (2) to the HV battery and tighten to 9N·m (80 in. lbs.) (Figure 8).

Service Procedure [Continued]

28. Install the battery skid plate (2) and tighten the fasteners (1) to 25N·m (18 ft. lbs.) (Figure 7).
29. Remove the support and lower vehicle.

WARNING: ANTIFREEZE COOLANT IS HARMFUL IF SWALLOWED OR INHALED. IF SWALLOWED, DRINK TWO GLASSES OF WATER AND INDUCE VOMITING. IF INHALED, MOVE TO FRESH AIR AREA. SEEK MEDICAL ATTENTION IMMEDIATELY. DO NOT STORE IN OPEN OR UNMARKED CONTAINERS. WASH SKIN AND CLOTHING THOROUGHLY AFTER COMING IN CONTACT WITH ETHYLENE GLYCOL. KEEP OUT OF REACH OF CHILDREN. DISPOSE OF GLYCOL BASED COOLANT PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA. DO NOT OPEN A COOLING SYSTEM WHEN THE ENGINE IS AT OPERATING TEMPERATURE OR HOT UNDER PRESSURE; PERSONAL INJURY CAN RESULT. AVOID RADIATOR COOLING FAN AND OTHER MOVING COMPONENTS WHEN ENGINE COMPARTMENT RELATED SERVICE IS PERFORMED; PERSONAL INJURY CAN RESULT.

WARNING: WEAR APPROPRIATE EYE AND HAND PROTECTION WHEN PERFORMING THIS PROCEDURE.

30. Fill the battery cooling system.

NOTE: Fill the High Voltage (HV) battery cooling system with the recommended MOPAR Antifreeze Coolant (Refer to 04 - Vehicle Quick Reference/Capacities and Recommended Fluids/Specifications in Service Library).

Service Procedure [Continued]

31. Power up the HV battery system.

NOTE: When performing any repairs that involve contact with high voltage components or systems, the technician performing repairs on the vehicle must verify that the system remains powered down during high voltage repairs.

- **This must be done by removing the test points access cover.**
- **The high voltage power down procedure must also be performed to ensure that the vehicle is properly powered down.**
- **The technician must know the whereabouts of the test points access cover throughout the repair.**
- **The technician must ensure that no one reinstalls the test points access cover while service is being performed.**
- **The technician must recheck that the test points access cover has not been reinstalled in cases where the vehicle was unattended.**

32. Use of an insulation tester such as the Fluke Meter, Multi 126-1587 is recommended for Plug-In Hybrid Electric Vehicle (PHEV) circuit testing. Perform the multi-meter functionality tests per the manufacturer's directions. Verify the multi-meter is operating correctly by measuring voltage from a known good power source, such as the vehicle's 12-volt battery. If at any point during the procedure, the multi-meter settings are changed, or the probes are repositioned in the meter, verification with a known good power source must be repeated.

Service Procedure [Continued]

33. Remove the Test Point Access Cover (Figure 31).

NOTE: Always observe these precautions prior to taking an isolation resistance measurement:

- **Have known good test leads**
- **Set the test voltage to 500 Volts**
- **Always wear safety glasses**

34. Using the Meter, Multi 126-1587 measure and record the isolation resistance between the high voltage positive test point and chassis ground (Figure 28).



Figure 28 – Measure and Record Isolation Resistance Between HV Positive Test Point and Chassis Ground

Service Procedure [Continued]

35. Using the Meter, Multi 126-1587 measure and record the isolation resistance between the high voltage negative test point and chassis ground (Figure 29).
36. Isolation resistance should be 2.3 Mohms (+/- .2). If the measured isolation resistance is outside of this range, a loss of isolation condition exists within the high voltage circuitry. **Do not continue the High Voltage Power Up procedure until the condition causing the loss of isolation is corrected.**
37. If required, remove the lockout-tagout padlock from the service lockout loop (1) (Figure 30).



Figure 29 – Measure and Record Isolation Resistance Between HV Negative Test Point and Chassis Ground



Figure 30 – Service Lockout Loop

Service Procedure [Continued]

38. Install the test points access cover (1) to the battery pack and securely tighten the eight M6 Torx screws (2), identified with blue circles (Figure 31).

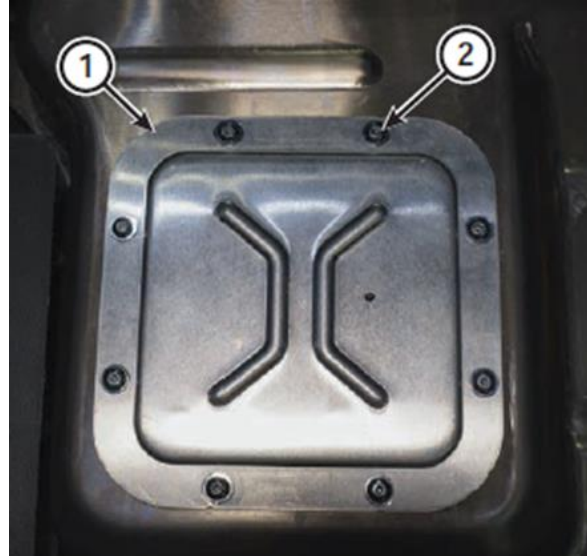


Figure 31 – Test Point Access Cover

39. Remove the cover, connect the negative battery cable to the IBS and tighten the fastener (1) to 10N·m (7 ft. lbs.) (Figure 32).
40. Install the F09 (5 amp) IDCM fuse (3) in the Power Distribution Center (PDC) (Figure 32).
41. Connect the IBS harness connector (2) (Figure 32).
42. Using the scan tool, delete any DTCs that may have set due to the IDCM fuse being removed. Turn the key OFF and wait 2 minutes,
43. Use the scan tool and flash program the BPCM with the latest software.

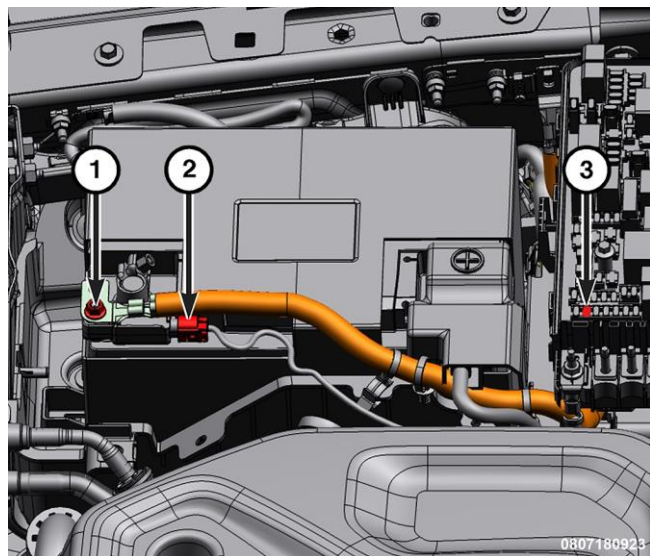


Figure 32 – Negative Battery Cable, Fuse F09 and IBS Connector

Service Procedure [Continued]

44. Use the scan tool and perform the “Enable Contactor for Service” procedure in BPCM.

NOTE: If these procedures are not performed, the vehicle will not start. The high voltage battery pack is shipped with the contactors locked in the open position for safety concerns. Until these routines are performed, the battery pack contactors will not close resulting in a no start condition.

45. Close the hood, press the START button and verify that the Hybrid Status Indicator is green and no warnings are displayed.

FILL AND BLEED USING THE SCAN TOOL (PREFERRED)

- a) Fill the HV battery pressurized coolant bottle to the max level.
- b) Cycle the ignition to the on position.
- c) With the scan tool, run the “Coolant Fill Procedure” routine in the Hybrid Control Processor (HCP). This should run all of the coolant pumps in all cooling systems.
- d) Continue adding coolant to the HV battery pressurized coolant bottle maintaining the coolant at the max level.
- e) When no more coolant is needed the system is filled and bled. The routine may time out before the system is full and take multiple cycles to bleed all of the air from the system.
- f) Stop the scan tool actuation. Fill the bottle slightly above the fill line in case of any air trapped in the system.

FILL AND BLEED WITHOUT THE SCAN TOOL

- a) Fill the HV battery pressurized coolant bottle to the max level.
- b) Cycle the key to the on position to power the battery coolant pump in order to fill and bleed the HV cooling system.
- c) Cycle the key to the off position after the pump times out and stops running.
- d) Fill the HV battery pressurized coolant bottle to the max level.
- e) Repeat the fill procedure until the proper coolant level is achieved. Fill the bottle slightly above the fill line in case of any air trapped in the system.

46. Return the vehicle to the customer.

Complete Proof of Correction Form for California Residents

This campaign is subject to the **State of California Registration Renewal/Emissions Recall Enforcement Program**. Complete a Vehicle Emission Recall Proof of Correction Form (**Form No. 81-016-1053**) and **supply it to vehicle owners residing in the state of California** for proof that this campaign has been performed when they renew the vehicle registration.

Process Steps to obtain the California Proof of Correction form:

- a. Access the “**DealerCONNECT**” website.
- b. Select the “**Service**” tab.
- c. Under the “**Publications**” heading, select the “**ePublishing**” link.
- d. Sign in using your **Dealer Code** and **Password**.
- e. Select the “**Proof of Correction form**”.

Completion Reporting and Reimbursement

Claims for vehicles that have been serviced must be submitted on the DealerCONNECT Claim Entry Screen located on the Service tab. Claims paid will be used by FCA to record Customer Satisfaction Notification service completions and provide dealer payments.

Use one of the following labor operation numbers and time allowances:

	Labor Operation Number	Time Allowance
Inspect PHEV Battery For Fault Codes	08-Z2-71-81	0.2 hours
Inspect and Replace High Voltage PHEV Battery	08-Z2-71-82	3.1 hours

Add the cost of the campaign parts package plus applicable dealer allowance to your claim.

NOTE: See the Warranty Administration Manual, Recall Claim Processing Section, for complete claim processing instructions.

Dealer Notification

To view this notification on DealerCONNECT, select “Global Recall System” on the Service tab, then click on the description of this notification.

Owner Notification and Service Scheduling

All involved vehicle owners known to FCA are being notified of the service requirement by mail. They are requested to schedule appointments for this service with their dealers. A generic copy of the owner letter is attached.

Vehicle Lists, Global Recall System, VIP and Dealer Follow Up

All involved vehicles have been entered into the DealerCONNECT Global Recall System (GRS) and Vehicle Information Plus (VIP) for dealer inquiry as needed.

GRS provides involved dealers with an updated VIN list of their incomplete vehicles. The owner’s name, address and phone number are listed if known. Completed vehicles are removed from GRS within several days of repair claim submission.

To use this system, click on the “**Service**” tab and then click on “**Global Recall System.**” Your dealer’s VIN list for each campaign displayed can be sorted by: those vehicles that were unsold at campaign launch, those with a phone number, city, zip code, or VIN sequence.

Dealers should perform this repair on all unsold vehicles before retail delivery. Dealers should also use the VIN list to follow up with all owners to schedule appointments for this repair.

VIN lists may contain confidential, restricted owner name and address information that was obtained from the Department of Motor Vehicles of various states. Use of this information is permitted for this notification only and is strictly prohibited from all other use.

Additional Information

If you have any questions or need assistance in completing this action, please contact your Service and Parts District Manager.

Customer Service / Field Operations
FCA US LLC

This notice applies to your vehicle,

[Model Year and Model]

VIN XXXXXXXXXXXXXXXXXXXX

Z27

LOGO

VEHICLE PICTURE

YOUR SCHEDULING OPTIONS

- 1. RECOMMENDED OPTION**
Call your authorized Chrysler / Dodge / Jeep® / RAM Dealership.
- 2. Call the FCA Recall Assistance Center at 1-800-853-1403.** An agent can confirm part availability and help schedule an appointment
- 3. Visit recalls.mopar.com, scan the QR code below, or download the Mopar Owner's Companion App.**

QR Code

Get access to recall notifications, locate your nearest dealer, and more through this website or Mopar Owner's Companion App. You will be asked to provide your Vehicle Identification Number (VIN) to protect and verify your identity.

DEALERSHIP INSTRUCTIONS

Please reference CSN Z27.

CUSTOMER SATISFACTION NOTIFICATION

PHEV Battery Replacement

Dear [Name],

At FCA US LLC, we recognize that the success of our business depends on the satisfaction of our customers. We are constantly monitoring the quality of our products and looking for opportunities to improve our vehicles even after they are sold. Because your long-term satisfaction is important to us, we are contacting you on important improvements we would like to make to your vehicle ^[1]. This will be done at no charge to you.

We are recommending the following improvements be performed on certain [2021 (JL) Jeep Wrangler PHEV] vehicles.

WHY DOES MY VEHICLE NEED REPAIRS?

The Plug-in Hybrid Electric Vehicle (PHEV) battery on your vehicle may develop internal resistance which sets a Diagnostic Trouble Code (DTC). When the DTC is set, the PHEV system is inoperative, and the vehicle reverts to Internal Combustion Engine (ICE) propulsion only.

HOW DO I RESOLVE THIS CUSTOMER SATISFACTION NOTIFICATION?

FCA US will repair your vehicle free of charge (parts and labor). To do this, your dealer will replace the PHEV battery. The estimated repair time is 3.5 hours. In addition, your dealer will require your vehicle for proper check-in, preparation, and check-out during your visit, which may require more time. Your time is important to us, so we recommend that you schedule a service appointment to minimize your inconvenience. Please bring this letter with you to your dealership.

**TO SCHEDULE YOUR FREE REPAIR,
CALL YOUR CHRYSLER, DODGE, JEEP OR RAM DEALER TODAY**

CALIFORNIA RESIDENTS

The State of California requires the completion of this emission recall repair prior to vehicle registration renewal. Your dealer will provide you with a Vehicle Emission Recall Proof of Correction Form after the Customer Satisfaction Notification service is performed. Be sure to save this form since the California Department of Motor Vehicles may require that you supply it as proof that the Customer Satisfaction Notification has been performed.

In order to ensure your full protection under the emissions warranty provisions, it is recommended that you have your vehicle serviced as soon as possible. Failure to do so could be determined as lack of proper maintenance of your (vehicle or engine).

WHAT IF I ALREADY PAID TO HAVE THIS REPAIR COMPLETED?

If you have already experienced this specific condition and have paid to have it repaired, you may visit www.fcarecallreimbursement.com to submit your reimbursement request online. ^[2] Once we receive and verify the required documents, reimbursement will be sent to you within 60 days. If you have had previous repairs performed and/or already received reimbursement, you may still need to have the repair performed.

We apologize for any inconvenience, but are sincerely concerned about your satisfaction. Thank you for your attention to this important matter.

Customer Assistance/Field Operations
FCA US LLC



Mr. Mrs. Customer
1234 Main Street
Hometown, MI 48371

[1] If you no longer own this vehicle, please help us update our records. Call the FCA Recall Assistance Center at 1-800-853-1403 to update your information.

[2] You can also mail in your original receipts and proof of payment to the following address for reimbursement consideration: FCA Customer Assistance, P.O. Box 21-8004, Auburn Hills, MI 48321-8007, Attention: Recall Reimbursement.