



# Service Bulletin

Bulletin No.: 23-NA-151

Date: November, 2024

## INFORMATION

**Subject: Hybrid/EV Battery Stability, High Priority DTCs, Potential Loss of Isolation, Vehicle Handling and Battery Pack Return Shipping Requirements**

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission:
		from	to	from	to		
BrightDrop	EV600	2022	2022	—	—	All	All
	Zevo 600	2023	2024				
	Zevo 400	2024	2024				
Cadillac	LYRIQ	2023	2025				
	Escalade IQ	2025	2025				
Chevrolet	Blazer EV	2024	2025				
	Equinox EV	2024	2025				
	Silverado EV	2024	2025				
	BrightDrop 400	2025	2025				
	BrightDrop 600	2025	2025				
GMC	HUMMER EV Pickup	2022	2025				
	HUMMER EV SUV	2024	2025				
	Sierra EV	2024	2025				

<b>Involved Region or Country</b>	North America, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Egypt, Europe, Cadillac Korea (South Korea), GM Korea Company, Japan, Palestine, Israel, Middle East, Kazakhstan, Australia/New Zealand.
<b>Information</b>	<p>This bulletin and criteria within are to determine the internal stability of the High Voltage Battery and the core return shipping method.</p> <p>If a vehicle arrives with any of the DTCs on the list, additional checks need to occur to give proper direction on isolated vehicle storage guidance and repair instructions and results <i>MUST</i> be documented in a TAC Case.</p> <p>Perform the service instruction steps as indicated if any of the following DTCs listed are set as CURRENT:</p> <p>DTCs: P0AA6, U359E, P0AE3, P0C78, U1666, U1667, U2426, U2427, U2BFC, P1C34, U35B5 OR if any of these DTCs are listed as HISTORY:</p> <ul style="list-style-type: none"> <li>• P0AA6</li> <li>• U359E</li> </ul> <p>OR if directed here by a service procedure or TAC.</p>

### Service Procedure

**Warning:** Never leave a vehicle or battery pack with an applicable DTC indoors overnight, plan all work to be completed during normal business hours.

**Danger:** Failure to use the proper Personal Protective Equipment and failure to carefully follow these procedures may result in serious injury or death.

**Important:** Service agents must comply with all International, Federal, State, Provincial, and/or Local laws applicable to the activities it performs under this bulletin, including but not limited to handling, deploying, preparing, classifying, packaging, marking, labeling, and shipping dangerous goods. In the event of a conflict between the procedures set forth in this bulletin and the laws that apply to your dealership, you must follow those applicable laws.

**Important:** This technical service bulletin (TSB) can only be completed by certified repair facilities who have met all specific training, tool and equipment requirements pertaining to the vehicle Brand and Model serviced. Repairs must be performed by a technician who has successfully completed the required training.

**Important:** Please review the data thoroughly. GM will not authorize core return shipment requests without proper review, which could lead to non-return core fee charges. It is essential to complete all steps outlined below and provide data to TAC for review and further direction, to avoid delays in the pick-up the high voltage battery core and prevent any duplication of work.

**Note:** Steps outlined below can also be found on Center of Learning Course # 59520.14V.

1. Verify if DTCs U2BFC or P1C34 are set as current. If yes, immediately report results to TAC now as review will be necessary to help determine stability.
2. Verify any of the following DTCs are set as CURRENT; P0AA6, P0AE3, P0C78, P1C34, U359E, U1666, U1667, U2426, U2427 or U35B5. Verify if the following DTCs are set as HISTORY: P0AA6 or U359E.
3. Obtain and document a clear and thorough description of the concern from the customer. Was the vehicle towed because of a no start concern or loss of propulsion, did they hear a 'pop' or abnormal noise.

**Danger: DO NOT add coolant without first confirming the Lithium-Ion Hybrid/EV Battery Pack internal coolant passage can maintain proper vacuum and pressure. Adding coolant to the coolant system with an internal lithium-ion Hybrid/EV Battery Pack coolant leak may result in Fire, which could result in vehicle or component damage, and cause severe body injury or death.**

4. Visually inspect the coolant level in the high-voltage battery surge tank (Fig 1 and 2) and document via photo. Inform TAC if coolant has previously been added.

**Note:** This Data is found in K16 – Battery Energy Control Module -> Data Display -> Hybrid/Electric Vehicle Battery Pack Thermal Stability Data.

Parameter Name	Value	Unit	Normal Range
High Voltage Battery Pack Thermal Stability Data			
High Voltage Battery Pack Thermal Stability Data - Pack 1	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 2	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 3	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 4	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 5	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 6	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 7	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 8	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 9	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 10	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 11	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 12	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 13	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 14	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 15	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 16	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 17	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 18	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 19	6200	ohms	6000-6400
High Voltage Battery Pack Thermal Stability Data - Pack 20	6200	ohms	6000-6400

5. Observe and record GDS2 data (Fig 3) :
  - Most Recent Isolation Resistance - Pack. *Greater than 6200K ohms is normal.*

- Thermal Event Temperature Sensor. *Near ambient and close to all other temperature sensors is normal.*
  - Thermal Event Gas Sensor. *0 to 30,000 ppm and not rising is normal.*
  - Thermal Event Pressure Sensor. *Near barometric pressure and not rising is normal.*
  - Interface Control Module Temperature (1 thru 24 as applicable). *Near ambient and close to all other temperature sensors is normal.*
6. If the vehicle is already on a hoist, you may perform the battery pack inspection steps that do not require battery pack removal to perform.

**Danger: Damage to a Lithium-Ion hybrid/EV battery pack could result in fire, loss of electrical isolation or exposure to high voltage. Until the high voltage system inspection has been completed, store the vehicle with hybrid/EV battery pack installed outside in a secure area away from buildings and other vehicles and protected from rain, snow, and other moisture.**

7. Move the vehicle to a stable location outdoors: isolated and away from buildings, vehicles, and foot traffic while waiting direction to diagnose/repair. Recommended distance is 50 feet (15M). Document isolated location via photo (Fig 4 and 5). Refer to 'Neutral Service Mode' in electronic transmission range select service information if required.
8. Start a TAC case and upload all photos and your GDS2 session log per Document ID: 6385557 / PIP4902 and reference this bulletin. Additionally, provide any previous diagnosis work performed based on the DTC(s) set or inability to collect the data.

**Note:** Perform the following steps at time of High Voltage Battery replacement. Depending upon the following results you may be required to immediately move the High Voltage Battery outdoors after removal. Do NOT submit a core pickup request unless given approval by TAC.

9. Following SI Procedure for high voltage battery removal, Hybrid/Electric Vehicle Battery Pack Removal, and Installation:
- 9.1. Inspect the High Voltage Connectors at the High Voltage Battery for corrosion, moisture, and/or soot. Take clear, close-up photos of the vehicle side HV connectors and High Voltage Battery connection headers. Review Fig 8-10 for examples of light and heavy soot and the photo clarity required. Attach photos to TAC Case.

**Note:** If soot, corrosion or moisture is observed, continue but contact TAC immediately upon completion.

- 9.2. Check for High Voltage at the Hybrid/Electric Vehicle Battery Pack X1 through X7 (as equipped) by following High Voltage Disabling – High Voltage Disable Confirmation Table – A4 Hybrid/EV Battery Pack in Service Information (Fig 6 and 7).

**Note:** If more than 3V is found, continue but contact TAC immediately upon completion.

- 9.3. Remove the High Voltage Battery Pressure Equalizer Vent and Battery Inspection plug (if equipped) (Fig 11 and 12). The equalizer vents have 4 fasteners, never remove the vent valves that fasten with 2 fasteners. Using a cotton swab or paper towel to swab inside the enclosure for moisture/coolant and/or soot. Take photos and attach to TAC case.

**Note:** Swabs are available in a pack of 20 as GM-47909-20)

**Note:** If fluid/soot is observed, continue but contact TAC immediately upon completion.

**Danger: Do not insert anything other than a cotton swab or paper towel while performing the swab test.**

- 9.4. Evacuate residual coolant from the High Voltage Battery coolant circuit. Refer to the SI Procedure for Hybrid/Electric Vehicle Battery Pack Replacement and Shipping Preparation.

**Note:** If unable to remove coolant from the High Voltage Battery coolant circuit, continue but contact TAC immediately upon completion.

- 9.5. Vacuum test the High Voltage Battery coolant circuit for leaks. See Hybrid Battery Pack Coolant Passage Leak Test (Fig 13 and 14). Attach photos to the TAC case.

**Note:** If the High Voltage Battery coolant circuit does not hold vacuum, continue but contact TAC immediately upon completion.

- 9.6. Pressure test the High Voltage Battery coolant circuit for leaks (Only complete if passes vacuum test). See Hybrid Battery Pack Coolant Passage Leak Test (Fig 15 and 16). Attach photos to the TAC case.

**Note:** If the High Voltage Battery coolant circuit does not hold pressure, continue but contact TAC immediately upon completion.

10. Place the High Voltage Battery in the provided DDR Crate & move outdoors: isolated and away from buildings, vehicles, and foot traffic. Cover high voltage battery/DDR crate with a tarp to protect from the elements while awaiting further direction (Fig 4). Take picture of location and upload into TAC Case. Report all results to TAC for Engineering review.

**23-NA-151 Hybrid/EV Stability Printable Checklist for VIN: \_\_\_\_\_**

**Initial Vehicle Inspection**

Steps	Results		Submission Check List
Inspect Coolant Level. Photograph result. <i>Danger: DO NOT add coolant without first confirming the Lithium-Ion Hybrid/EV Battery Pack internal coolant passage can maintain proper vacuum and pressure. Adding coolant to the coolant system with an internal lithium-ion Hybrid/EV Battery Pack coolant leak may result in Fire, which could result in vehicle or component damage, and cause severe body injury or death.</i>	Passed Example Refer to Figure 1	Failed Example Refer to Figure 2	Coolant Level Photo _____
GDS2 Session Log. Battery Energy Control Module>Data Display>Hybrid/Electric Vehicle Battery Pack Thermal Stability Data	Refer to Figure 3	Pack Isolation 1 _____ ohms 2 _____ ohms Thermal Sensor _____ C/F Thermal Gas _____ PPM Thermal Pressure _____ psi/kPa Interface Temperature (average) _____ C/F	GDS2 -Vehicle Battery Pack Thermal Stability Data Captured _____
Move vehicle to stable location away from buildings and other vehicles. Recommended isolation distance is 50 feet (15M) Photograph results. <i>Warning: Never leave a vehicle or battery pack with an applicable DTC indoors overnight, plan all work to be completed during normal business hours.</i>	Passed Example Refer to Figure 4	Failed Example Refer to Figure 5	Vehicle Isolated Outside and Picture Captured/Submitted _____
Start TAC Case (submit all the above).	Vehicle to stay isolated outdoors until Hybrid/Electric Vehicle Battery Pack Removal and Installation or under the direction of TAC during any required diagnosis procedure.		TAC Case Created Case # _____

**High Voltage Battery Removal Stability Inspection**

Hybrid/Electric Vehicle Battery Pack Analysis			
Steps	Results		Submission Check list
High Voltage Disabling at the A4 Hybrid/EV Battery Pack. Note It is only necessary to photograph the meter results if greater than 3 volts is observed.	Passed Example Refer to Figure 6	Failed Example Refer to Figure 7	Pass Fail Pictures Captured/Submitted
Inspect all Battery Pack HV connectors and headers for soot, moisture, coolant or any signs or damage. Photograph every connector/header and advise TAC of findings. <b>Note:</b> Ensure all connector seals are present/undamaged and remain attached to the harness side connector.	Passed Examples Refer to Figure 8	Failed Heavy Soot Examples: Refer to Figure 9 Failed Light Soot Examples: Refer to Figure 10	Pass Fail Pictures Captured/Submitted

Hybrid/Electric Vehicle Battery Pack Analysis			
Steps	Results		Submission Check list
Remove the HV battery pressure equalizer vent and inspection plug (if equipped). Insert a cotton swab as an aid to detecting moisture/coolant. Photograph and advise TAC of findings.	Passed Example Refer to Figure 11 On some vehicles the pressure equalizer vent is accessible prior to battery pack removal.	Failed Example Refer to Figure 12	Pass Fail Pictures Captured/Submitted
Hybrid/Electric Vehicle Battery Pack Replacement and Shipping Preparation Remove coolant from the HV battery internal coolant circuit.			Pass Fail Pictures Captured/Submitted
Hybrid Battery Pack Coolant Passage Leak Test. Inspect coolant passage for leaks, should maintain 20 inches of vacuum for 2 minutes. Photograph and advise TAC of findings.	Passed Example Refer to Figure 13	Failed Example Refer to Figure 14	Pass Fail Pictures Captured/Submitted
Hybrid Battery Pack Coolant Passage Leak Test. Inspect coolant passage for leaks, should maintain 5 psi of pressure for 2 minutes. Photograph and advise TAC of findings. <b>Note: ONLY PERFORM PRESSURE TEST IF VACUUM TEST WAS PASSED</b>	Passed Example Refer to Figure 15	Failed Example Refer to Figure 16	Pass Fail Pictures Captured/Submitted
<b>Stable to Ship determination</b>			<b>RESULTS</b>
If moisture/coolant/soot was detected at the HV connectors the HV battery is NOT STABLE. If moisture/coolant/soot is detected at the equalizer vent and/or inspection plug the HV battery is NOT STABLE.			
<b>NOT STABLE</b>		<b>STABLE</b>	
Immediately Place the HV battery in the provided DDR Crate (if available) and move to a stable location outdoors, away from buildings, vehicles and foot traffic. Cover the HV battery or DDR crate with a tarp. Photograph location and immediately advise TAC.		Place the HV battery in the provided DDR crate. Advise TAC of the results and request the core return process.	


<p><b>Figure 1 (Coolant Level - Passed)</b></p>	
---	--

Figure 2 (Coolant Level - Failed)



6715476

Figure 3 (GDS2 Data Capture)

6715479



**Figure 4 (Vehicle and Battery Pack Isolation – Passed)**

6715481



6760498



**Figure 5 (Vehicle and Battery Pack Isolation – Failed)**

6715482



6760499

**Figure 6 (High Voltage Disable  
Result < 3V)**



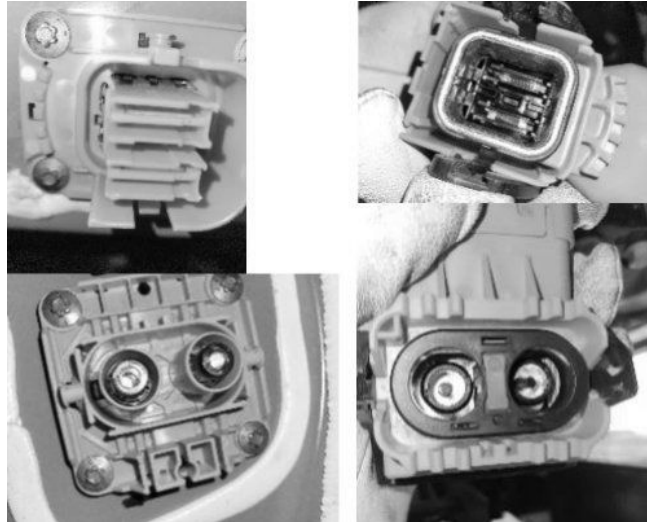
6715483

**Figure 7 (High Voltage Disable  
Result > 3V)**



6760500

**Figure 8 (Battery Pack Connectors  
- Passed)**



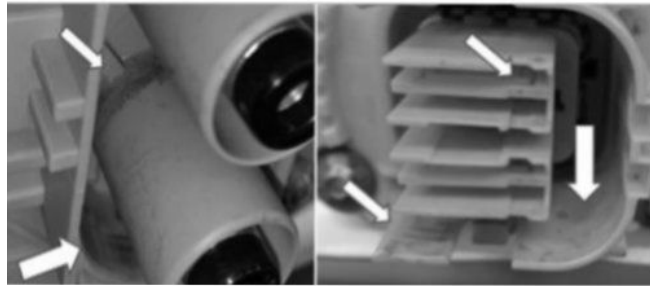
6715486

**Figure 9 Battery Pack Connectors  
- Failed w/Heavy Soot)**



6715487

**Figure 10 (Battery Pack Connectors – Failed w/Light Soot)**



6715488

**Figure 11 (Battery Pack Swab Test – Passed)**



6715489

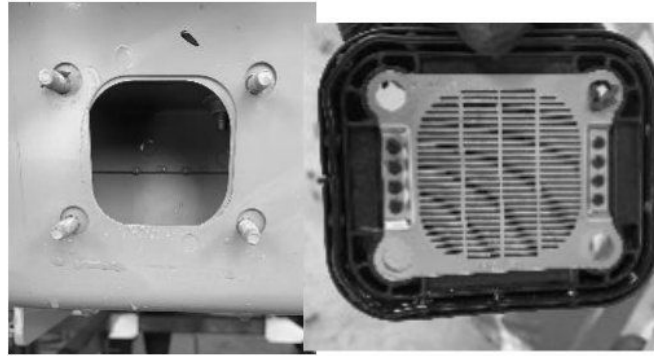
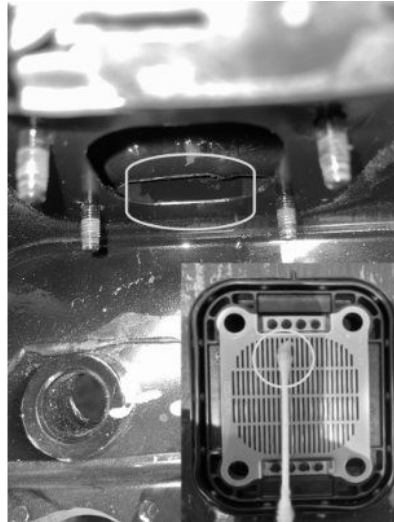
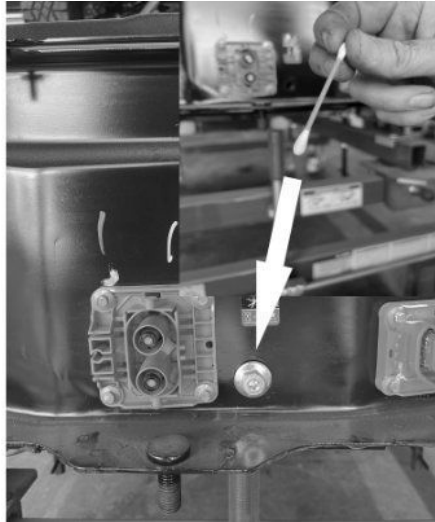


Figure 12 (Battery Pack Swab Test - Failed)

6715491



6763180



6763181

**Figure 13 (Coolant Passage Vacuum Leak Test – Passed)**



6715492

**Figure 14 (Coolant Passage Vacuum Leak Test – Failed)**



6715493

**Figure 15 (Coolant Passage Pressure Leak Test – Passed)**



6715494

Figure 16 (Coolant Passage Pressure Leak Test – Failed)



6715495

**Warranty Information**

For vehicles repaired under the Bumper-to-Bumper coverage (Canada Base Warranty coverage), use the following labor operation. Reference the Applicable Warranties section of Investigate Vehicle History (IVH) for coverage information.

Labor Operation	Description	Labor Time
5080398*	Hybrid/EV Battery Inspection & Transportability Assessment	1.0 hr

\*This is a unique Labor Operation for bulletin use only.

<b>Version</b>	10
<b>Modified</b>	<p>Released September 05, 2023</p> <p>Revised October 17, 2023 – Updated Model Years, Added Steps 8-12 and added Warranty Information.</p> <p>Revised January 16, 2024 – Added Illustrations, Updated Steps, 2022 Model Year Zevo 600 and 2024 Zevo 400.</p> <p>Revised March 14, 2024 – Added Europe and Updated information throughout the entire bulletin.</p> <p>Revised May 23, 2024 – Added Equinox EV model, updated Involved Region or Country and multiple steps under Service Procedure.</p> <p>Revised June 04, 2024 – Added Warning and Adjusted Step 17.</p> <p>Revised August 01, 2024 – Removing U22xx DTCs, adding P0AE3 and P0C78. Rewording for alignment with service titles and naming.</p> <p>Revision August 14, 2024 – Added Chart and 2025 Model Year.</p> <p>Revision November 13, 2024 – Updated Entire Bulletin to aid in Printing and readability.</p> <p>Revision November 20, 2024 – Added Cadillac Escalade IQ.</p>

