

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:		En-gine:	Transmis-sion:
		from	to	from	to		
Bright-Drop	Zevo 600	2022	2025	—	—	All	All
	Zevo 400	2024					
Cadillac	LYRIQ	2023					
Chevrolet	Blazer EV	2024					
	Equinox EV						
	Silverado EV						
GMC	HUMMER EV	2022					
	HUMMER EV SUV	2024					

Involved Region or Country	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.
Information	<p>This bulletin and criteria within are to determine the internal state of the High Voltage Battery and 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 vehicle storage and repair instructions and results <u>MUST</u> 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 before starting a TAC case for High Voltage Battery order authorization.</p> <p>DTCs: P0AA6, P0AA7, P0AE3, P0C78, U359E, U1666, U1667, U2426, U2427, U2BFC, P1C34, U35B5</p>

Service Procedure

Warning: *Never leave a vehicle or battery pack with a high-risk DTC indoors overnight, all work should 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.

Warning: Never leave a vehicle or battery pack with a high-risk DTC indoors overnight, all work should be completed during normal business hours.

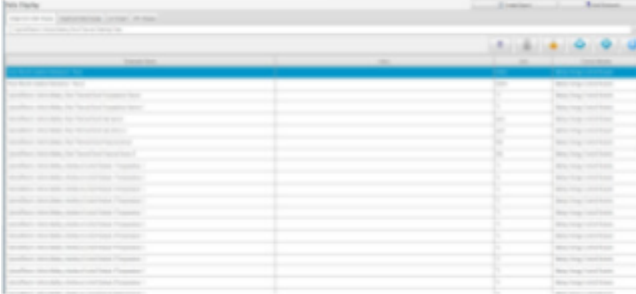
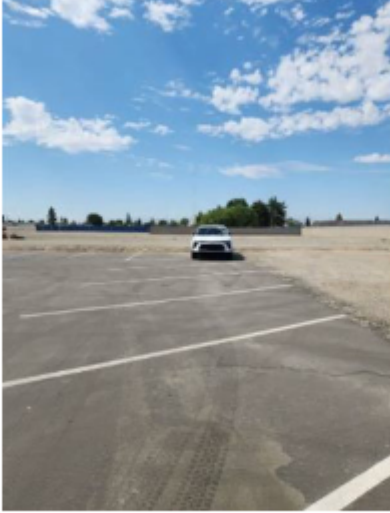

Checklist is available on Global Connect under Service Forms. Refer to the link below to access Hybrid EV Stability Checklist form.

23-NA-151 Hybrid/EV Stability - Printable Checklist for VIN

Initial Vehicle Inspection



Steps	Results		Subm sion Chec Lis
Inspect Coolant Level. Photograph result.	<p style="text-align: center;">Passed Example</p> 	<p style="text-align: center;">Failed Example</p> 	Coola Leve Pho

Steps	Results		Subm sion Chec Lis
<p>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.</p>	6715474	6715476	


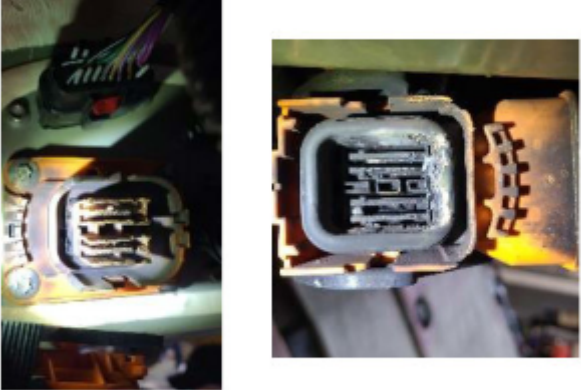

Steps	Results		Subm sion Chec List
<p>GDS2 Session Log. Battery Energy Control Module>Data Display>Hybrid/Electric Vehicle Battery Pack Thermal Stability Data</p>	 <p>6715479</p>	<p>Pack Isolation 1 _____ohms 2 _____ohms Thermal Sensor _____C/F Thermal Gas _____PPM Thermal Pressure _____psi/kPa Interface Temperature (average) _____C/F</p>	<p>GDS2 Vehicle Battery Pack Thermal Stability Data Capture</p>
<p>Move vehicle to stable location away from buildings and other vehicles. Photograph results.</p> <p>Warning: Never leave a vehicle or battery pack with a high-risk DTC indoors overnight, all work should be completed during normal business hours.</p>	<p>Passed Example</p>  <p>6715481</p>	<p>Failed Example</p>  <p>6715482</p>	<p>Vehicle Isolation Outsider and F ture Capture/S mitted</p>

Steps	Results	Submission Checklist
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	TAC Case Created Case

High Voltage Battery Removal Stability Inspection



This process should be started at Hybrid/Electric Vehicle Battery Pack Removal and Installation.			
Steps	Results		Submission Checklist
High Voltage Disabling at the A4 Hybrid/EV Battery Pack. Photograph results and advise TAC if greater than 3 volts is observed.	<p style="text-align: center;">Passed Example</p>  <p style="text-align: center;">6715483</p>	<p style="text-align: center;">Failed Example</p>  <p style="text-align: center;">6715485</p>	Photograph Captured
Inspect all HV connections	Passed Examples	Failed Heavy Soot Examples	Photograph

This process should be started at Hybrid/Electric Vehicle Battery Pack Removal and Installation.



Steps	Results		Sub si Ch li
<p>tors and headers for soot, moisture, coolant or any signs or damage. Photograph every connector/header and advise TAC of findings.</p>	 <p>6715486</p>	 <p>6715487 Failed Light Soot Examples</p>  <p>6715488</p>	<p>Pict Ca ture mit</p>
<p>Remove the HV bat-</p>	<p>Passed Example</p>	<p>Failed Example</p>	<p>Pa F</p>

This process should be started at Hybrid/Electric Vehicle Battery Pack Removal and Installation.



Steps	Results	Sub si Ch li
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<p>tery 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.</p>			<p>Pict Ca turec mit</p>
	<p>6715489</p> <p>On some vehicles the pressure equalizer vent is accessible prior to battery pack removal.</p>	<p>6715491</p>	

Hybrid/Electric Vehicle Battery Pack Replacement and Shipping Preparation Remove coolant from the HV battery internal coolant circuit.

<p>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.</p>	<p>Passed Example</p> 	<p>Failed Example</p> 	<p>Pa F Pict Ca turec mit</p>
	<p>6715492</p>	<p>6715493</p>	

This process should be started at Hybrid/Electric Vehicle Battery Pack Removal and Installation.

Steps	Results		Sub si Ch li
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. Note: ONLY PERFORM PRESSURE TEST IF VACUUM TEST WAS PASSED	Passed Example  6715494	Failed Example  6715495	Pa F Pict Ca ture mit
	Stable to Ship determination		R SU
If moisture/coolant/soot was detected at the HV connectors the HV battery is NOT STABLE. If moisture/coolant is detected at the equalizer vent and/or inspection plug the HV battery is NOT STABLE.			
NOT STABLE	STABLE		
Immediately Place the HV battery in the provided DDR Crate and move to a stable location outdoors, away from buildings, vehicles and foot traffic. Cover the 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.		

<https://dealer.autopartners.net/sites/usserviceforms/Pages/default.aspx>[\[https://dealer.autopartners.net/sites/usserviceforms/Pages/default.aspx\]](https://dealer.autopartners.net/sites/usserviceforms/Pages/default.aspx)

1. Verify if DTCs U2BFC or P1C34 are set as current or history? 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, P0AA7, P0AE3, P0C78, P1C34, U359E, U1666, U1667, U2426, U2427. Verify if DTC U35B5 set as current or history.
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.
4. Visually inspect the coolant level in the high-voltage battery surge tank (Fig 1) and document via photo. Inform TAC if coolant has previously been added.

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.

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
Pack Temperature	25.0	°C	0 to 100
Gas Sensor	1000	ppm	0 to 30,000
Pressure Sensor	1013	hPa	1013
Interface Control Module Temperature	25.0	°C	0 to 100
...

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5. Observe and record :

- 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 High Voltage Disabling has already been performed the high voltage service lockout (HVSL) should remain in the OFF position until battery pack replacement or TAC approval is obtained. 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.

7. Move the vehicle to a stable location outdoors: isolated and away from buildings, vehicles, and foot traffic while waiting direction to repair. Document location via photo. The recommended method for moving the vehicle would be with HVSL pulled, Service Mode in neutral until directed otherwise.

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.

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 when you have the return DDR crate on-site. 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 2 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.

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 3). The equalizer vents have 4 fasteners, never remove the valves that fasten with 2 fasteners. Using a cotton swab or paper towel to swab inside the enclosure for moisture or coolant. Take photos and attach to TAC case.

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

Danger: Do not insert anything other than a cotton swap or paper towel while performing the swap 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. 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. 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 to stable location outdoors: isolated and away from buildings, vehicles, and foot traffic. Cover DDR crate with a tarp to protect from the elements while awaiting further direction. Take picture of crate and location and upload into TAC Case." Report results to TAC for Engineering review.

Figure 1

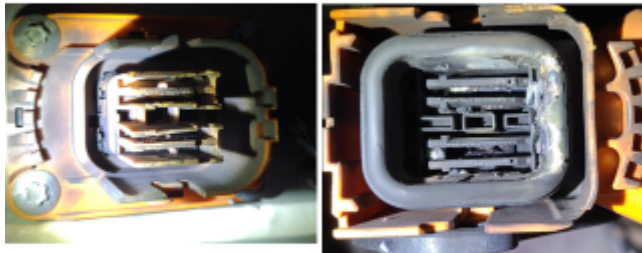


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Figure 2 Soot Examples

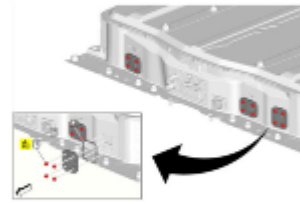


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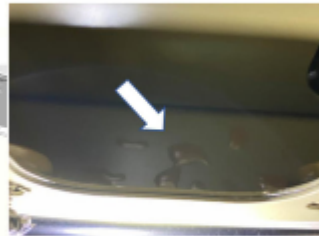
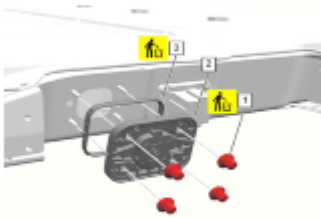


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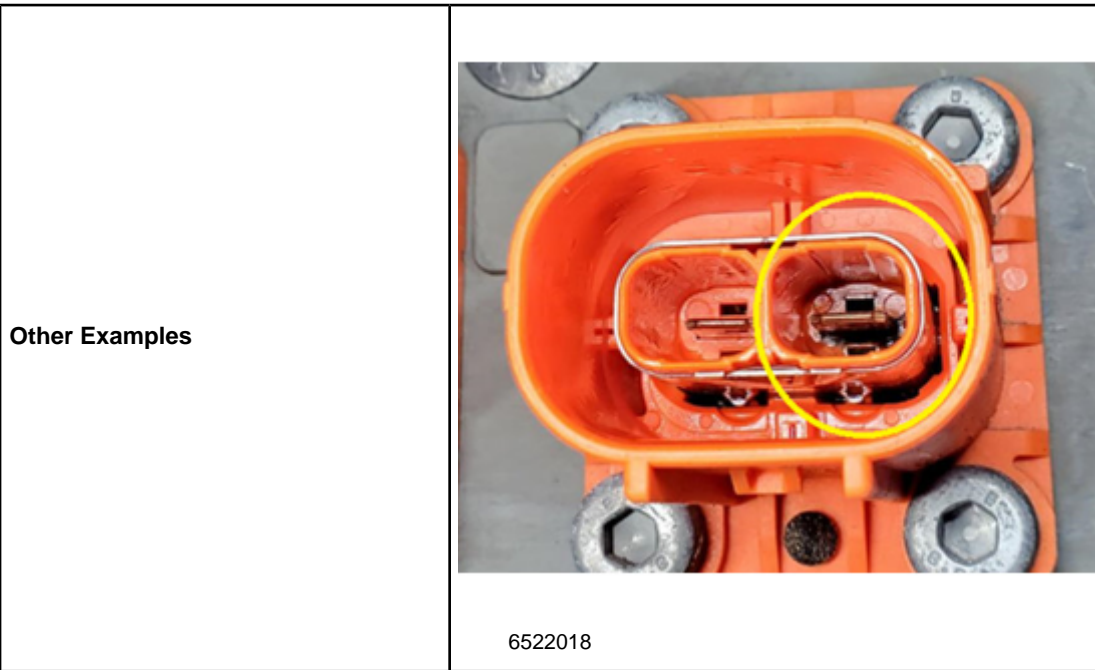
Figure 3 Liquid and Moisture Examples



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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.		

Version	8
Modified	<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>