



Countries: CANADA, MEXICO, UNITED STATES
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Other Languages: NONE
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Coding Information

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Title: EV Regenerative Braking Operation During Cold Weather Causing Faults

Applies To: 2002 to Present eCE bus and eMV trucks

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

12/20/2024 - Initial Article Release

DESCRIPTION

This document will guide the user through the details on faults set during the use of EV regenerative braking during cold weather operations.

SYMPTOMS

Possible faults below can be set during cold weather operation of EV Regenerative Braking

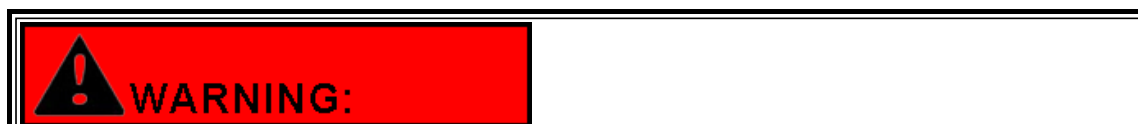
Diagnostic Trouble Codes

DTC/Light	Description
SPN 523521 FMI 15	HVESS Pulse Charge Current : Data Valid But Above Normal Operating Range - Least Severe Level
SPN 523522 FMI 15	HVESS Continuous Regenerative Charge Current : Data Valid But Above Normal Operating Range - Least Severe Level

Customer Observations or Concerns:

Reduced Regenerative Braking
RBS Lamp
Amber CEL Lamp

Regenerative Braking Operating Principal:



To prevent personal injury and / or death, or damage to property please note:

Regenerative braking is a system that is used only for energy recovery. When simultaneously using a regenerative braking stage with a driver assistance system like Cruise Control or ATC, the control behavior of the driver assistance system is always prioritized (independently of the display). It is not a driver assistance system and cannot take over any driver assistance system tasks.

- Do not use the deceleration effect of regenerative braking as a distance control system.
- Always be ready to brake and stay a safe distance away from the vehicle in front.
- For greater braking power or for braking the vehicle to a standstill, press the brake pedal as required.

During regenerative braking, the drive motor converts the momentum of the moving vehicle into electrical energy, which is stored in the high-voltage batteries.

- Regenerative braking starts as soon as you take your foot off the accelerator pedal and slows down the vehicle. You can adjust the regenerative braking strength.
- Applying the bus brake pedal will reduce the amount of regenerative braking energy that is recovered. When safe to do so, use the regenerative braking function to recover energy. This will extend the total vehicle range. The level of energy recovered can be viewed in the powermeter in the instrument panel. To increase regenerative braking efficiency apply and disengage the throttle pedal and brake pedal slowly and only with as much position as needed. Avoid all the way on or all the way off the throttle pedal driving.

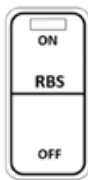
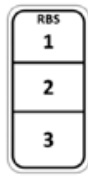
Switch	Description / Function
 0000499801	ON: regenerative braking with moderate deceleration of the vehicle. OFF: no regenerative braking
 0000499800	Selects level or regenerative braking strength. 1: lowest level of regenerative braking strength felt and lowest level of energy recovery. 3: highest level of regenerative braking strength felt and highest level of energy recovery.

Figure 1: Regenerative Braking Settings

The deceleration effect of regenerative braking can be limited due to high-voltage battery temperature and / or high-voltage batteries being at a full state of charge. This temporary reduction in regenerative braking will be accompanied by the RBS lamp illuminated on the cluster.

- Compensate for reduced regenerative braking by pressing the brake if necessary. The regenerative braking strength is displayed in the power meter.

UPDATED COLD WEATHER OPERATION

Operation of the Regenerative Braking System (RBS) during cold ambient temperatures may set several faults with dash lamps as listed above. These faults set most often when the batteries are at 95% - 100% charge and with cold ambient and battery temperatures. To prevent these faults during these conditions, operate the Regenerative Brake System in Level 1 until battery temperature increases (after first 30 minutes of vehicle operation). Extreme low temperature operation may require the Regenerative Braking System switch to be set to off until battery temperatures increase .

There will be a future VCU calibration release that will address these faults and DTCs.

OTHER RESOURCES

[Master Service Information Site](#)

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