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Title: Electric Vehicle Charging Concerns

Applies To: Electric Vehicles

CHANGE LOG

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

8/29/2022 - Added Charging Enable & Disable Procedures to avoid operator actions inadvertently causing concerns
3/10/2022 - Added SPN 523649 FMI 2
1/25/2022 - Initial Article Release

DESCRIPTION

This document will guide the user on how to approach diagnostics when there is a charging concern with an electric vehicle.

NOTE:

Operator actions can inadvertently cause false isolation faults, which will not allow the vehicle to charge properly. Before diagnosing, please insure operator is performing the correct charge 'Enable & Disable' procedures.

- Enabling a charge session procedue
- Disabling a charge session procedure

SYMPTOMS

Diagnostic Trouble Codes & Dashboard Indicator Lights:

DTC/Light	Description
SPN 8083 FMI 0	HVESS Charge Current Limit : Data Valid But Above Normal Operational Range - Most Severe Level
SPN 8083 FMI 6	HVESS Charge Current Limit : Current Above Normal Or Grounded Circuit
SPN 8083 FMI 14	HVESS Charge Current Limit
SPN 8083 FMI 16	HVESS Charge Current Limit : Data Valid But Above Normal Operating Range - Moderately Severe Level

SPN 8090 FMI 0	HVESS Maximum Charge Voltage Limit : Data Valid But Above Normal Operational Range - Most Severe Level
SPN 523530 FMI 17	HVESS Low Insulation In Driving : Data Valid But Below Normal Operating Range
SPN 523575 FMI 31	HVESS Faulty : Condition Exists
SPN 523576 FMI 31	HVESS Faulty
SPN 523577 FMI 31	HVESS Faulty
SPN523578 FMI 7	OBC2 Fuse : Mechanical System Not Responding Or Out Of Adjustment
SPN 523579 FMI 12	VCU - Implausible OCI Wake-Up : Bad Intelligent Device Or Component
SPN 523630 FMI 7	OBC1 Fuse : Mechanical System Not Responding Or Out Of Adjustment
SPN 523649 FMI 2	Charge Plug: Data Erratic, Intermittent or incorrec

Customer Observations or Concerns:

Vehicle will not charge
Vehicle difficult to charge
Vehicle states it is charging, but state of charge (SOC) % does not increase
Charge port LED errors (Red or Yellow)
Amber Warning Lamp (AWL) illuminated

SPECIAL TOOLS / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
Class 0 Electrical Insulating Gloves (RED Label)			
Electrical Hazard (EH) Rated Safety Shoes or Boots			
National Fire Protection Association (NFPA) Category 2 Arc Flash Protective Clothing and Face Shield			

SERVICE PARTS INFORMATION

Part replacement is dependant on diagnostics, common parts listed below

Kit Description	Part Number	Quantity Required	Notes
LAND-BASED CHARGER	N/A	1	Supplier
MODULE , OBC TOP EVO 11K	4286673C91	1	OBC2
MODULE , OBC BOTTOM EVO 11K	4286672C91	1	OBC1

MODULE , ONBOARD CHARGING INTERFACE	4210954C91	1	OCI
MODULE , SUPERVISORY CONTROL UNIT SCU	4209406C2	1	SCU

DIAGNOSTIC STEPS

NOTE:

Please do not perform any diagnostics on vehicle, until land-based charger has been ruled out. This will require customer/dealer to work with the land-based charger supplier to inspect and/or diagnose. Once the land-based charger has been ruled out, please feel free to open a technical service case file at this time for aid towards on vehicle diagnostics if needed.

WARNING:

To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING:

To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING:

To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING:

To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle’s batteries. Batteries expel explosive gases.

WARNING:

To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

WARNING:

To prevent personal injury or death, NEVER service a high-voltage vehicle without completing high-voltage safety training. Before working on vehicle, read and obey all High-Voltage Safety and Lock-Out Tag-Out procedures and information.

To prevent personal injury or death, wear and use approved high-voltage Personal Protective Equipment (PPE) when near a high-voltage electric vehicle. Inspect PPE before use. Do not use gloves or other PPE with expired dates, holes, cracks or damage. NEVER touch energized orange high-voltage cables or high-voltage components without wearing approved high-voltage PPE.

To prevent personal injury or death, read all information in the Safety Information and High-Voltage Safety sections of the service manual.

Step	Action	Decision
1	**DIAGNOSTIC:** Does the vehicle have a charging concern?	**Yes**. Contact land-based charger supplier to inspect/diagnose land-based charger. Proceed to step 2
		No. No further action needed

Step	Action	Decision
2	**DIAGNOSTIC:** Did the land-based charger supplier resolve charging concern with the vehicle?	**Yes.** No further action needed
		No. Perform on vehicle diagnostics using the service manual for any faults that may be active.

Step	Action	Decision
3	**DIAGNOSTIC:** Did on vehicle diagnostics point to root cause and resolve the charging concern?	**Yes.** No further action needed, release the vehicle.
		No. Open a technical service case file for additional support providing all information to this point.

REPAIR STEPS

1. Bring vehicle into shop and park on a flat surface

2. Shift transmission into park or neutral, set parking brake and install wheel chocks

3. Perform proper level isolation, refer to the proper section of the service manual if needed.

4. Repair vehicle based on diagnostics per the service manual

5. Verify operation, insure vehicle is accepting a charge.

6. Release vehicle back to service

WARRANTY INFORMATION

Warranty Claim Coding:
Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s):
Refer to the SRT Manual for Repair Times

OTHER RESOURCES

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