



Technical Journal

TITLE:

HV Battery Balancing Procedure

REF NO:
TJ 35897.1.2ISSUING DEPARTMENT:
Technical ServiceCAR MARKET:
United States and CanadaPARTNER:
3 US 7510 Volvo Car USAISSUE DATE:
2021-07-14STATUS DATE:
2021-07-15FUNC GROUP:
3113FUNC DESC:
Battery, high voltage

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“Right first time in Time”

Attachment

File Name	File Size
UnbalancedCellSOCExample.png	0.1081 MB
UnbalancedCellVoltageExample.png	1.4574 MB

Rows beginning with * are modified

Note! If using a printed copy of this Technical Journal, first check for the latest online version.

DESCRIPTION:

If a vehicle comes into the shop with any of the cell balancing DTCs listed below, no obvious signs of cell failure, and having voltage and/or SOC patterns that appear erratic (see attached pictures for examples), the vehicle could be a candidate to have the cell balancing procedure outlined in the Service section performed.

CSC Customer Symptom Codes

Code	Description
55	Driving, Twin Engine/Propulsion using combustion engine/Always active/Active too often
YN	High voltage battery/Discharged/poor charge
DL	Warning lights and chimes/Malfunction Indicator Light ("Check engine" light) indication/no indication



DTC Diagnostic Trouble Codes

ECU	DTC	Fault Type
BECM	P0DAF00	Permanent
BECM	P0DB300	Permanent
BECM	P0DB700	Permanent
BECM	P0DBB00	Permanent
BECM	P0DBF00	Permanent
BECM	P0DC300	Permanent

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
224	BK	B1LPHEV					2020-9999		-	201920-209952
224	BR	B1FPHEV					2019-9999		-	201850-209952
225	BK	B1LPHEV					2020-9999		-	201920-209952
225	BR	B1FPHEV					2019-9999		-	201850-209952
234	BC	B1BPHEV					2018-9999		-	201726-209952
234	BR	B1FPHEV					2019-9999		-	201817-209952
238	BC	B1BPHEV					2018-9999		-	201726-209952
238	BK	B1LPHEV					2020-9999		-	201920-209952
238	BR	B1FPHEV					2018-9999		-	201746-209952
246	BK	B1LPHEV					2020-9999		-	201920-209952
246	BR	B1FPHEV					2018-9999		-	201717-209952
256	BC	B1BPHEV					2016-9999		-	201526-209952
256	BK	B1LPHEV					2020-9999		-	201920-209952
256	BR	B1FPHEV					2018-9999		-	201717-209952

SERVICE:

Please take a moment to carefully read over the following procedure. It is very important that every step is followed correctly in order for the entire procedure to work.

The following procedure will allow the battery to balance itself out.

Step 1: Using VIDA, take note of the HV battery Cell Delta SOC and Cell Delta Voltage using the HV battery cell SOC overview and HV battery cell voltage overview found under BECM>Diagnostic sequences.

Step 2: Perform a total upgrade to make sure the latest BECM software is installed.

Step 3: Reset HV battery State of Health using the script in VIDA found under Components>BECM>Diagnostic sequences>Resetting the state of health (SOH). Verify that the SOH has been reset (should now read 100%) by going under the High voltage battery, SOH script. It is very important that the SOH is reset in order for this balancing procedure to work properly!!!



Step 4: Make sure that the HV battery SOC according to the high voltage battery state of charge (SoC) in DIM -BECM parameter is between 25-40%. If the HV battery SOC is less than 15%, the balancing procedure will not work!!! If the SOC is less than 15% and you are not able to charge the HV battery, stop here and create a Support Needed vehicle report so the Technical Helpdesk team can assist. Next, park the vehicle somewhere in the shop where it can sit undisturbed for several hours.

Step 5: Connect a 12v battery maintainer to the vehicle. It is very important that the battery maintainer is putting out sufficient power to maintain a positive charging current (in order to prevent the 12v battery from being discharged overnight). Use the 12v overview found under service functions to verify that the battery is receiving positive charging current.

Step 6: Place the vehicle in usage mode “Active” by turning the start knob clockwise for at least 5 seconds. You can verify what usage mode the vehicle is in by checking the connection bar at the top in VIDA.

Step 7: Leave the vehicle in this state with the 12v maintainer connected and the vehicle in usage mode Active for at least 8 hours, preferably overnight. The longer the vehicle is left in this state, the more balanced the battery should become. In some cases if the module delta is very high, it will take longer than 8 hours/overnight to fully balance.

Step 8: Once the vehicle has been left to balance for the allotted time, perform a new VIDA readout on the vehicle (select “new,” NOT “existing”). Next, go back to the HV battery cell SOC and cell voltage overviews and compare the values to what you had when you started. Provided everything was setup properly, the Delta SOC and Delta voltage should have gone down significantly.

Step 9: If the Delta SOC is below 4% and Delta voltage is below 20mV, clear DTC's, then charge the vehicle and test drive in PURE mode. Perform another new readout afterwards to see if any faults return. If no faults return, release the vehicle back to the customer.

VST Operation Number

VST Operation Number	Description
08080	HV Balancing - Hybrid Models Only

VEHICLE REPORT:

Yes, please submit a Vehicle Report if the service instruction described in this TJ has no effect. Use concern area “Vehicle Report” and sub concern area “Support needed”, use function group 3113.

Important: Please attach screenshots of the “High voltage battery, cell SOC overview” and “High voltage battery, cell voltage overview” to the Vehicle Report!

To view TJ attachments continue to next page. This TJ has two attachments.

