

# Technical Journal

## TITLE:

**Polestar: Checklist if 12 Volt battery is drained - Perform SW Upgrade**

<b>REF NO:</b> TJ 35542.2.0	<b>ISSUING DEPARTMENT:</b> Technical Service	<b>CAR MARKET:</b> United States and Canada	
<b>PARTNER:</b> 3 US 7515 Polestar		<b>ISSUE DATE:</b> 2023-01-05	<b>STATUS DATE:</b> 2023-01-06
<b>FUNC GROUP:</b> 3111	<b>FUNC DESC:</b> Battery, complete	<b>Page 1 of 6</b>	

## Attachment

File Name	File Size
Approved DTC's.xlsx	0.0105 MB
TJ35542_Remote key backup.JPG	0.0318 MB

## DESCRIPTION:

\*If a customer complains of not being able to unlock the vehicle with the remote key and experiences no start due to a drained 12 Volt battery, please follow instructions under "Service".

An updated wake to charge 12V battery SW is available in VIDA since 22w50d3. This SW will limit the risk of a drained 12v battery.

### Description of the function:

The software in CEM has been optimized for Polestar 1.

When the vehicle is parked, CEM will wake up to check the State of Charge (SoC) level of the 12V battery every sixth hour. If the charge level is deemed ok, CEM falls back to sleep.

If the check reveals that the calculated state-of-charge of the 12V battery is below 65%, CEM will start energy conversion from the high voltage battery, charging the 12V battery up to 85% SoC. Once 85% SoC of the 12V battery is reached, the charging cycle ends and CEM falls back to sleep.

The SoC check of the 12V battery repeats every 6h indefinitely as long as the vehicle remains parked in abandoned mode. The SoC of the high voltage battery needs to be above ~2%. If the vehicle is plugged in to a charger with power available, a conversion cycle will primarily use grid power to charge the 12V battery.

CEM = Central Electronic Module

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## CSC Customer Symptom Codes

Code	Description
LM	12 V main battery/Dead battery
LN	12 V main battery/Weak or low electrical power

## DTC Diagnostic Trouble Codes

### Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
232							2020-2021		-	201939-202044

### SERVICE:

**\*If the software is older than variant released 2022 week 50 day 3, perform a software upgrade in accordance with TJ 35361.**

#### Checklist customer inquire:

- Ask the customer when the vehicle was parked (date/time) and if the charge cable was connected or not?
- Ask the customer if the green LED was illuminated after the charge cable was connected?
- When did the customer discovered that the battery was drained e.g. for how long had the car been parked, and was there a DIM message pertaining to the problem?
- Was there any particular circumstances when the customer parked the car e.g. car was not locked/locked, parking brake was applied, etc.?

Please contact your local technical helpdesk if you have trouble following the guided fault tracing hereunder.

#### Initial checks:

- Check operation of the outer door handle's push buttons, are they working as intended e.g. not sticking, or/and returns to initial position?
- Is the car locked? Open it with the emergency key inside the keyfob. (Depending on the situation, tow truck or technician at customers home)
- Put the key towards to RFID symbol (place the remote key in the back-up area according to attached picture) Try to start the engine?
- Check 12 volt battery terminals for correct installation and torque.
- Check and ensure good ground for the negative battery cable from the Battery Monitoring Sensor (BMS) to body, if cable eyelet is possible to move/wiggle/pivot on the stud with slight force, it must be re-torqued.

#### If car does not start:

- Open the hood.
- Connect a 12 Volt starter booster
- Start the car. (Car must start to be able to continue the fault tracing, and to charge the 12 Volt battery)

The driver and passenger seats must be recalibrated before continuing any other steps. The seats should be moved to the most forward position and the most backward position, this should be done two times i.e. move the entire axis back and forth.

Which means Length axis:

- Forward
- Backward
- Forward
- Backward

The same principle for the height axis:

- Up
- Down
- Up
- Down

The seats are now calibrated.

### **Continue checking:**

- 1 - Check if the Electric Parking Break (EBP) is engaged. Release it if it is.
- 2 - Check how many miles/km the car can drive on the electric motors in Hybrid mode (*There must be enough High Voltage charge to propel the car in HYBRID mode when so possible*)
- 3 - Check if the motion alarm setting is activated.
- 4 - Do a first DTC readout with VIDA, no fault tracing at this step. Note DTC's
- 5 - Check that door handles move as they should when locking/unlocking the car.
- 6 - Check available driving range in Pure Mode. (*Pure mode must be available to continue checking*)
- 7 - If not possible to drive in PURE, use a charge cable/power outlet if possible, if not start the engine to charge the High Voltage battery.

Important: Make note of which charge method used, engine/power outlet.

- 8 - Check that driving range in Pure is about 120 - 140km /75 – 85 miles) with a fully charged high volt battery.
- 9 - 1st time: Clear all DTC, no fault tracing necessary.
- 10 - Drive the car for 5.0Km/3.8 miles.
- 11 - Park and lock and allow car to go down in Abandon Mode/sleep, this will take approx. 10 min after locking the car.
- 12 - Check that Center Stack Display (CSD), Driver Information Module (DIM), and interior light actually turns off approx. 2 min after locking the car.
- 13 - Still in Abandon mode, check that Foot Movement Detection Module (FMDM) is working, kick function.
- 14 - Read out DTC again and note down all DTC's
- 15 - Compare them to approved DTC. (Only confirmed DTC must be fault traced as per VIDA) See Attachment)

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## Read out:

- Read out the high voltage battery cell values. *(If one cell deviates significantly from the others a fault will be set for the High Voltage battery and thus charge to the 12 volt battery may be interfered)*
- Connect a clamp-on meter (Amp clamp) or use the method in VIDA and measure so that Quiescent Current (QC) consumption goes down to 12 – 14mA after 15 minutes.
- If possible check for several hours to ensure the average QC consumption remains about 13mA.
- 2nd time: Clear all DTC's, no fault tracing is necessary.
- Update all software with VIDA by following TJ 35361
- Drive the vehicle again for 5.0Km/3.8 miles.
- Park and lock the car and let it go down in Abandon Mode. (10 min.)
- Before returning the car to the customer, read out DTC's again. **Note:** If any DTC is “permanent” it must be fault traced as per VIDA.

## Warranty claim info:

\*Note that the TJ number must be stated in repair order text.

To get warranty claim accepted for a job described in this TJ, please use following data:

VST OP number: 36004-2, 96166-2 (initial check) and if applicable 99932-2 (continued checking)

## VST Operation Number

VST Operation Number	Description
99932-2	General reimbursement acc. to TJ/QB
96166-2	Troubleshooting battery/installation
36004-2	Software control module downloading

## LABOR TIME:

Labor ops.: 99932-2; 2 hours 96166-2; 0.3 hours 36004-2; 0.5 hours

## VEHICLE REPORT:

Yes, please submit a Vehicle Report Polestar if the service solution described in this TJ has no effect. Use concern area “Vehicle Report Polestar” and sub concern area “Support needed Polestar”, use function group 3111.

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

Name	DTC
CEM HIGH	U102268
LOAD MODULE BCM2	U270382, U2C7F81, U2CE183, U2D5083, U210782, U2C7F82, C006381, C006481, U2C3081, U2D8482, ED4D82
BATTERY HIGH VOLTAGE REAR	DC4087
INVERTER EMRR	263882, 258F82
CONTROL UNIT VCU1 FULL	51241C, D10900
CONTROL UNIT AWM	D36B49, D36B79, D36B82
LOAD MODULE BECM	0DAF00

