VOLVO CAR
SERVICE AND PARTS BUSINESS

Technical Journal

TITLE:
High Voltage battery maintenance for T8 vehicles on display

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FUNC GROUP: **3113**	FUNC DESC: **Battery, high voltage**	**Page 1 of 5**	

"Right first time in Time"

Attachment

File Name	File Size
BECM_Fuses.jpg	0.1412 MB
Usage_Modes.pdf	0.0229 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
2XX	BC						2016-2017		-	201526-201716
2XX	BR						2018-9999		-	0-0

CSC Customer Symptom Codes

Code	Description
YN	High voltage battery/Discharged/poor charge

VST Operation Number

DTC Diagnostic Trouble Codes

Rows beginning with * are modified

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

Text

DESCRIPTION:
A hybrid vehicle in Active Usage Mode uses a small amount of energy from the high voltage battery. See attachment for Usage Mode description. Usage_Modes.pdf

Over an extended period of time, this could lower the cell voltages and eventually degrade the battery.

SERVICE:
Periodically check the high voltage battery state of charge and keep it at or above 25% as per the instructions in the owner's manual for "Long-term storage of vehicle with hybrid batteries".
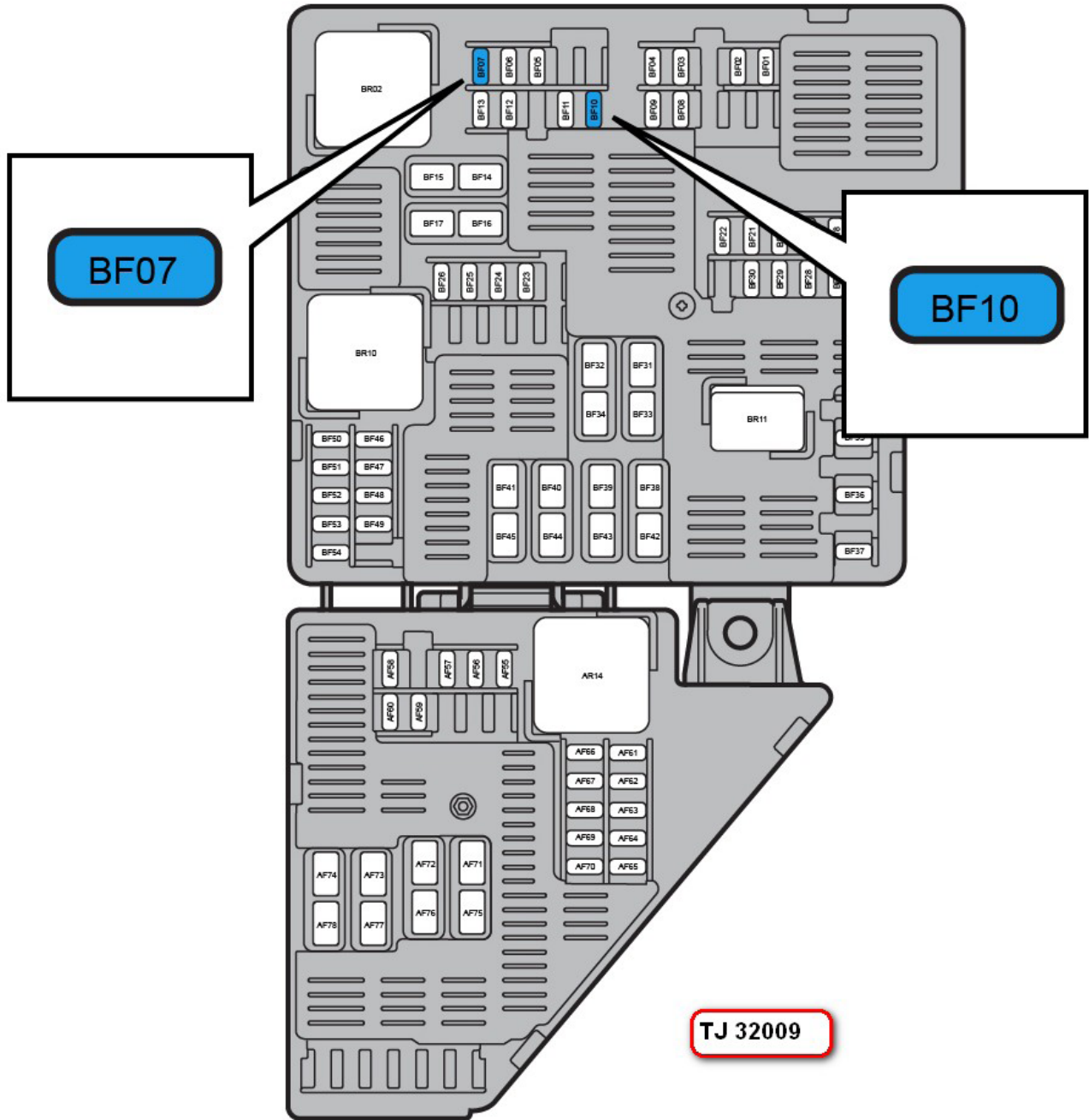
* Fuses BF07 and BF10 can be removed from vehicles on display to prevent low cell voltage. BECM_Fuses.jpg

VEHICLE REPORT:
N/A

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

BF07

BF10

TJ 32009

The vehicle has a number of different states called usage modes. The vehicle automatically switches between the usage modes depending on user interaction and also control module activity.

The usage modes are the modern equivalency of the different ignition positions that a mechanical key switches between. However, the usage modes are more comprehensive and more complex.

The main purpose of usage modes is to assure that the vehicle is always left in its lowest energy consumption state, even if the user forgets and neglects instructions to turn off the vehicle.

The different usage modes
The different usage modes are described in the table below. It is primarly user interaction that triggers an usage mode transistion.

Usage mode	Description
Driving	In driving mode, the drivetrain and thereby propulsion functionality is activated and ready to give torque. Driving mode gives full functional availability. The Electrical Energy and Power Management EEPM reduces load if there is not enough electric power and/or energy in the vehicle. A valid key must be detected and approved.
Convenience	In convenience mode, a number of convenience functions are available to the user. The usage of these functions is limited by the Electrical Energy and Power Management EEPM, an engine start is not allowed if there is not sufficient electric energy available. A valid key must be detected and approved.
Active	In active mode, most functions are available, except the drivetrain. Braking functionality is prioritized, along with external lights, in order to provide safe functionality if the vehicle is being towed. The Electrical Energy and Power Management EEPM reduces load if there is not enough electric energy available, for example during a driver start request. A valid key must be detected and approved. **Note!** **The active mode is not intended to be used during normal customer usage, but during towing, service or similar. Therefore this mode requires more input from the driver before it is entered. The mode is not intended to be accessed without a special request from the driver.**
Inactive	Inactive is a resting mode. The functional availability is kept to a minimum by only allowing functions that may have after-run activities. There is a well-defined timeslot for functions and systems to coordinate shutdown events. A limited number of functions are inactive but waiting to be activated by the user, such as the radio. A valid key is not needed to access this usage mode. The Electrical Energy and Power Management EEPM reduces load or not allow activation of some functions in order to ensure start of the vehicle. A valid key is not needed to access this mode.
Abandoned	Abandoned is a resting mode which is typically entered after a certain time is spent in inactive mode. There is no or minimal network activity in this usage mode. The purpose is to shut down functions that may be on standby, awaiting input or activation, or periodically checking for incoming data.

Transitions

> **Note!**
> **A detailed description of each transition is not included, since the transitions can vary with vehicle setup and can also change further on in the platform lifetime. These transition descriptions are only examples.**

Transition	Description
1. Abandoned to inactive	The vehicle transitions from abandoned to inactive when detecting that an authorized user iintends to use the vehicle. This includes, but is not limited to, unlocking the vehicle, using connectivity, air conditioning, and diagnostic readout. Usage mode abandoned can only be reached from usage mode inactive.
2. Inactive to convenience	Convenience mode can only be reached from inactive mode. Transition from abandoned goes via inactive. Transitions directly from either active or driving is not possible since turning the ignition knob towards thestop position from those two states is interpreted as "turn off vehicle". This means that two separate turns are required to reach convenience from active or driving.
3. Convenience or inactive to active	Transition to active is only possible from inactive and convenience by turning the ignition knob towards the start positionand hold it. . Active is not a normal customer mode, but a towing, or service mode.
4. To driving	Usage mode active keeps the last known value until the transition to driving is fulfilled. Necessary power supply logic must be activated to allow the engine system to begin its startup sequence. Activating power supply logic to prepare for start will then be done in the usage mode where the driver start request is made. The activation of necessary power supply logic is triggered by an internal signal that indicates that a driver has requested a start of the vehicle.
5. Driving to inactive	The current usage mode directly transition to inactive when turning the vehicle off. If the vehicle is moving or the gear is not in P (park), it is required to turn the ignition knob to the stop position and hold it.
6. Convenience to inactive	The vehicle can be automatically shut down to save the battery if the user forgets to shut it down. Before that, the driver is advised to shut the vehicle down and thereby switching to usage mode inactive, This transition is only possible when the energy level of the battery is low, but still sufficient to withstand the energy drainage of an engine start. Remote looking will also cause transition to usage mode inactive.
7. Inactive to abandoned	After a period of time without interaction from the driver or vehicle systems the usage mode transitions from inactive to abandoned.