

No troubles without BEM code

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Important information to register aftermarket replacement batteries in vehicles equipped with EMS (Energy Management System)

Along with the increasing coming-up of vehicles with EMS and start|stop system, equivocal information has been published keeping one believing that replacing batteries in such vehicles without registration and coding by means of diagnostic equipment is completely impossible or harmful for on-board electronics. Is that really true?

There are two alternatives:

1. Code entry not imperative

The registration and coding of the new battery is normally no problem if a suitable scan tool is available. But even though the scan tool offers the function "battery replacement" it is not guaranteed that the tool works according to the manufacturer's specifications. Some car manufacturers (i.e. Audi) demand a BEM code (Battery Energy Management) for the replacement of an original battery. This BEM code, however, is property of the car manufacturer and can only be found on original batteries.

If an original battery is replaced by an aftermarket battery, this BEM code has to be entered. If this code is not available, the energy management system does not know that the battery has been replaced. So the state of the new battery does not match with the recorded parameters of the replaced battery. That means the EMS (energy management system) has to learn about the actual battery state on the basis of trigger events (i.e. starts, cold starts, charging currents etc.). Until the EMS cannot absolutely certain diagnose the battery state, some electric consumers in the vehicle (i.e. air con) can be temporarily deactivated. As soon as the battery state can be diagnosed by the EMS (with the help of trigger events), the electric consumers perform again without limitation. In principle mounting a battery without BEM code in an Audi vehicle is no problem and will do no damage to on-board electronics.

2. Open energy management system

Compared to Audi, other car manufacturers do not demand a BEM code. Replacing the original battery by an aftermarket battery and its registration without BEM code is easily possible. If the registration of the new battery remains undone (i.e. if no scan tool is available), the EMS cannot absolutely certain diagnose the battery state and some electric consumers in the vehicle can be temporarily deactivated as well.

Finally, some car models may not require any active registration process at all. A Korean car manufacturer, for instance, instead requires 4 hours waiting time after battery replacement; during this time, the open circuit voltage shall be no higher than 150mA. After this, the EMS should recognize the new battery's status. If the customer wants to continue his ride straight after the battery replacement, he may do so without risking any harm to on-board electronics. However, in this case too, electric consumers in the vehicle may be temporarily deactivated. [NB: proceedings for current BMW models may differ from the above]

Conclusion

To conclude, it should be pointed out that workshops should not omit the registration of the battery (in spite of self-learning function of battery management systems) if demanded by the car manufacturer.