



Technical Failures of Accumulatory Batteries

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Abstract: The article provides information on defects, their signs and possible causes of occurrence during the operation of car lead-acid battery batteries. In addition, the main factors of the causes of operational defects of accumulator batteries are also mentioned.

Keywords: battery cells, Positive and negative electrodes, separator, starter, electrode charging, negative pole plates.

Manufacturing defects are common in automotive battery batteries within the first few months of operation. Their external manifestations and the causes of their appearance are listed in Table 1.

Manufacturing defects of batteries, their symptoms and possible causes of their occurrence

Defect	Signs	Possible reasons
Circuit breaker inside AKB.	There is voltage at the battery outputs, but the strater does not rotate.	Breakdown of bridges between banks. Poor welding of the pole terminals
A short circuit between the positive and negative electrode plates	In a defective can, the can does not "boil" when charging with a charging device whose density is lower than that of others. During the operation of the starter, intensive gas release occurs in the bank.	Damage to the separator or its incorrect placement during assembly. Poor quality of the separator material or deviations from its dimensions. Bending of electrodes.
Active mass of electrodes full not forming.	A fully charged battery cannot provide more than 2-3 starts of the engine, and it boils intensively during charging and discharging	Forming - electrode charging process operation is broken.
Disconnection of electrodes (plates) from connecting bridges.	"Electro-lithium boils in such a can during the operation of the starter." The battery does not decrease in electrolyte density during inactivity.	Low quality of welding of the plate with a bridge.

* Details that provide electrical contact between the cans.

If the warranty period has not expired and there is a suspicion that the battery failure is due to the manufacturer, it is necessary to contact a specialized workshop (its address should be indicated on the warranty card). It should have a cash register or goods receipt, a warranty card with the date of sale and the name of the seller-organization. In addition, it is advisable to indicate the characteristics

of the battery at the time of sale - electrolyte density, no-load output voltage, etc. This will help the examination [1,2,3].

It appears as a result of careless operation of the battery in the car. The main malfunctions - the level of electrolyte and the condition of electrical equipment - are not monitored. The defects listed in Table 1.2 make the battery almost unusable for further use. The only exception is the leakage of the active mass of the electrodes (separation of small particles from the surface of plastics) at the initial stage. Because the formation of a large amount of sludge (flowed active mass) leads to the cleaning of the plate grids and the loss of AKB performance when turning on the starter.

Operational defects of AKB, their symptoms and possible causes of their occurrence

Defect	Signs	Possible reasons
Strong oxidation of pole terminals	There is voltage at the battery outputs, but the starter does not turn. The terminals get hot.	Cleaning of the pole terminals is not performed.
Leakage of the active mass - dissolution of the grid of electrodes.	Dark color of the electrolyte. Rapid drop in battery voltage during starter operation.	Long-term operation of the battery with low charge and low electrolyte level.

The causes of operational defects appear due to the factors mentioned below.

Low level of charge. Less than 75% (a charge level of 65% is allowed in summer) may be the result of the following. [4].

- loose tension of the generator drive belt;
- generator and voltage regulator failure. With the engine running, the voltage at the battery outputs will be less than 13.68;
- starter failure, which leads to an increase in current consumption or repetition of engine starting actions;

To regenerate accumulator batteries, it is carried out in local conditions using negative polarity plates.

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