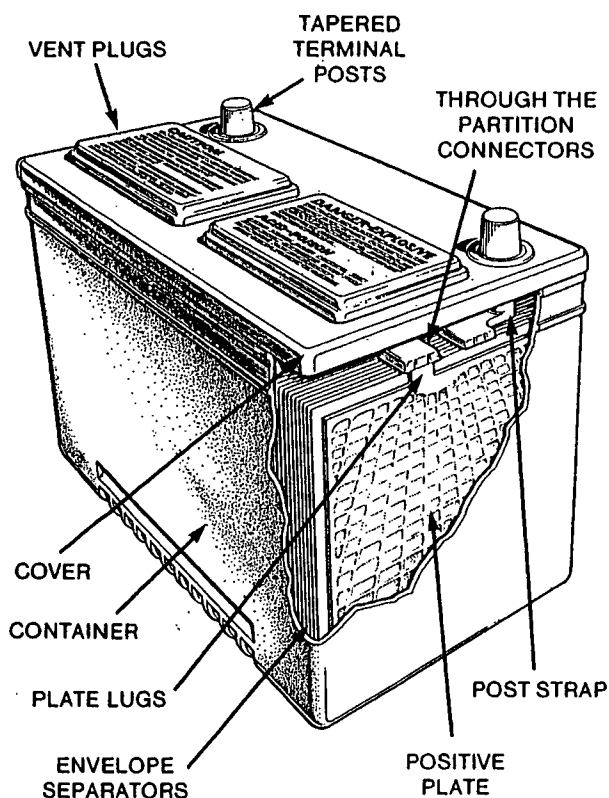


THE BATTERY

The typical automotive lead-acid storage battery stores electrical energy in chemical form and releases it when required by the automobile. It supplies the energy to drive the starter motor, and powers the ignition system when the car is starting. If the charging system fails, the battery may be called on to provide all the electricity needed by the car.

Unlike most of the smaller batteries that power flashlights and toys, an automotive battery is rechargeable. The energy that's "taken out" of the battery can be "put back in" by the car's charging system.

How A Battery Works



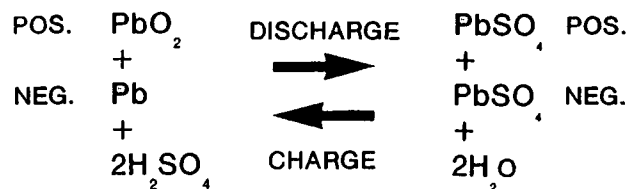
(Figure 8) Interior of a Battery.

The backbone of a storage battery is the grid, a framework that supports the electrically active material in the battery, which is arranged in plates. The grid supports both positive and negative active material, and provides a conductor path from the plate terminals where the cables are connected.

The primary ingredient of the active material is lead, although positive plates and negative plates are made with a slightly different formulation. Positive and negative plates are alternated, with separators placed between them for insulation, to form a cell. A connection is made between all the positive plates and between all the negative plates in each cell of the battery.

Each cell can produce a maximum of 2.1 volts. These cells are welded together in series to create a battery of the desired voltage. A 6-volt battery, for example, has three cells, and a 12-volt battery has six cells.

Once all the battery cells are welded together and placed in the battery case, the electrolyte, or acid, is added. Then the battery is given its initial charge, which establishes its electrical performance. During this process, the positive and negative plates undergo a chemical reaction that changes the active material into lead dioxide and lead respectively, storing up the electrical energy in a chemical form.



(Figure 9) Chemical reactions within a lead-acid storage battery.

When the battery is in use and discharging, the positive and negative active material tend to become more similar, reacting with the sulfate in the acid to form lead sulfate. Then as the alternator recharges the battery in the car, it again stores up electrical energy converting the active material back to lead dioxide and lead.

Types of Batteries

Batteries fall into three general categories: wet, dry-charged, and moist-n-charged.

Wet batteries are delivered complete from the factory, full of electrolyte and already charged. The biggest advantage of the wet battery is that it can be installed without having to add electrolyte. The disadvantage, however, is that it has