



AIRCRAFT CELLS & BATTERIES

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Cells and Batteries

Batteries are an integral component of almost all aircraft electrical systems. They mainly serve as backup power for numerous items of avionics equipment, and are used in a wide range of other operations, including starting engines and auxiliary power units, thus assuring continuous power for navigation systems, and to provide ground power capability for maintenance and preflight checkouts. An aircraft battery must have the ability to withstand a wide range of operating temperatures, be easy to maintain, possess rapid recharge capability, and be sturdy enough to tolerate environmental ruggedness.

CELL

A *cell* is a device that stores electrical charges in a chemical form. A cell has two labelled ends, namely the positive (+) and negative (−) terminals. The positive terminal is called cathode and the negative terminal is called anode. The voltage of a typical cell is 1.5 volts (1.5V). The symbol for a cell is shown in Figure 1.



FIGURE 1 Symbol of a Cell

Cell Construction

A cell is composed of several negative and positive electrode plates, interwoven with single/multiple layers of separator material (Figure 2). This separator material varies with respect to the cell type. For example, a mixture of sulphuric acid and water is used as an electrolyte in a lead-acid cell, whereas porous rubber cellulose fibre is used in flooded cells.

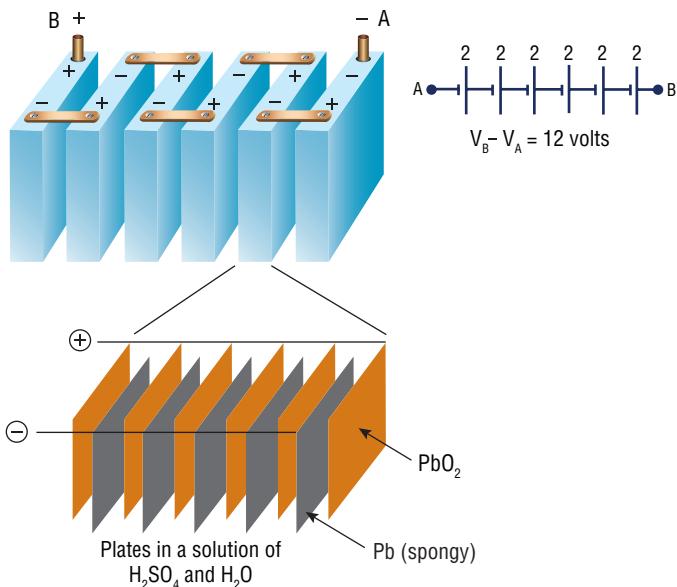


FIGURE 2 Construction of a Cell

BATTERY

A *battery* is formed when two or more cells are connected end-to-end. Several cells are connected to form batteries with different voltages such as 3V, 6V, 9V and so on, based on application requirements. As the voltage gets higher, the electrical force increases, thus delivering higher current. The symbol for a battery is shown in Figure 3.



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