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# Battery Charging and Temperature

One thing that is important is to maintain a good charge on your batteries whether the coach is stored or you live in your coach full time. Your batteries are very costly but with good maintenance practices and some understanding of how the charger does its job, they should last for a long time.

## Charging:

Unlike other types of batteries, lead-acid batteries do not develop a memory and should never be completely discharged. In fact, flooded cell batteries with which we are all familiar, as well as the more costly absorbed glass batteries (AGM), last much longer if NOT severely discharged or overcharged. The further batteries deviate from their fully charged state, the shorter their lifespan. In order to establish the charging voltage, most charging systems depend on continual interplay between the push of current from the charger and the push back from the batteries as they charge.

Think of charging a battery like blowing up a balloon. The more the balloon is inflated, the harder it becomes to inflate. When designing charging systems for lead-acid batteries, manufacturers choose charging voltages low enough to guard against gassing, but high enough to maximize service life. When the charger voltage is set too low, the batteries are not fully charged and sulfating becomes a problem. Sulfating or the build-up of sulfur on the battery plates, can severely shorten battery life. When voltage is too high, batteries can self-destruct due to thermal runaway, i.e., overheating.

The most basic battery chargers simply push current into the battery. The more sophisticated multi-stage chargers do a more complete job of charging the battery. They begin the charge cycle by pushing a higher number of amps into the battery when it is at its lowest voltage. Then, when the battery reaches 80-90 percent of full charge voltage, the charger increases the voltage, or pushes, at the same time reduces the amount of amperage to maintain a "float" charge. At this stage, the minimal charge rate reduces the likelihood of water loss or gassing and prevents battery damage.

## Temperature:

Temperature plays a crucial role in the equation of charging the battery. In order to maximize battery life, the charger voltage should be higher when the batteries are cold and lower when the battery temperatures rise. Most charging systems, however, respond to battery voltage. They do not have the ability to make adjustments based on battery temperature alone. Since it would be impossible to be in a 77 degree environment year-round, it is far simpler to have a temperature sensor installed on the battery or the battery terminal to monitor the battery temperature. This is the part of the equation that keeps the charger operating in the optimum charging range. Don't worry, you probably have a temperature sensor already installed on your coach.

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