

Recreational Vehicle Charging Systems



in collaboration with



PROVIDING THE RIGHT CHARGE TO A RECREATIONAL VEHICLE BATTERY SYSTEM

Almost all new Recreational Vehicles sold into the Australian market today come standard with at least one auxiliary or 'house' battery, which is used to power almost everything. We all know that batteries require recharging after use, but many do not realise how important it is to supply and install the correct charger for the battery and setup.

Each different battery type (e.g. AGM, Gel, Calcium etc.) requires a different style and type of charge output. The way a battery has been designed and constructed will dictate the requirements for being recharged as well as discharged.

If the charging profile recommended by the battery manufacturer is adhered to when recharging any lead acid battery including Gel, AGM, standard and calcium, whether it is deep cycle or cranking, the battery will give higher power output and tolerate many more cycles than a battery that has not been charged in this way. To identify the charge profile a battery requires, and the characteristics that can be expected from the battery in terms of cold cranking amps, amp hours, and some even to the extent of number of cycles, the battery manufacturers' data sheet must be referred to. Most reputable battery brands and retailers can provide this information when purchasing a battery for any task.

There are two major components to a battery charging profile that need to be considered when selecting the right charging profile for a battery:

1. The Voltage Level; and
2. The Maximum Current Limit

It is crucial that the correct **voltage level** is applied to achieve a full state of charge on a battery or battery system. Likewise, the **maximum current limit** must be carefully applied and monitored by the charger so that the battery is not charged too quickly, resulting in damage.

Other factors such as time and temperature come into play as well, which a high quality multistage battery charger will manage during operation.

Recreational Vehicle Charging Systems Cont.

UNDERSTANDING MULTISTAGE CHARGING

Multistage charging is different stages of charge that apply a specific voltage and current level to the battery for a set period of time or until the current acceptance of the battery falls to a certain value. For example, a battery that is currently in use, running a fridge for instance, requires **three charge stages** to safely recharge it to 100% state of charge.

1. **Boost:** Full charger current, charger size should be chosen so as not to exceed the batteries maximum allowable charge current, until the batteries maximum charging voltage is reached (also known as constant current stage).
2. **Absorption:** The voltage is held at the batteries maximum charge voltage until the current acceptance of the battery falls below the required level to determine that it is full (also known as constant voltage stage).
3. **Float:** The battery voltage is held at a safe voltage to maintain it at full for extended periods without overcharging, the load on the battery may be covered by the charger rather than discharging the battery during ongoing charging (such as the fridge running while driving or when solar is available).

Some chargers provide a further two charge stages – Equalisation and Maintenance. These stages are particularly useful and important when the battery will not be used for long periods of time.

Equalisation: A higher than maximum charge voltage is applied to flooded cell batteries (not Gel or AGM) to ensure equal charge between each of the cells is achieved.

Maintenance: The battery voltage is allowed to fall to its open circuit voltage to monitor for battery faults such as shorted or open circuit cells, and also ensure the battery is not overcharged due to prolonged float charging, float will be resumed when required to overcome the batteries self-discharge.

As a Recreational Vehicle Manufacturer, you can spend big dollars on supplying high quality batteries in your products, but if you don't have a quality multi stage charger to properly manage and charge the battery, even the best batteries won't last.

Content supplied by REDARC – visit www.redarc.com.au for a wide range of power products including battery charging solutions.



in collaboration with

