

# Charging ODYSSEY® Batteries

## Proper Charger Selection

A critical factor in the proper use of a rechargeable battery is charging. Inadequate or improper charging is the most common cause of premature failure of rechargeable lead acid batteries.

We suggest the following charger ratings to get peak performance from your ODYSSEY® battery.

<b>Charger Rating</b>	<b>Recommended ODYSSEY® Model</b>
6A-7A charger	PC 535 / PC 545 / PC 625 / PC680
10A charger	PC 925 or smaller battery
15A charger	PC 1200 or smaller battery
20A charger	PC 1700 or smaller battery

As an alternative, small, portable automotive chargers may also be used to charge your ODYSSEY® battery. These chargers are essentially designed to bring a discharged battery to a state of charge (SOC) that is high enough to crank an engine. Once this is successfully accomplished it is up to the engine alternator to fully charge the battery. It is important to keep this design philosophy in mind when using this type of charger.

There is another class of chargers that is designed specifically to maintain the battery in a high state of charge. **These chargers, such as the Motocell™ 12V, 3A charger is not capable of charging a deeply discharged ODYSSEY® battery.** This is due to the fact that these chargers have very low output power. They should only be used either to continuously compensate for parasitic losses or to maintain a trickle charge on a fully charged stored battery.

### ***(A) Selecting the right charger for your battery***

Small portable automotive chargers can also be used, as long as certain suitability criteria are met. Qualifying these chargers for your ODYSSEY® battery is a simple two-step process.

#### ***Step 1 - Charger output voltage***

Determining the charger output voltage is the most important step in the charger qualification process. **If the voltage output from the charger is less than 14.2V or more than 15V for a 12V battery do not use the charger.** This output voltage is measured on the battery terminals with the charger charging, the voltage is steady and the output current has begun to decline. For 24V battery systems the charger output voltage should be between 28.4V and 30V. If the charger output voltage falls within these voltage limits when the battery approaches a fully charged state, low output current, proceed to Step 2; otherwise pick another charger.

#### ***Step 2 - Charger type — automatic or manual***

The two broad types of small, portable chargers available today are classified as either **automatic** or **manual**. Automatic chargers can be further classified as those that charge the battery up to a certain voltage and then shut off and those that charge the battery up to a certain voltage and then switch to a lower float (trickle) voltage.

An example of the first type of automatic charger is one that charges a battery up to 14.5V, then immediately shuts off. An example of the second type of automatic charger would bring the battery up to 14.5V then switch to a float (trickle) voltage of 13.6V; it will stay at that level indefinitely. The second type of automatic charger is preferred as the first type of charger is likely to undercharge the battery.

A manual charger typically puts out a single voltage and has to be manually switched off to prevent battery overcharge. **Should you choose to use a manual charger with your ODYSSEY® battery, do not exceed charge times suggested in Table III below.**

***(B) Selecting battery type on your charger output***

While it is not possible to cover every type of battery charger available today in a product guide such as this, this section will try to give the ODYSSEY® battery user some general charger usage guidelines to follow, ***after the charger has been qualified for use with this battery.***

In general, do not use either the gel cell or maintenance free setting, if provided on your charger. Choose the deep cycle option, should there be one on your charger. Table III below provides suggestions on charge times based on charger currents.

**Table III: Suggested charge times for ODYSSEY® batteries**

<i>Model</i>	<i>Charge time for 100% discharged battery</i>	
	<i>10A charger</i>	<i>20A charger</i>
<i>PC 545</i>	<i>1½ hr.</i>	<i>45 min.</i>
<i>PC 680</i>	<i>2 hr.</i>	<i>1 hr.</i>
<i>PC 925</i>	<i>2 ½ hr.</i>	<i>1¼ hr.</i>
<i>PC 1200</i>	<i>4 hr.</i>	<i>2 hr.</i>

Note that the charge times recommended in Table III are based on an assumption that the ODYSSEY® battery is fully discharged with an open circuit voltage of 11.6 volts. If the battery is only partially discharged the charge times should be appropriately reduced.