

Extend the life of your batteries!

Discover how to extend the life of your batteries with Pride Mobility chargers!

Pride Chargers and Charging Batteries

Pride Mobility products use two 12 - volt valve regulated lead acid batteries in a series connection for a total battery voltage of approximately 24 volts. A lead acid battery is an electrical storage device that uses a reversible chemical reaction to store energy. Lead plates and electrolyte convert electrical energy into a potential chemical energy and back again. The recombination process of a valve regulated lead acid battery, when charged with the correct type of charger, occurs within the battery itself. Improperly charged batteries may cause venting and emit hydrogen gas into the air.

{For more in depth information on batteries including; chemical & physical composition, how batteries work, sizes, testing and storage, please review the Battery Diagnostics Guide under the Technical Troubleshooting Guide section on Pride Service.}

How Pride Chargers Work

Three Stages of Charging

All Pride chargers are designed to charge deep cycle batteries and work in three stages.

- 1. The first stage of charging is called the “bulk” stage.** During this stage current is sent to the batteries at the maximum safe level they will accept. The charger may send between 24VDC (min.) to 29VDC (max.) to the battery at its maximum current rating (2 to 8 amps depending on the charger). Most of the battery charging will occur at this stage. The amount of current will remain consistent until the battery voltage rises to a near full - charge level (80 – 90%).
- 2. The second stage of charging is the absorption stage.** The charger voltage will remain consistent as the current gradually tapers off due to an increase of battery internal resistance. This is so that the batteries will absorb the last 10% of its charge without becoming overheated.
- 3. The third and last stage is the float stage.** During this stage the charger reduces the voltage and current output until the batteries reach 100% charge.

Zero vs. Non-Zero



Charron Medical Services is a JCAHO accredited provider

Start Chargers When the charger is plugged in or powered on, it senses the total battery voltage. Many chargers must read a minimum amount of voltage, or else it will not turn on (charge). This type of charger is a “non-zero” start charger. A “zero” start charger turns on even if the batteries have near or zero voltage in them.

Best Way to Charge Deep Cycle Batteries

The best way to charge deep cycle batteries is to use a charger specifically designed for deep cycle applications. Deep cycle batteries provide a small amount of current over a long period of time. So in turn when charging the batteries, these chargers deliver a small amount of current over a long period of time. Pride chargers automatically adjust the charge voltage and length of charge according to the battery’s state of charge. When the battery is almost full, the charge voltage is switched to a safe level that may be left on indefinitely, safely maintaining the batteries at maximum capacity. When the charger is not allowed to charge long enough so that the batteries don’t come to a full state of charge, “under charging” occurs.

"Operating or storing the batteries in an undercharged state will cause sulfation and shorten the life of the batteries."

Using undercharged batteries forces them to work harder than fully charged batteries, which will also shorten their life span. Overcharging of batteries can occur if an incorrect charger is used, but can also occur when recharging severely discharged batteries. The incorrect charger could cause excessive water consumption, corrosion of the positive plates and create damaging temperatures which will dry out the electrolyte. It is best to have the voltage of each battery within 2/10 of a volt of each other; this way one battery does not get under charged as the other gets overcharged.

When to Charge a Battery

To achieve maximum life of a lead-acid battery, it should be fully charged as soon as possible after each and every use. The battery should not be allowed to sit for an extended period of time after being discharged.

Temperature of Operating Charger

When the charger is operating (charging batteries), the surface or casing of the charger can feel warm or even hot to the touch. For optimum charger operation, the ambient or room temperature should remain approximately 26 degrees Celsius (78.8 Fahrenheit). Pride chargers have over temperature protection built - in to their function. So if a charger gets too hot internally, it will automatically shut down.



Issues that can affect how hot a charger can get when charging

1. Whether is it an on - board or off - board charger {off - board gets warmer}
2. The location of the charger; if in an enclosure (cabinet, under rug, etc).
3. Ambient or room temperature

Always place a charger in a well ventilated area.

Display on Mobility Device during Charging

If the mobility device (power chair or scooter) has an on - board charger, usually there will also be an ammeter. When the charger is in the bulk stage of charging, the ammeter will be at its maximum current reading. Depending on the charger's output, this can be from 3 to 5 amps. When the charger is in the second (absorption) stage, the ammeter will begin to drop off, over a period of hours. The last or float stage will have the ammeter reading all the way down to zero. Periodically the ammeter needle may go slightly above zero and back down again.

"When charging a scooter with an on or off board charger, the battery condition gauge will be in the green, all the way to the right."

With an on - board charger, the ammeter will indicate when the batteries are fully charged. The status indicator LED's of the off - board charger must be observed to determine when the batteries are fully charged. If the battery pack is removed from the scooter when using an offboard charger, then the battery condition meter will not go up during charging. When charging a power chair with an on - board charger, the ammeter will indicate when the batteries are fully charged. Depending on the power chair electronics, various indicators (or sounds) on the joystick can occur during charging. The status indicator LED's of the off - board charger must be observed to determine when the batteries are fully charged.

How Condition of Battery Affects Charging

Depth of Discharge

The deeper the batteries are discharged, the longer the charger will have to work in order to fully charge the batteries.

"To safely charge the batteries, the charger current output should not exceed 20 % of the battery AH."



So using a charger with a higher current output is not the answer, time is. Also if the total battery voltage is too low, a “non - zero” start charger may not turn on or charge the batteries.

Size & Efficiency of Charger

Larger (AH) batteries could use a charger with a higher current output than smaller batteries. If several sizes of batteries are being charged, then it might be best to use different size chargers. Also chargers will differ with the different charger manufacturers. Technicians can test various chargers for what they feel is the best for the job.

"Batteries should be stored fully charged and in a cool, dry place."

Age & Condition of Battery

Many battery manufacturers may rate their batteries for 400 cycles at 80% depth of discharge. So if the batteries are charged when the depth of discharge is 50% or less, the number of cycles will increase. Even if the depth of discharge is maintained at 50% or less, if the end user is an active person and charges the batteries often, then the rated cycles will be attained quicker than an end user who uses (and charges) their mobility product sparingly. On the other hand, the deeper the battery is discharged, the less cycles it will attain.

Temperature of Battery

Battery charging, battery performance and even its shelf life are affected by temperature. During charging, the batteries should remain cool or lukewarm to the touch. Batteries should not get increasingly warm as they are getting charged. Batteries can be used in a reasonably wide ambient temperature range, but most battery manufacturers use 77 degrees F as the optimum working temperature. At higher temperatures there is more chemical activity (increasing battery capacity) but the battery voltage becomes lower. With the increase in battery capacity, the battery life is shortened and this is due to the increase in positive grid corrosion. As the temperature goes down, so will the battery capacity. Also keep in mind that the battery will freeze at different temperatures, depending on the charged state. So the higher the state of charge, the lower the temperature has to be before the battery would freeze. Never attempt to charge a frozen battery. Since batteries will self - discharge, storing them in a cool dry place will slow the amount of self - discharge.

