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IMPORTANT PLEASE READ BEFORE USING YOUR BATTERY

The information in this document is to help you understand the best use of gel cell batteries and the equipment that they are used to operate.

Battery discharge:

Gel cell batteries are designed to provide the number of amperes noted on the battery. This means that a 14 amp/hr battery will safely supply 14 amps. Once the 14 amps have been depleted and a piece of equipment (load) keeps taking power from the battery, the potential for damaging the battery increases. Continually discharging a gel cell battery causes permanent damage that results in the battery not being able to hold a charge.

Most gel cell batteries, at full charge, start at voltage levels higher than the stated value of the battery. In other words, a 12 volt battery might have a fully charged voltage value of approximately 13.6 volts. A higher beginning voltage reading of a battery is normal. Battery manufacturers provide a voltage rating level beyond which a battery should not be discharged. Discharging beyond the manufacturer's low limit will result in excess amperage reduction and permanent damage to the battery. It is important to know that when the battery is operating below the low voltage level, it will continue to provide power to a load, even though it is being damaged. **A 12 volt battery is considered to fully discharged at 10.5 volts or less.** It should be recharged as soon as possible. BioQuip offers a low cost multi-meter, P/N: 2861VM, that can be used to verify your battery's voltage.

Amperage calculation:

Power use calculations are fairly straight forward. Power (watts) = Amps x Volts. To find out the amperage level of a 15 watt light tube that operates on 12 volts, the equation would be
amps = volts / watts:

$$\text{Amps} = \frac{15 \text{ (watts)}}{12 \text{ (volts)}} = 1.25 \text{ amps}$$

A 14 amp/hr battery would be expected to provide 11.2 hours. (14amp/hr / 1.25 amps)

Electronic (light) ballasts:

Operating electronic light ballasts below the recommended battery voltage will not only damage the battery, it can destroy ballasts. The amount of power consumed by a ballast remains constant during operation. As the battery voltage drops, the amperage level increases. Light ballasts are not designed to operate at high amperage levels and when the amperage level increases too far, electrical components start to fail and "burn up". Operating trap motors beyond the maximum discharge does not appear to cause damage to the motor. The fact that the motor is not damaged does not mean the battery is not damaged.

Tips for battery conservation:

If you don't already have one, obtain a multi-meter or volt meter to check battery voltage levels. They are inexpensive and can be found at most auto supply stores and home centers.

Test your battery under load. This means that you need to test the battery with your equipment running. This will give you a true voltage reading.

Before deploying equipment powered by gel cell batteries use a multi-meter or volt meter to test batteries for adequate charge. Defective or damaged batteries should not be deployed.

Determine the operating amperage of the device you want to run and make sure that the device will not run the battery below the discharge limit while the device is unattended.

For operation of equipment beyond the battery capacity, use a solar panel to add energy to the battery during daylight hours.

Use larger batteries or multiple batteries in parallel for more capacity.

Use a low voltage disconnect switch to shut down the device when the low battery voltage level of 10.5 volts is reached. BioQuip supplies a Low Voltage Disconnect, P/N: 2805LVD.

A fully discharged battery may take 14 hours to regain full capacity. Automotive chargers such a BioQuip part number 2865 can speed up the charging process.

Overcharging the battery is possible if your charger does not have a float function. Make sure the charger has a float function when leaving the battery on the charger for longer unattended periods.

Batteries purchased from BioQuip that do not hold a charge or are at less than 10.5 volts are not returnable for credit and no warranty will apply.

When not being used for longer periods of time, most manufacturers recommend that you recharge your batteries in storage at least every 3 months.

Batteries need to be used to function properly. It is better to run a battery or cycle it for 3-4 hours and then recharge it than just "top off the charge". When a battery is working the chemistry is different than just sitting around.