



New Batteries should be given a full charge before use.

Now Deep Cycle batteries need to be cycled several times before reaching full capacity (50-125 cycles, depending on type). Capacity will be limited during this period. \*XC2 formulation can reach full capacity in as few as 25 cycles.

Battery cables should be intact, and the connectors always kept tight. Always use insulated tools to avoid shorting battery terminals. Regular inspection is recommended.

Vent caps should be correctly installed and tight during vehicle operation and battery charging.

Batteries should always be kept clean and free of dirt and corrosion. Batteries should always be watered after charging unless plates are exposed before charging. If exposed plates should be covered by approximately 1/8" of distilled water. Check distilled level after charge. The distilled level should be kept 1/4" below the bottom of the fill well in the cell cover.

For best battery life, batteries should not be discharged below 80% of their rated capacity. Proper battery sizing will help avoid excessive discharge.

## Frequently asked questions

What is the float voltage for standby applications?

A. 2.17 Volts per cell adjustment for the temperature as above.

How to charge USBMC deep cycle batteries?

A. There are numerous correct ways to charge the batteries. Typically, charge at C/10 amperes, (where C = the 20-hour capacity of the system express in Ampere Hours) until the battery voltage rises to 2.583 Volts per cell (i.e. 7.75 volts for a 6V battery). Hold this voltage constant for 2 to 4 hours and stop charging. A similar method would be to charge at the following upper limits and terminate the charge when the time limit is reached:

Charge Current = C/10 Amperes  
Charge Voltage = 2.583 Volts per Cell  
Charge Time = 10 Hours  
Battery temperature adjustment: reduce the voltage by 0.028 Volts per Cell for every 10 degrees (F) above 80 degrees (F), increase by the same amount for temperatures below 80 degrees (F).

# Proper care and maintenance of Deep Cycle batteries



- Marine
- Car Audio
- RV
- Electric Vehicle
- Renewable Energy
- UPS Symptoms
- Lift & Accessories
- Golf Carts

Water used to replenish batteries should be distilled or treated not to exceed 20 T.D.S. (total dissolved solids, parts per million.) Care should be taken to avoid metallic contamination (iron).

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Avoid charging at temperatures above 120 degrees F or ambient, whichever is higher.

Deep cycle batteries need to be equalized periodically. Equalizing is an extended, low current charge performed after the normal charge cycle. This extra charge helps keep all cells in balance. Actively used batteries should be equalized once per month. Manually timed charger should have the charge time extended approximately 3 hours. Automatically controlled charger should be unplugged and reconnected after completing a charge.

In situations where multiple batteries are connected in series, parallel or series/parallel, replacement battery(s) should be of the same size, age and usage level as the companion batteries. Do not put a new battery into a pack which has 50 or more cycles. Either replace with all new or use a good used battery(s).

Always use a matched charger and battery pack system. Unmatched chargers will cause potential problems.

Periodic battery testing is an important preventative maintenance procedure. Hydrometer readings of each cell (fully charged) gives an indication of balance and true charge level. Imbalance could mean the need for equalizing; it is often a sign of improper charging or a bad cell. Voltage checks (open circuit, charged and discharged) can locate a bad battery or weak battery. Load testing will pick out a bad battery when other methods fail. A weak battery will cause premature failure of companion batteries.

As batteries age, their maintenance requirements change. This means longer charging time and/or higher finisher rate (higher amperage at the end of charge). Usually older batteries need to be watered more often. And, their capacity decreases.

Lead acid batteries should be brought to full charge at the earliest opportunity. Avoid continuously operating batteries in a partially charge condition. This will shorten their life and reduce their capacity.



Extreme temperatures can substantially affect battery performance and charging. Cold reduces battery capacity and retards charging. Heat increases water usage and can result in overcharging. Very high temperatures can cause “thermal run-away” which may lead to an explosion or fire. If extreme temperature is an unavoidable part of an application, consult a battery/charger specialist about ways to deal with the problem.

Inactivity can be extremely harmful to all lead acid batteries. If seasonal use is in application, we recommend the following:

1. Completely charge the battery before storing.
2. Remove all electrical connections from the battery, including series/parallel connectors.
3. Store the battery in as cool a place as possible. However, do not store in a location which will consistently be below
4. When not in use, boost every two months.

Battery chargers should be matched to fully charge batteries in an eight-hour period. Defective and unmatched chargers will damage batteries or severely reduce their performance.