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PowerBook: Recharging Batteries (5/95)

Article Created: 2 November 1992

Article Reviewed/Updated: 9 May 1995

TOPIC -----

This article discusses proper methods for recharging PowerBook batteries.

DISCUSSION -----

All PowerBook models do not use the same kind of battery; it's important to know which type of battery you're using in order to recharge it properly.

Apple uses three different types of batteries for PowerBook computers:

- Sealed Lead Acid (SLA)
- Nickel Cadmium (NiCad)
- Nickel Metal Hydride (NiMH)

Each type of battery requires a different recharging technique to ensure maximum battery life.

Sealed Lead Acid

Recharge sealed lead acid batteries whenever they become depleted and never fully discharge the battery. Lead acid batteries should always be kept fully charged.

If a lead acid battery becomes fully discharged, it may experience sulfation. Sulfation occurs when the lead electrodes inside the battery convert to lead sulfate. This destroys the battery making it unable to hold a charge.

Nickel Cadmium

Recharge nickel cadmium batteries when they become depleted. Apple recommends fully discharging and recharging the battery approximately every 90 days.

Nickel cadmium batteries are subject to an issue known as "memory effect." If a NiCad battery is only partially discharged then recharged many times, it will begin to "remember" the level it was discharged to and won't fully recharge.

Here's an example: Let's assume your PowerBook battery has a normal capacity of 2.5 hours and you use your PowerBook for 1 hour a day, then recharge the battery

overnight. After a period of time, approximately between 30-90 days, you'll discover that your battery now has a capacity of a little over an hour, instead of 2.5 hours.

The only way to recover the battery's full capacity is to fully discharge it, then fully recharge it.

Nickel Metal Hydride

Recharge nickel metal hydride batteries when they become depleted. Fully discharge and recharge the battery approximately every 30 days.

Nickel metal hydride batteries are also subject to "memory" and should be treated like nickel cadmium batteries.

How to fully discharge NiCad and NiMH Batteries

The best way to fully discharge NiCad or NiMH PowerBook batteries is to use your PowerBook normally, but to ignore the low-power messages that appear on the screen. Be sure, however, to save your work frequently. When the computer goes to sleep automatically, recharge the battery completely before using that battery again.

Length of time to recharge

Allow plenty of time to recharge a battery. It may take six to eight hours to completely charge a battery on some PowerBook models, longer if you're using the computer.

When you use the power adapter to run the computer and recharge the battery simultaneously, the battery may not be completely recharged during your work session. It's a good idea to leave the adapter plugged in overnight occasionally to assure that the battery is fully charged.

Here are some ways to recharge a fully depleted battery, from fastest to slowest:

- In an external recharger (one battery)
- In the computer while shut down
- In the computer in sleep mode
- In the computer while working

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Article Change History:

09 May 1995 - Reviewed.

05 May 1994 - Updated article to remove references to specific PowerBook models and to clarify information.

07 Jun 1993 - Added information about how long to recharge batteries, and to

add newer PowerBook models.

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Keywords: supt,kpbook,kfax

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19960627 16:33:15.00

Tech Info Library Article Number: 10970