

# Eight steps to better battery performance

Motorola Enterprise Mobility Services has identified best practices for managing and maintaining optimal battery usage. When implemented, this effective plan will help improve your productivity and satisfaction.

## 1. Locate the battery's date of manufacture.

This date may be available as:

- a four digit code on the face of battery, where the first two digits represent the year of manufacture and the next two digits represent the week of manufacture
- a seven character code on the face of battery in the format ddmmmyy, where the first two characters represent the day, the next three characters represent the month (e.g. JUL) and the last two characters represent the year
- an ID string that embeds the date code, where the 6th character is the year (Q=2007, R=2008, S=2009) and the 7th character represents the month (1=January, 2=February...A=October)

## 2. Discontinue using outdated batteries.

Older batteries may not hold a charge as well as newer ones. Using an outdated battery can also lead to erratic operation, a shorter lifespan and impaired product performance. Discontinue usage when:

- A battery is more than two years old.
- Utilized for 18 months in a typical retail application.
- Used for 12 months in a 2-3 shift industrial or warehouse application.

## 3. Remove and do not use all non-Motorola or non-Symbol approved batteries.

Motorola Enterprise Mobility batteries ("Motorola batteries") are designed to work with all features of your device and hence will maximize its performance.

## 4. Change the battery when prompted. (the indicator light reads "low", you get an audible alert, or a pop up indicates a low battery).

If you use the device until the battery has completely drained, it may lock up and appear to be "dead." Many times, locked units can be reset without being sent out for repair. If this occurs, let the unit charge overnight. If the unit is still locked, the unit may require a cold boot.

## 5. Maintain 2-3 spare batteries per unit.

Keeping extra batteries on hand allows you to fully charge the others off shift. This helps increase reliability and minimize downtime. Following are recommendations for the minimum number of batteries you should have available:

Industry	Environment	# of Batteries
Retail	1- to 2-shift applications	2+ batteries
Industrial/Warehouse	24x7 applications	3+ batteries

## 6. Assign a specific terminal to each user.

Locating charging stations throughout the floor is a common practice. However, as their batteries become discharged, users pick up a battery from any station – though it may have only been placed there 15 minutes prior. Having a single person in charge of a central location helps reduce device failure and confusion.

## 7. Tie the batteries to the unit.

The following process helps ensure that each battery is associated with a specific device and a battery charger:

- Label each device with its own unique number.
- Ensure each battery charger and adaptor slot, if applicable, has its own unique label.
- Upon receipt of new Motorola batteries, mark each one with the date received.
- Next, assign each battery to a specific device and label each battery accordingly.
- Finally, assign each battery to a specific adapter, if applicable, in a specific charger, and appropriately label each battery.

## 8. Keep your battery contact surfaces clean.

Dirty contact points are a main source of charging problems. Regular cleaning is required for optimal performance. To clear dirt and residue, gently clean the contacts with a soft cloth. Pure alcohol may be used to remove grease and other contaminants.



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## Battery management and maintenance

Improve uptime with Motorola's Battery Management Process





## First-use battery charging

Prior to first use, follow the charging protocol for your particular battery.

Battery Type	First-use charging instructions
Nickel Cadmium (NiCad) & Nickel Metal Hydride (NiMH)	<p>General Guidelines: <i>(Please refer to the user manual for your charger for specific instructions)</i></p> <ul style="list-style-type: none"> <li>Press the Condition button (if your charger has one).</li> <li>Allow each battery to go through 3 discharge charge conditioning cycles.</li> <li>Each cycle may take up to 8 hours.</li> </ul> <p>NOTE: Batteries should never be conditioned more than once a month, and done so only if the battery sees regular partial charge/discharge cycling.</p>
Lithium Ion (Li-Ion)	<ul style="list-style-type: none"> <li>There is no need to precondition the battery prior to first use.</li> <li>Simply place the battery in charger to begin its cycle.</li> </ul> <p>NOTE: Li-Ion batteries may not reach full capacity for the first few cycles.</p>

If the battery only works for a short period of time, it could have the following problems:

- It is not fully charged.** Typical Lilon batteries generally take 4-8 hours to charge. NiCad or NiMH batteries may take 1-14 hours to charge, depending on the charging device.

- NiCad and NiMH batteries have a memory effect.** Should this occur, fully discharge and drain the battery, then fully charge the battery.

## How to identify a battery problem

A weak battery can cause an error message to appear on your device. Before sending your product out for repair, please ensure the battery is working properly. Following are some common errors that may appear on your device:

Error Message	Solution
<b>Device is dead</b> (Display is blank or the unit will not power on.)	Try to cold boot the terminal first. If this does not work, replace the battery with a known good battery.
<b>When power button is pressed, the LED blinks on the terminal</b>	When the battery is too low and the power button is pressed, the LED will blink on the terminal. Replace the battery with a known good battery.

**NOTE:** When the battery is inserted into the device, it must make connection with metal contacts inside the device's bottom housing. Make sure the contacts are not crushed or broken off.

## Back-up Battery Testing

### How much time does the back-up battery need to be charged prior to testing the device?

A fully charged backup battery has been charged for at least 15 hours. (Please note that the back-up battery charges from the main battery.)

### How long does the back-up battery typically last?

A fully charged back-up battery is designed to last for 30 minutes. Please plan to exchange the main battery for a fully charged replacement within 15 minutes.

### How can the back-up battery be tested?

Charge the back-up battery for 10 minutes, and then test the back-up battery by removing the main battery for one second.

### What is the typical lifetime of a back-up battery?

This depends on many factors, including how the battery has been stored, temperature, humidity, the time left uncharged, or the specific device characteristics. For example, warmer temperatures cause backup batteries to self-discharge faster than colder temperatures.

## Summary

A weak battery can cause product-specific error messages. Always check the battery first before sending your unit in for repair. Reaping the full benefits from your Motorola batteries requires giving them proper care. Following our simple maintenance instructions can help you achieve optimum performance by improving device reliability and extending battery service life.

## The importance of proper battery care

Depleted batteries are a hidden, but common cause of product failure at customer sites. Often, what appears to be a malfunctioning product may just be poor performance caused by a weak or worn battery.

Without first checking the battery's condition, products are frequently sent in for unneeded repair. This can cause:

- Lost productivity.
- Decreased satisfaction.
- Duplicate repair rates with concurrent higher repair costs.

Batteries are a consumable item, and their age and condition will impact the operation of the products they power. To help increase your satisfaction and improve product performance, Motorola Enterprise Mobility Services recommends that you implement our simple battery management process throughout your organization.

**For more information, visit [motorola.com/business/services](https://motorola.com/business/services)**