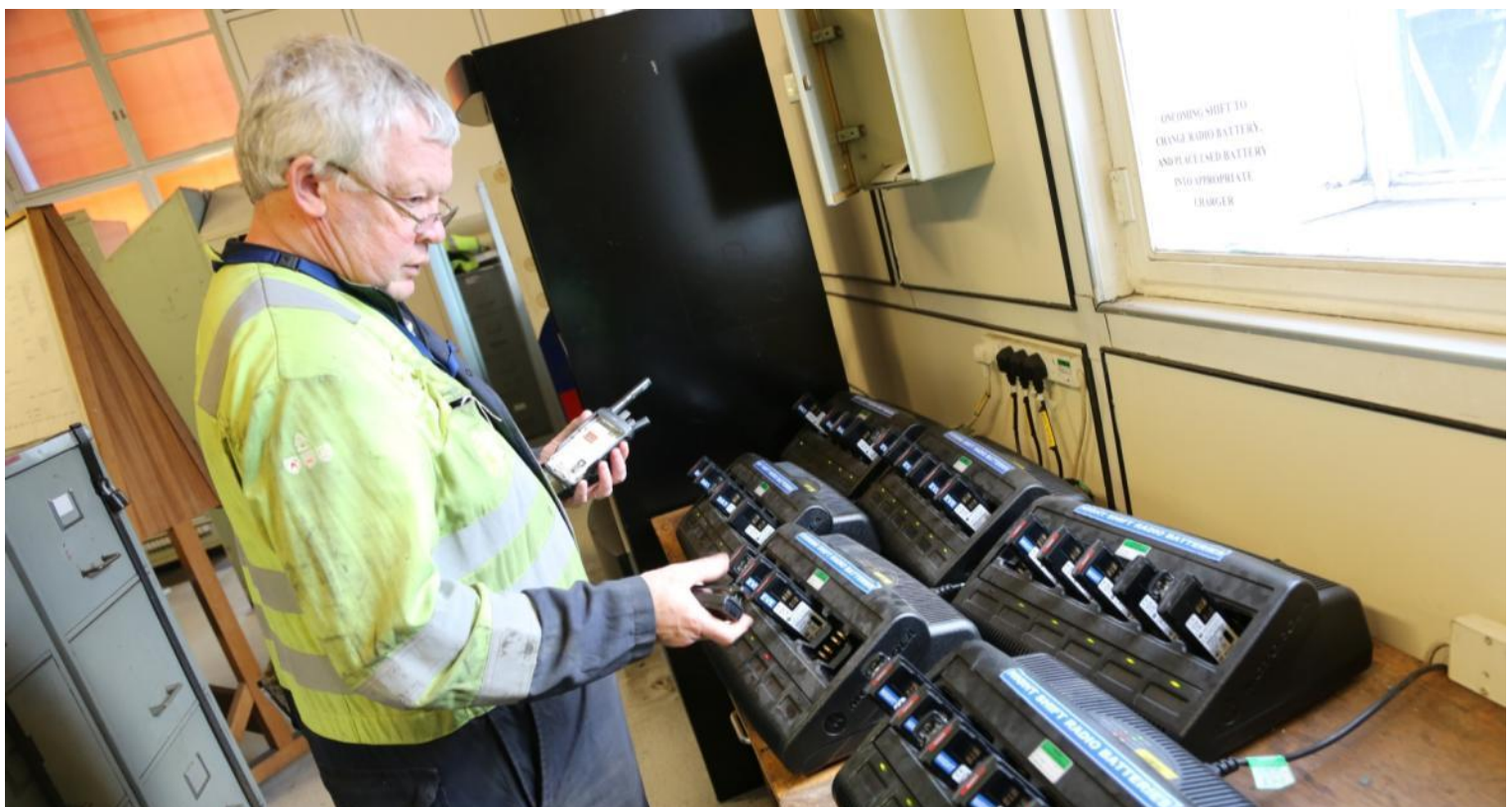




**MOTOROLA**  
SOLUTIONS



# AN INTRODUCTION TO MOTOROLA ORIGINAL™ BATTERIES AND CHARGERS



## RADIO ENERGY SYSTEMS: BATTERIES AND CHARGERS

Motorola Solutions offers different sizes, capacities and types of batteries and chargers to meet a wide variety of user requirements. Understanding the benefits of these technologies, and the advantages of Motorola Original® batteries, will enable you to select the best energy system to help ensure the radio is always ready to use when needed it.

Simply put, a radio is only as reliable as the battery that powers it. Using the right battery and charger with the radio can add real value for users by providing a complete, customized solution that they can rely on. And, for Motorola's Authorized Channel Partners, providing the right energy system with the radios can help increase customer satisfaction and generate additional revenue.

## RELIABILITY YOU CAN TRUST

Motorola batteries are "Proven Tough" for reliability and performance. Our design engineers draw on vast experience from radio user feedback, thousands of hours of simulation and testing and years of real-life usage that enables them to design energy solutions you can trust to perform when needed. Heavier duty casings, sturdier internal circuitry, better shock absorbing materials and premium quality cells all add up to reliable, high-performing energy solutions that can withstand the electrical shocks and physical bumps and drops they will encounter in every-day use. And, of course, all Motorola batteries and chargers are tested with our radios as a complete system to ensure they comply with all relevant regulatory standards.

## MOTOROLA ORIGINAL BATTERY PORTFOLIO TIERING

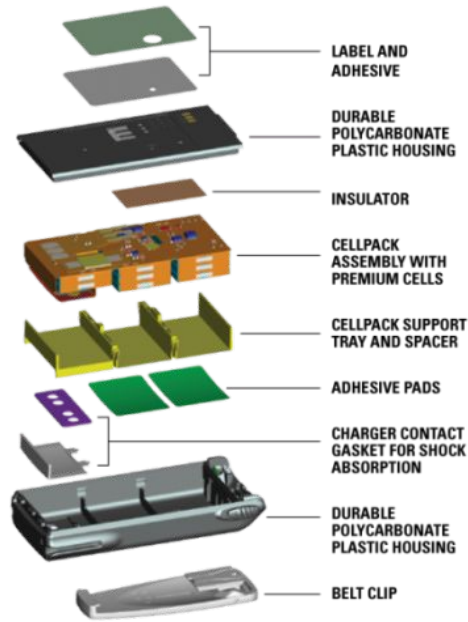
Different users have different requirements for operating conditions, performance and budget. In order to meet the needs of these different users, Motorola offers three tiers of batteries:

- **MagOne** for budget-focused users
- **Motorola Standard** everyday workhorse
- **Motorola IMPRES™** gives ultimate performance



## BATTERY PACK CONSTRUCTION

There is a lot more to a Motorola two-way radio battery pack than just the battery. The cells form the heart of the battery pack, but careful design of all the other components of the pack are required to optimize both electrical and mechanical performance under a wide range of conditions. Internal circuitry, connectors, adhesive pads and insulators all contribute to battery performance and reliability. Support trays, spacers, gaskets and housings have to protect the cells and look good with the radio. Motorola combines all these elements to ensure all our batteries will perform in the most difficult and demanding conditions.

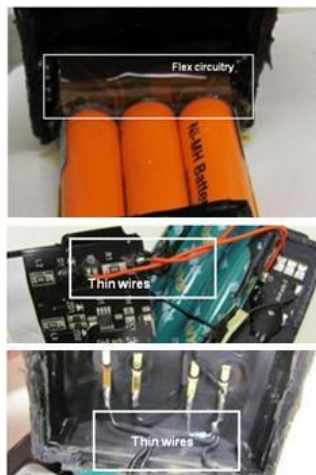


## MOTOROLA ORIGINAL BATTERIES ARE PROVEN TOUGH

Unlike aftermarket battery brands, Motorola batteries are designed and developed as an integral component of our two-way radios. No other battery manufacturer can offer that certainty and compatibility with Motorola radios.

## FLEX CIRCUITRY vs. WIRES

Wires need to be stripped and soldered by hand creating weaknesses and potential points of failure both in production and in use. Flex circuitry allows for more consistent manufacturing quality enabling safe and reliable connections between cells. Flex circuitry is also capable of withstanding significantly more knocks, drops and vibration so can better resist the abuse of daily use throughout the life of the battery. Motorola uses flex circuitry in our battery packs to help ensure superior quality, performance and reliability.



Motorola engineers, manufactures and tests to stringent specifications to make sure our batteries withstand the most unforgiving environments. So you can be confident our radio batteries perform reliably, when you need them most.

## ADHESIVE PADS vs. GLUE

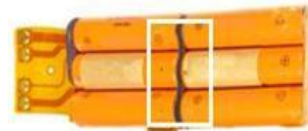
Using glue to hold the batteries in place can be unreliable – it is easy to use too much or too little and the glue can creep between batteries and displace the cells. Instead, Motorola uses adhesive pads: they can be controlled and placed precisely, allowing quality production time after time. Pads also provide better shock and vibration absorption helping improve long-term reliability.



We tested Motorola batteries against the others. Read the [Proven Tough Positioning Paper](#) to see the results.

## INTER-CELL INSULATION vs. NO INSULATION

Using no insulation means shocks and heat can easily transfer from one battery to another. Motorola physically insulate between cells to ensure they do not butt up against each other, helping prevent shock which can cause damage from transferring between cells when the battery is dropped. Inter-cell insulation can also prevent temperature changes generated through charge or discharge from transferring between cells, helping improve reliability.



Inter-cell insulation



No insulation

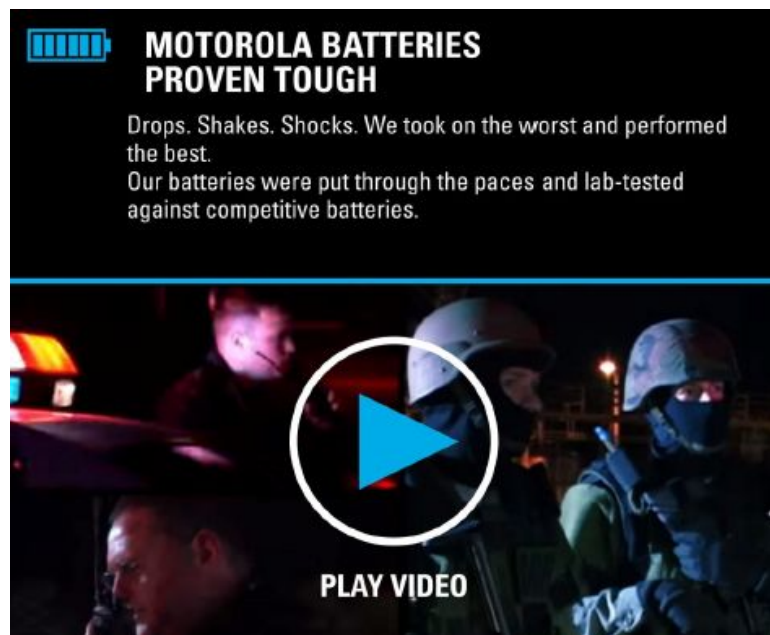
## REGULATORY COMPLIANCE AND QUALITY STANDARDS

Regulatory compliance is not just a legal requirement, but can help protect the health and safety of radio users and those around them. Motorola ensures our batteries and chargers meet all relevant standards, including those for RF energy exposure, conducted emissions and Restriction of Hazardous Substances (RoHS). Non-Motorola batteries do not always meet these criteria, and have even been known to cause the radio to fail. We also apply rigorous quality procedures to both design and manufacture so users can be confident that their Motorola radio and battery meet requirements for performance, reliability and legal compliance.



## WATCH THE VIDEO: "PROVEN TOUGH" MORE THAN A MARKETING SLOGAN

Drops. Shakes. Shocks. We took on the worst and performed the best. Our batteries were put through the paces and lab-tested against competitive batteries. Click on the image below to watch this impressive video.



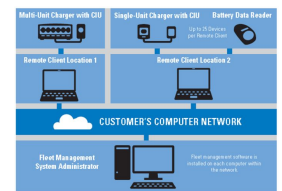
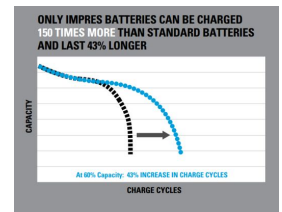
## IMPRES™ ENERGY FOR IMPROVED RETURN ON INVESTMENT AND EXTENDED BATTERY LIFETIME

Motorola standard batteries deliver good performance and lifecycles, but for even greater dependability, we developed the innovative Intelligent Motorola Portable Radio Energy System (IMPRES). IMPRES Energy is a proprietary system unique to Motorola and comprises batteries, chargers and a communications interface between the IMPRES battery and radio, all combining to provide improved availability and lifetime.

IMPRES automatically recalibrates and reconditions the battery exactly when required. It manages how much charge the battery needs, optimizing and adapting the charging cycle specifically to each individual battery to ensure it is in best possible shape when you need it.

This can increase the life of an IMPRES battery by more than 43% - typically 150 charge cycles more than standard batteries. The result is fewer batteries over the life of the radio, reducing total lifetime cost and enhancing reliability, performance and safety.

For even greater control of radio battery fleets, Motorola created the IMPRES Energy Fleet Management solution. This consists of data readers, charger interface units and a software application that allows administrators to remotely record and analyse battery and charger usage and performance to ensure they get the best from their radio system. IMPRES Over the Air (OTA) Battery Management supports automatic collection of battery information over the air while the radios are in use.



<h3>Mag One</h3> 	<h3>MOTOROLA STANDARD</h3> 	<h3>MOTOROLA IMPRES™</h3> 
<p><b>COMPETITIVE BIDS AND PRICE CONSCIOUS CUSTOMERS</b></p>	<p><b>HIGH PERFORMANCE FOR EVERYDAY USERS AND BIDS</b></p>	<p><b>FOR THE MOST DEMANDING RADIO USERS</b></p>
<p><b>RELIABLE PERFORMANCE AT A COMPETITIVE PRICE</b></p> <ul style="list-style-type: none"> <li>• Only value brand designed, tested and certified by Motorola</li> <li>• Competitive quality and reliability</li> <li>• 12 months workmanship, 12 months capacity warranty</li> </ul>	<p><b>BATTERIES YOU CAN DEPEND UPON</b></p> <ul style="list-style-type: none"> <li>• Proven Tough against the competition</li> <li>• FM Intrinsic Safety, submersibility and cold temperature available</li> <li>• 48 months workmanship, 12 months capacity warranty</li> </ul>	<p><b>SAFER, SMARTER, LASTS LONGER</b></p> <ul style="list-style-type: none"> <li>• Over 40% additional cycles</li> <li>• Real time capacity on radio &amp; charger displays</li> <li>• IMPRES Battery Fleet Management System</li> <li>• Proven Tough</li> <li>• FM &amp; UL Intrinsically Safe and submersible versions available</li> <li>• 48 months workmanship, 18 months capacity warranty</li> </ul>

## CHOOSING THE RIGHT BATTERY

When workers rely on their radio for safety or efficient operations, poor performance from cheap batteries can be a false economy. To select the right battery, it is important to consider the required performance, not just the initial purchase price.

**CAPACITY:** If the radio will be busy, making lots of calls, transmitting GPS location updates or connecting to Bluetooth® devices, then consider a higher battery capacity to help last through the entire shift.

**CHEMISTRY TYPE:** Lithium Ion (Li-Ion) batteries have higher energy density so are smaller and lighter than Nickel Metal Hydride (NiMH), but NiMH batteries are more effective at lower temperatures.

**INTRINSIC SAFETY:** Will the radio be used in potentially explosive environments? For EU and EFTA countries, only ATEX-certified radios can be used in those areas. In other countries, users can demand intrinsically safe ATEX, FM (Factory Mutual) or UL certified radios and batteries.

**IMPRES:** If the user wants their battery to last for longer before it needs to be replaced, then IMPRES is the right choice.



## CHOOSING THE RIGHT CHARGER

Motorola has a range of different chargers to meet different user needs.

**SINGLE OR MULTI-UNIT:** When the user wants to charge radios individually, Single Unit Chargers (SUCs) are ideal. For larger radio fleets, Multi-Unit Chargers (MUCs) allow up to six radios and batteries to be charged at the same time.

**FIXED OR ON-THE-MOVE:** SUCs and MUCs get their power from the mains electricity so are intended for use in static environments. Users who want to recharge their radio whilst on the move in a car or truck should use a travel charger that takes its power from the DC socket/cigarette lighter.

**IMPRES:** Automatic battery conditioning helps prolong lifetime.

**INFORMATION DISPLAY:** Battery status and charge capacity can be displayed, taking the guess work out of managing battery fleets.



## YOUR RADIO IS ONLY AS RELIABLE AS THE BATTERY THAT POWERS IT - MAKE SURE IT'S PROVEN TOUGH

No matter how you use your radio, the battery is key to its operation. With a complete portfolio of Motorola Original batteries and chargers that have been designed and developed as an integral component of our two-way radios, you can be confident they will perform optimally when you need them most.



For more information on Motorola Solutions' accessories, visit [http://www.motorolasolutions.com/en\\_us/products/two-way-radio-accessories.html](http://www.motorolasolutions.com/en_us/products/two-way-radio-accessories.html) or find your closest Motorola authorized reseller at [http://www.motorolasolutions.com/en\\_us/partners/search.html](http://www.motorolasolutions.com/en_us/partners/search.html).

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