Subject: Important: MAXAIR Li-Ion Batteries Guidance Reminder & Trade-In Program Update

Dear Valued MAXAIR Customer,

As part of our ongoing commitment to ensuring the safety and efficacy of your MAXAIR Systems, we are reaching out to remind you of some crucial guidelines regarding the care and handling of your MAXAIR Li-Ion Batteries (LIBs) and Chargers.

Pre-Covid-19, we introduced our Technical Bulletin: Li-Ion Battery Advisory and the MAXAIR Ensure Readiness Program, emphasizing the proper care and handling of LIBs and Chargers. This program aims to provide guidance on their use, charging, storage, and transportation, along with a high-discount trade-in program. Our goal is to make it more affordable for you to replace your batteries and chargers to safeguard against potential hazards and ensure your MAXAIR Systems are always ready for use.

Here are some key highlights and reminders:

- Proper Charging Practices:

  Avoid leaving a MAXAIR LIB connected to its charger longer than necessary. Refer to our Ensure Readiness Program, Technical Bulletin, and User's Instructions for maximum charge times and best practices.

- Surge Protection:

  Always connect your MAXAIR Charger to a surge protector to safeguard against external factors.

- Replacement:

  Retire and replace LIBs when their performance falls below your requirements.

  Consider replacing Battery Chargers subject to wear and tear, per the Ensure Readiness Trade-In Program.

  It is crucial to understand that LIBs and Chargers are vital components for the effective and safe use of your MAXAIR Systems. Regular evaluation according to our guidelines is essential.

For more details on our Ensure Readiness Program and the latest Trade-In offers, please visit our website's Special Programs section, Ensure Readiness Program, at www.maxair-systems.com.

Please note the warning: Internal damage may exist in seemingly functioning LIBs, especially if left connected to chargers for extended periods. Such damage is irreversible and may worsen over time.

Your safety is our priority, and we encourage you to review and adhere to these guidelines diligently. Should you have any questions or concerns, feel free to reach out to our support team.

Sincerely,

MAXAIR Systems Marketing

Subject: MAXAIR Ensure Readiness Sale

Dear Valued MAXAIR Customer,

In alignment with our ongoing commitment to the MAXAIR ENSURE READINESS Program

For ***ALL*** Add-On, Backup, and Replacement Battery and Charger Purchases[1]

The enduring impact of COVID-19 continues to affect all facets of our lives, demanding increased dedication and resilience, particularly in your work environments. We understand the vital role your MAXAIR PAPR Systems play in ensuring safety and efficiency during these challenging times.

In our unwavering support of your readiness needs, we are pleased to announce the MAXAIR Ensure Readiness Sale Update, focusing on the essential components that power your MAXAIR Systems: the Battery and Charger.

Who is eligible to participate in The Program?

All MAXAIR Systems Customers – If you have previously invested in one or more MAXAIR Systems, you are eligible to benefit from significant savings on **all purchases**[1] of new MAXAIR Li-Ion Batteries and Chargers.

What discounts are available? 40%!

- Batteries: Enjoy a generous 40% discount off the Current List Price of 2500-36TSC and 2500-37TSC Batteries
- Chargers: Benefit from a 40% discount off the Current List Price of 2600-02 Battery Chargers

When does The Program take effect?

The Program is effective immediately and will remain in place until further notice.

Is there a limit on the quantity of Batteries and Chargers that can be purchased?

No Quantity Restrictions: We fully support your need to ensure the readiness of all your MAXAIR Systems.

To request a quote or obtain further information:

- Visit maxair-systems.com and navigate to the Special Programs section
- Email us at info@maxair-systems.com
- Call our dedicated Customer Service team at 800-443-3842

We deeply appreciate the trust you have placed in us by choosing MAXAIR PAPRs. Rest assured, MAXAIR Systems remains steadfast in our commitment to providing superior respiratory protection to workers across all industries.

Warm regards,

MAXAIR Systems Marketing

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[1] Applies to separate, line-item purchases of Batteries and Chargers; **does not apply to Batteries and Chargers included in System purchases**

MAXAIR TECHNICAL BULLETIN : Lithium-Ion (Li-Ion) Battery Advisory

This Bulletin is for those responsible for handling/transporting, using, and storing MAXAIR Systems Lithium-Ion Batteries (LIBs).

It is intended to provide information for the safe handling/transporting, use/discharge, charge, and storage of MAXAIR Systems Li-Ion Batteries (LIBs). It provides good practice guidance and emergency response guidance while considering the hazards offered by Lithium-ion (Li-Ion) batteries.

Lithium-Ion Batteries (LIBs) - Overview

Lithium Ion (Li-Ion) became the battery chemistry of choice beginning in the early 1990s. It was the natural leader as the demand for performance of portable powered devices grew. Lithium is the lightest of all metals, possesses advantageous electrochemical potential, and provides great energy density per weight. With a few precautions, Li-Ion batteries remain the choice for powering portable medium sized electromechanical devices.

Key Li-Ion Battery Advantages:

- High energy density—more power and use per amount of battery weight
- No prolonged priming when new—one regular charge and ready to go
- Low maintenance—no periodic discharge is needed (No memory)
- No scheduled cycling to prolong battery life
- Low self discharge

CURRENT MAXAIR LITHIUM-ION BATTERIES (LIBs)

2500-36TSC 2500-37TSC

Li-Ion Battery Limitations:

Due to there very high performance levels, Li-Ion Batteries do have some limitations that require attention.

- Protection devices are included in Li-Ion Battery Packs to maintain voltage and current within safe limits.
- Use, charging, transport, and storage conditions need to be controlled.

You may expect highly advantageous performance from your Li-Ion powered MAXAIR System by following these guidelines and recommendations.

GENERAL WARNINGS

Failure to read and follow these instructions and guidelines may result in fire, personal injury and damage to property. Your MAXAIR LIBs need to be handled/transported, used/discharged, charged, and stored properly. Follow the safety rules listed below.

1. Follow these instructions and the instructions in the MAXAIR User's Instructions (UIM) and the Instructions For Use (IFU), and use MAXAIR LIBs in accordance to the warning labels on the MAXAIR LIBs to properly manage and control charging and discharging of all MAXAIR LIBs.
2. Keep MAXAIR LIBs and Chargers away from children.
3. Test MAXAIR LIBs before using to ensure they are operating properly and safely with the MAXAIR Helmet or on the MAXAIR Charger. (See Appendix B. LIB Check Procedure).
4. As with all Li-Ion battery packs, misused and defective Li-Ion cells may explode and cause fire. If at any time a LIB starts to balloon, swell up, smoke or get hot, emit an unusual smell, change color, or appear abnormal in any other way, discontinue

its use immediately, disconnect the LIB from the Helmet or Charger, and observe it in a safe place for approximately 15 minutes. If any of these conditions occur, the LIB should be replaced.

CAUTION: These conditions may result in LIB cell leakage. Since delayed chemical reaction can occur, it is best to observe the LIB as a safety precaution in a safe area outside of any building or vehicle and away from any combustible material. In the event of coming in contact with any leakage from a LIB, do not rub or touch the eyes, immediately rinse all contacted areas thoroughly with water, and immediately seek medical care. If left untreated, the LIB leakage could cause eye and other serious injury.

5. In the event of any damage or perceived damage to a LIB due to bad shipment or other reason, remove the LIB to a safe location for observation and place it in a safe open area away from any combustible material for approximately 15 minutes.
6. Do not place LIBs in direct sunshine, or use or store LIBS inside relatively closed environments (cars, etc.) in hot weather and anywhere extreme temperatures may exist. Doing so may cause the LIB to generate heat, rupture, or ignite. Using the LIB in this manner may also result in a loss of performance and a shortened life expectancy.
7. Do not use, charge or store LIBs in or near microwave ovens, high pressure containers, or conduction cookware.
8. Do not expose a LIB to water, salt water, any other liquid, or moisture, beyond air with a relative humidity between 10%-90%.
9. Do not connect the connection terminals together, even momentarily, with any material including touching with the human body.
10. Do not allow a LIB to make contact with a hard object (dropping, throwing, striking, piercing, etc.) so as to subject it to strong impact, shock, or other mechanical stress.
11. Do not open, penetrate, or attempt to disassemble or modify a LIB case in any manner without contacting the manufacturer. The LIB contains safety and protection devices which, if damaged, may cause the LIB to generate heat, rupture, or ignite.
12. Do not submit to static electricity.

Recommended Temperature Ranges

Degrees Centigrade		Degrees Fahrenheit		Activity
min.	max.	min.	max.	
0	54	32	129	Handling & Transporting
0	54	32	129	Use/Discharging
0	45	32	113	Charging
0	35	32	95	Storage

If recommended temperature range is exceeded, let batteries cool down or warm up, as appropriate, to ambient temperature, and ensure all condensation, if any, has evaporated before charging or use.

USE/DISCHARGE:

WARNING

1. Do not discharge a LIB by using any device except a MAXAIR Helmet.
2. The temperature range over which a LIB is to be discharged is 0° C-54° C (32° F-129° F). Use outside of this temperature range may damage the performance and reduce the life expectancy of the LIB.

CAUTION

When the LIB has reached its usual and customary useful life (See Appendix A. Useful Life) -

1. Immediately discontinue use of the LIB and replace it.
2. Insulate the connection terminals with adhesive tape or similar material before disposal.

CHARGE:

WARNING

1. Always use a MAXAIR charger when charging a LIB; never use any other type of charger for a MAXAIR LIB.
2. Never connect a LIB to any device other than a MAXAIR helmet or a MAXAIR charger.
3. Never charge a LIB outside the temperature range of 0° C to 45° C (32° F to 113° F). Charging the LIB at temperatures outside of this range may cause the battery to become hot or damaged. Charging the LIB outside of this temperature range may also harm the performance of the LIB or reduce the LIBs life expectancy. When the LIB becomes hot, the built-in safety equipment is activated, preventing charging further. Additional heating can destroy the safety equipment and can cause accelerated temperature increases, ignition, or other damage to the LIB.
4. Do not continue charging the LIB if it does not recharge within the maximum charging time. (See Appendix C. Reference Information) Doing so may cause the LIB to become hot, rupture, or ignite.
5. Always charge in an isolated area, away from flammable materials.
6. When charging LIBs, always monitor the charging process and react to potential problems that may occur.
7. Always disconnect the LIB from the Charger when it is fully charged - Charger LED is lighted Green or the maximum charge time (Appendix C.) is reached, whichever occurs first.
8. Even though LIBs and Chargers may still appear to be working properly, internal damage may already exist, most especially if your past protocol allowed them to remain connected for long periods while the charger was connected to a main power source. Any existing internal damage is not reversible and will (likely) increase over time.

STORE:

WARNING

1. Store in closed containers and packaging that prevent short circuits and damage during storage or transportation.
2. In case of mixed storage of goods and articles, organize separate storage areas for LIBs, for example, by maintaining a distance of 2.5 meters between the LIB storage area and other goods.
3. Store in limited quantities and in isolated area with frequent surveillance.
4. Keep in a dry, cool and well-ventilated place, within the recommended storage temperature range of 0° C-35° C (32° F-95° F). Cooler and dryer environments of storage are safer and extend useful life.
5. The temperature range of 19° C-25° C (66° F-77° F) at 30%-50% full charge will optimize battery useful life.
6. Perform a boost charge and LIB Check Procedure (Appendix B.) every 3 to 6 months; this will help prevent the potential of an over-discharge.

HANDLING & TRANSPORT:

Lithium-Ion batteries are classified as Dangerous Goods for the Transport by Road/Rail, Sea and Air. When considering transporting LIBs to other locations, conform to the requirements of the UN Regulation on the Transport of Dangerous Goods.

Internal transfer of Lithium-Ion batteries should follow the minimum safety rules imposed by the local legislation/regulation regarding the handling of Dangerous Goods.

When handling LIBs, use caution, specifically to avoid shorting the connector terminals.

WARNING

1. Do not exceed the temperature range of 0° C-54° C (32° F-129° F) when handling and transporting LIBs.
2. Do not expose battery packs to direct sunlight and/or heat for extended periods.

Appendix A. Useful Life

All batteries, including Li-Ion batteries, begin aging when they are manufactured. The useful capacity (Recoverable Capacity) of a Lithium-Ion battery decreases each year; however, estimates from different sources vary widely.

Many “use” variables can have an impact on battery useful life as well, including temperature (even humidity and atmospheric pressure), charge and discharge cycles, and physical handling and storage conditions.

Signs of Li-Ion Battery aging include:

- The battery doesn’t perform as well as it used to
- The battery rapidly self-discharges
- The battery is physically swollen
- Charging causes the battery to overheat
- The battery can’t charge at all
- The battery powers off unexpectedly
- Charging times vary from typical when first used (see Appendix C. Reference Information)

Determining When To Replace a Li-Ion Battery

When is the right time to replace a Li-Ion battery is just before it fails; however, this is extremely difficult to determine in most instances.

Guidelines include:

- Battery run-time per full charge: The battery’s run time has decreased below 80% of its original run time
- Charging time: The battery takes longer than usual to charge
- Charging temperature: The battery gets warmer when charging
- Other signs: The battery makes hissing, cracking, or popping sounds, emits a strong or unusual odor, or is smoking (safe-guards internal of the battery pack usually prevent things from going this far.)

Voltage Measurement[1]:

Routine and periodic measuring the voltage of Li-Ion Batteries is a practical indicator of the charge status of your Li-Ion Batteries and can serve as a easy and cost effective means of determining replacement schedules. For example, we would recommend a battery be considered for replacement when:

- The battery voltage is less than 15.8 volts after a full charge cycle.
- The battery voltage is less that 8.8 volts at any time.

[1] Reference User Instruction, Volt Meter 2500-10, P/N 01523224 available at maxair-systems.com, Resources section.

Appendix B. LIB Check Procedure

MAXAIR LIB Test for Diminishing Battery Capacity

Note: A MAXAIR helmet and MAXAIR charger are required to perform this basic battery test. The helmet and power cord must be in good working order. Set the helmet Air Flow Switch to Low for the test.

CAUTION

If the LIB performs in one of the "Suspect LIB" categories below, discontinue using it and replace that LIB as soon as possible.

Case 1: The LIB has been connected to a charger and the charger green LED is on.

Procedure: Unplug the LIB from the charger and plug the helmet power cord to the LIB. Allow the helmet to settle for about 10 seconds.

Good LIB: The helmet runs with 3 or 2 green indicator lights on.

Suspect LIB: The helmet runs with only 1 green indicator light on.
Suspect LIB: The helmet runs with the red indicator light on.
Suspect LIB: The helmet doesn't run.

Case 2: The LIB has been in storage.

Procedure: Plug the helmet power cord to the LIB to be tested. Allow the helmet to settle for about 10 seconds.

Good LIB: The helmet runs with 3, 2 or 1 green indicator light on.

Suspect LIB: The helmet runs with the red indicator light on.
Suspect LIB: The helmet doesn't run.

Case 3: The LIB is connected to the MAXAIR Charger.

Good LIB: the LIB is felt to be about room temperature.

Suspect LIB: the LIB is warm or hot to the touch.

Appendix C. Reference Information

Lithium-ion Battery main components:

MSDS for Li-Ion Battery Cells available upon request. Call Customer Service, 1-800-443-3842.

Typical Charging Time Specifications:

Time to fully charge a fully discharged MAXAIR LIB

CHARGING TIME						
BATTERY	2600-02 Charger		2600-01 Charger		2610-01 Charger	
	Typical	Maximum	Typical	Maximum	Typical	Maximum
2000-30/30T, 2500-30TSC	5.0 hrs	10.0 hrs	5.0 hrs	10.0 hrs	7.5 hrs	15.0 hrs
2500-37TSC	3.8 hrs	7.5 hrs	3.8 hrs	7.5 hrs	5.8 hrs	11.3 hrs
2000-36/30T 2500-36TSC	2.5 hrs	5.0 hrs	2.5 hrs	5.0 hrs	4.0 hrs	7.5 hrs

Appendix D. Surge Protection

All electrical devices may be harmed or damaged by electrical power surges, such as from electrical storms, while connected to wall outlets without specific surge protection.

MAXAIR Systems highly recommends that all MAXAIR Chargers always be connected to surge protector(s), adequate for all anticipatable occurrences, whenever they are connected to MAXAIR LIBs, as well as whenever they are connected to a mains power source.

To choose an appropriate surge protector you should consult with your Engineering department regarding specifics to your physical plant and geographical environment. You may want to consider the following common fundamentals -

- ▲Indicator light – surge protectors will not last forever – when a surge protector properly diverts a surge, the protector itself can be damaged in the process. An indicator light will indicate that the surge protector is working fine.
- ▲UL Rating - good surge protectors come with a UL rating (or equivalent regulatory mark for non U.S. countries, e.g. CE Mark, etc.), a rating put out by the independent Underwriters Laboratories that tests the safety of electronic devices.
- ▲Clamping voltage - the voltage measurement that prompts the surge protector to start redirecting the excess electricity away from the plugged-in devices.
- ▲A surge protector with a lower clamping voltage will trigger earlier, thus better protecting electrical devices.
- ▲Joule rating - the maximum amount of energy the surge protector can absorb. If the surge exceeds this maximum, the surge protector will be rendered useless. The higher the joule rating, the more energy can be absorbed by the surge protector, therefore, a higher joule rating will often indicate a longer lifespan for the product.

Appendix E. Glossary

LIB
Lithium Ion Battery, Li-Ion Battery

Self Discharge
The rate at which the battery charge level declines while it is just sitting in storage, usually quoted as a decline in %-per-month. Self-discharge increases with age, cycling and elevated temperature.
Discard a battery if the self-discharge reaches 30 percent in 24 hours.

Recoverable Capacity
The amount that a battery can be “fully charged back to” over time, usually quoted as a certain % of the full charge level when the battery was initially manufactured.