CleanSpace™
wearable protective masks

RESPIRATOR BATTERY INFORMATION

GENERAL BATTERY INFORMATION

CleanSpace™ Respirators have an internal 12.6V lithium ion (Li-ion) polymer battery. Lithium ion (Li-ion) batteries have the highest energy density of all battery types, and are widely used today in portable electronic devices across many different industries. The commonly available Li-ion polymer batteries are similar to Li-ion batteries, except they are packaged in a soft polymer film as opposed to the metal case commonly used for Li-ion cells. The soft packaging allows the cells to expand under extreme heat, making them safer and more reliable. The optimal performance for an internal lithium ion polymer battery is up to 5 years depending on use and storage conditions (see recommended conditions below), after which the battery's operating time will reduce and may require to be charged more often. Note: CleanSpace Lithium Polymer batteries can receive short (top up) charges without 'memory' issues. There is no need to fully discharge the battery before re-charging.

BATTERY CHARGE INDICATOR

ALL CleanSpace Respirators are equipped with an indicator of battery charge.

There are three (3) battery indicator lights. Three green lights are lit up when the battery is fully charged and has up to eight (8) hours of operating time. The Respirator should be fully charged before use.

CleanSpace Respirators will function with one (1) or two (2) green battery lights illuminated. If two (2) battery indicator lights are on, the Respirator has between 25% and 75% charge and will typically operate for between 1 and 3 hours. If only one (1) battery indicator light is on, the battery has less than 20% charge and we recommend that you charge the Respirator before use. When the battery approaches a level at which it would not be able to supply the Manufacturer's Minimum Design Flow, an alarm sounds (3 beeps, repeated once per second). All green battery lights are extinguished. **If the low battery alarm sounds you must leave the contaminated area immediately and recharge the battery.**

Battery operating time is strongly affected by breathing and work rate The operating times quoted above are average durations at moderate work rates. Actual operating times may vary from average durations.

LOW BATTERY ALARM

All CleanSpace™ respirators have a battery light and audible alarm indicating low battery charge. The battery alarm is triggered when the battery has approximately 10-20 minutes life remaining (depending on breathing exertion). If the battery alarm sounds (single beep), leave the contaminated area immediately, re-charge the battery. Note: CleanSpace Lithium Polymer batteries can receive short (top up) charges without 'memory' issues. There is no need to fully discharge the battery before re-charging.

CHARGING THE INTERNAL BATTERY

CleanSpace respirators have internal charging circuits that require a suitable DC source to charge. The charging is automatic and requires no user intervention. Use only the CleanSpace specified power source to charge. ONLY CleanSpace™ chargers should always be used to charge the CleanSpace™ batteries or you will invalidate your warranty. **WARNING: DO NOT CHARGE THE POWER UNIT WHEN THE UNIT IS BEING WORN.**

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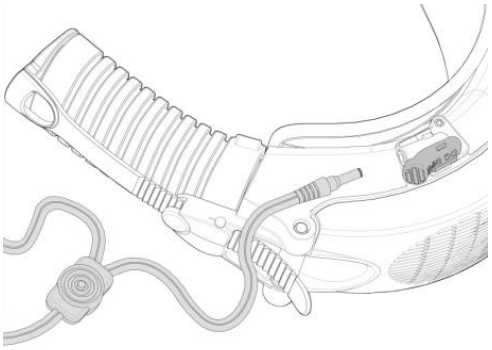
STEP 1. Turn over the power unit and locate the charging port.

STEP 2. Insert the charger cable connector into the charging port (located on the underside of the power unit).

STEP 3. Ensure the charger is plugged into a power socket (indicated by the green LED(s) on the Power Unit flashing).

STEP 4. Charging is complete when the Power Unit shows three (3) green solid lights. A fully charged internal battery typically provides up to 8/9 hours of run time.

STEP 5. When charged, disconnect the charger cable from the Power Unit charging port.



RESPIRATOR STORAGE AND CARE

Lithium Polymer batteries are a highly stable battery technology in storage. To maintain the integrity of the internal battery, the Respirator should be stored under the following conditions when not being used:

Long term storage (> 90 days)	18°C to 28°C @ 45-85% RH
Medium term storage (< 90 days)	-10°C to 35°C
Short term storage (< 30 days)	-10°C to 45°C

STORAGE ON CHARGE: If the Power Unit is left continually on charge, there is minimal battery degradation. Battery life is dependent on the number of cycles (charges and discharges ie use) and the temperature the power unit is stored in. High temperatures (>35C) accelerate the aging of the battery.

STORAGE OFF CHARGE: If the Power Unit is fully charged and then unplugged (ie off charge) without use, the battery will lose charge over 4 weeks. If the Power Unit is never charged (ie power unit is stored without charge), the battery life is dependent on storage temperature (>35C ages the battery). Battery manufacturers recommend best practice that the battery be regularly cycled (ie charged/discharged) optimally every 3 months.

WARNINGS:

Like all batteries, care must be taken to ensure best performance, battery life, reliability and safety. The following precautions must be followed for use of the Power Unit:

- Avoid mechanical shocks or impacts to the Power Unit from any sharp or hard objects
- Do not use or place the Power Unit in extreme heat (ie in direct sunlight, near heat sources). The battery will be damaged at temperatures above 100°C. CleanSpace™ will not function at internal temperatures above 60°C
- Do not immersed or soak the Power Unit.
- Do not dispose of the Power Unit in fire
- Do not disassemble the Power Unit case. There are no user serviceable parts inside. Dissembling the Power Unit case will void the manufacturer's warranty.
- Do not use the CleanSpace™ Respirator if there are any signs of severe mechanical damage in the Power Unit.

IMPORTANT: IN THE EXTREMELY RARE CIRCUMSTANCE WHERE THE BATTERY IS DAMAGED AND ELECTROLYTE COMES IN CONTACT WITH EYES, FLUSH WITH WATER IMMEDIATELY AND SEEK URGENT MEDICAL ATTENTION