



Technical Data Bulletin

OH&ESD

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MAINTENANCE AND MANAGEMENT OF BATTERY PACKS FOR 3M™ POWERED AIR PURIFYING RESPIRATORS (PAPRs)

General Maintenance Guidelines

3M™ Rechargeable PAPR Battery Packs are durable nickel cadmium (Ni-Cad) rechargeable batteries designed to deliver consistent power over a long life. Each battery pack model provides up to 500 charge/discharge cycles. However, the life of 3M battery packs will be significantly reduced when they are exposed to high heat over an extended period of time. To maximize battery life, these maintenance guidelines should be followed.

- 3M battery packs may be charged any time during the discharge cycle – after 30 minutes of use or 8 hours of use. Voltage depression (AKA “memory”) caused by repeated incomplete discharge cycles is not a significant factor for 3M PAPR battery packs.
- Running the batteries down completely (less than 1 volt output) or “deep discharging” will damage the battery cells and will not improve capacity.
- For battery packs without a recharge indicator light, charge the battery pack when you notice reduced airflow. Note that clogged filters or other factors can also cause reduced airflow. Refer to the respirator User Instructions for information on checking airflow and inspection.
- Use only the 3M charger specified for that model battery pack:

Charger	Battery Packs
GVP-112	GVP-111
W-2933	W-2954
Smart Chargers: 520-03-73 (1 unit) (520-01-61SGL in Canada) 520-03-72 (5 unit) (520-01-61FIV in Canada) 520-01-61 (10 unit)	520-01-17 (Breathe Easy/Powerflow, Intrinsically Safe, Blue) 520-01-15 (Breathe Easy, Standard, Black) 520-01-02 (Airstream Headgear, Intrinsically Safe, Black) 520-01-18 (Airstream Headgear, Standard, 4 Hour, Black) 520-01-06 (Airstream Belt-Mounted, Snap) 520-01-44 (Airstream Belt-Mounted, Slide) 007-00-15 (Air-Mate, external charging requires cable 520-04-24)

3M Occupational Health and Environmental Safety Division

3M Center, Building 275-6W-01
P.O. Box 33275
St. Paul, MN 55133-3275

- Always charge 3M battery packs at a temperature of 77° F (25° C) or less. At higher temperatures, the battery pack may not accept a full charge. If a battery pack feels hot, let it cool ½-hour at 77° F (25° C) or less before charging. Do not charge multiple battery packs in an enclosed cabinet without ventilation.
- Using batteries in high temperature environments (above 120°F ambient) or near radiant heat sources may reduce battery capacity.
- Do not charge a battery pack continuously for more than 1 week. Continuous charging generates heat that deteriorates Ni-Cad batteries.
- Infrequently used battery packs should be fully charged, initially, then charged one hour each day to maintain a full charge.
- Without periodic charging, a Ni-Cad battery in storage loses up to 1 % of its charge each day. Allowing a battery to self-discharge during extended storage will not harm the battery pack. Batteries subjected to prolonged storage (longer than 12 months) may lose their capacity to hold a full charge. Battery capacity can be checked by running the PAPR motor/blower unit for eight hours and checking that the required airflow is maintained. Several charge/run-down cycles may restore battery capacity.

Repair and Disposal

The following batteries can be sent to 3M for diagnosis and repair, including cell replacement: 520-01-17, 520-01-15, 520-01-02, 520-01-18 and W-2954CA. Send batteries to: 3M PPR Repairs, 600 E. Meigs St., Valley, NE 68064 or call (800) 328-1667. In Canada, send to: 3M Service Center 1175, California Ave., Brockville, Ontario, K6V 5V8 or call (800) 267-4414. The GVP-111 and 007-00-15 batteries are permanently sealed and cannot be factory serviced. Damaged or worn-out batteries should be disposed of in accordance with local, state and federal regulations at an approved hazardous waste recycling or disposal facility. 3M participates in the RBRC program which provides for 3M PAPR batteries to be dropped off (free of charge) at participating recycling collection sites. To find a local recycling collection site, call the RBRC at (800) 822-8837.

PAPR Battery Management

The purpose of a PAPR battery management system is to assure a reliable supply of fully charged and functioning batteries to respirator users and to maximize the service life of batteries through proper maintenance procedures. Correct battery management increases worker productivity and reduces battery replacement costs. Battery management systems should be tailored to the specific needs of each work site and will vary depending on the number of respirators in use, availability of personnel and workspace, equipment contamination, and other factors. Most successful systems fit into one of the two general outlines below.

End-User Battery Management

This system places the responsibility for battery management on the respirator user. Each user is assigned a battery. The user connects the battery to a charger at the end of each work shift and disconnects it at the beginning of the next shift.

Batteries can be charged in small, ventilated lockers equipped with outlets or in a central charging area. If a central charging area is used, clearly marking batteries or segregating batteries by work shift will help avoid accidental use of uncharged batteries. A reserve of replacement batteries should be stocked and maintained in a charged state to replace damaged or worn-out batteries.

Central Battery Management

This system places responsibility for battery management on one or more trained individuals. These individuals frequently have overall responsibility for respirator cleaning and management. Central battery management becomes more efficient with larger numbers of respirator users. It saves workers time and minimize battery damage from improper charging. Users exchange their discharged batteries for freshly charged batteries at their convenience. Battery age and service history can be tracked by serial number, if desired.

Multiple Charging Stations.

Charging large numbers of batteries with single-outlet chargers at a central location can be difficult and confusing unless the charging station is properly set up. Five outlet (part no. 520-03-72 or 520-01-61FIV in Canada) and ten outlet (part no. 520-01-61) smart chargers are available for the following batteries:

- 520-01-17 (Breathe Easy/Powerflow, Intrinsically Safe, Blue)
- 520-01-15 (Breathe Easy, Standard, Black)
- 520-01-02 (Airstream Headgear, Intrinsically Safe, Black)
- 520-01-18 (Airstream Headgear, Standard, 4 Hour, Black)
- 520-01-06 (Airstream Belt-Mounted, Snap)
- 520-01-44 (Airstream Belt-Mounted, Slide)
- 007-00-15 (Air-Mate, external charging requires cable 520-04-24)

There is currently no multiple outlet charger available for the GVP-111 or W-2954CA batteries. Wall-mounted power strips with outlets spaced four or five inches apart can be used to keep single-unit chargers organized. The power strips should be mounted approximately 10 inches above the table or shelves where the batteries will be placed during charging. Each power strip should be controlled by a switch or breaker and should be connected to an electrical supply with an appropriate current rating. Each charging cable should be coiled to the appropriate length and tied with a plastic cable-tie to avoid tangling.

Contacting 3M

For more information about 3M respirator systems, visit the 3M Occupational Health and Environmental Safety Division web site at: www.mmm.com/occsafety or contact a Technical Service Representative at:

- In the United States, call 1-800-243-4630.
- In Canada, call 1-800-267-4414