MOTO ELECTRIC VEHICLES

LITHIUM BATTERY

Owner manual

MEV105AH-GC

51.2V / 105Ah / $LiFePO_4$

Safe use, charging and care for your MotoEV lithium battery.

Read before using or charging.
Keep this manual with your vehicle.

02 Safety and handling

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02 / READ FIRST

Safety and handling

WARNING Improper handling can cause electric shock, fire, battery leakage, or serious injury. The battery management system provides protection, but it does not replace safe handling.

Keep the battery protected

- Keep the battery dry. Do not immerse it in water or expose it to other liquids. Store it in a cool, shaded, well ventilated location.
- Keep the battery away from flames, heaters, and excessive heat. Do not burn the battery.
- Do not drop, strike, crush, step on, puncture, or open the battery. Protect it from heavy loads and unstable stacking.
- Keep metal objects away from the terminals. Never bridge the positive and negative terminals with a tool, wire, or other conductive object.
- Never reverse polarity. Confirm the positive and negative connections before use.
- Avoid strong static electricity and strong magnetic fields, which can damage the protection system.

Inspect before use or charging

Check the case, cable insulation, terminals, and connectors for damage, wear, or loose connections. Confirm that the battery voltage and connections are normal before use.

If the pack voltage is below 40V, do not charge it. Stop using the battery and contact Moto Electric Vehicles for inspection and service.

Stop using a damaged battery

Stop use and charging immediately if the battery develops an unusual odor, excessive heat, swelling, deformation, leakage, or any other abnormal condition. Disconnect it only if safe to do so, and contact Moto Electric Vehicles. Do not attempt to repair the battery yourself.

If electrolyte contacts the eyes, do not rub them. Rinse immediately with clean water and seek urgent medical attention.

Use the correct charger

Never connect the battery directly to an AC wall outlet. Use only the charger specified for this battery. Follow the charger and vehicle instructions as well as this manual.



03 / PRODUCT DETAILS

Battery specifications

The MEV105AH-GC uses sixteen lithium iron phosphate cells connected in series. Its built-in battery management system monitors the pack during charging and use.

Specification	Rating
Chemistry	Lithium iron phosphate ($LiFePO_4$)
Cell model	LF105 • 3.2V, 105Ah
Rated capacity	105Ah
Nominal voltage and configuration	51.2V • 16 cells in series (16S)
Charging method	Constant current / constant voltage (CC-CV)
Standard charge voltage	58.4V
Normal / maximum charge current	50A / 150A
Discharge cut-off voltage	40V
Continuous discharge current	300A
Peak discharge current	600A for 10 seconds
Maximum AC impedance	50 mΩ at 1kHz
Self-discharge	No more than 3% per month
Overall length	19.57 ± 0.08 in
Overall width	13.74 ± 0.08 in
Overall height	9.57 ± 0.08 in
Approximate weight	101 lbs



04 / EVERYDAY USE

Charging and monitoring

Before you connect

Confirm that the charger is approved for the MEV105AH-GC and uses the specified 58.4V CC-CV charging profile. The normal charging current is 50A; the maximum permitted current is 150A. A maximum rating is not a recommendation to change charger settings.

- Inspect the battery, charger, insulation, and connectors. Do not charge damaged equipment.
- Check pack voltage. If it is below 40V, stop and arrange service.
- Verify polarity and follow the connection sequence provided with the approved charger and vehicle.
- Charge in a dry, well ventilated location away from heat sources. Stop immediately if the battery becomes abnormal.

Bluetooth monitoring

Use the SMART BMS app specified for your battery to view pack voltage, state of charge (SOC), and other available battery information. Connect to the correct battery before relying on displayed readings.

The factory manual lists Android versions above 4.3 and iPhone 4S or later with iOS 7 or later. Current app compatibility may differ. Confirm the correct app and supported phone software with Moto Electric Vehicles.

What the battery management system does

The battery management system (BMS) monitors all 16 series-connected cells and estimates the remaining charge. Its SOC calculation includes an automatic learning function.

Protection	Function
Voltage	Overcharge and over-discharge protection
Current	Overcurrent and overload protection
Short circuit	Hardware protection against discharge faults
Temperature	Temperature monitoring and protection

The BMS can interrupt charging or discharging when it detects an abnormal condition. If power shuts off unexpectedly or protection occurs repeatedly, stop use and contact Moto Electric Vehicles. Do not bypass the BMS.



05 / LONG TERM CARE

Storage and care

Temperature limits

Storage temperature: 50°F to 113°F (10°C to 45°C). Confirm permitted charging and operating temperatures with Moto Electric Vehicles before use in extreme conditions. The performance test temperatures on page 6 are test conditions, not operating limits.

Store in a suitable location

Keep the battery in a dry, clean, well ventilated location at 50°F to 113°F (10°C to 45°C). Protect it from water, direct heat, conductive objects, and physical damage.

Store the battery at approximately 50% state of charge. If it remains unused for six months, recharge it and return it to the recommended storage charge level.

Transport and handling

Maintain 30% to 50% SOC during transport. Protect the terminals against short circuits and prevent exposure to liquids. Secure the battery so it cannot fall, tip, or shift. Avoid dropping it or placing heavy loads on it.

Use suitable lifting equipment and confirm the actual battery weight before handling. Keep the battery and its terminals separated from loose metal objects during storage and transport.

Clean and inspect

Keep terminals clean and dry. Wipe dirty terminals with a clean, dry cloth only when the battery is safely isolated. Poor terminal contact can cause unreliable operation. Inspect the case, insulation, and connectors before returning the battery to service.

When to contact Moto Electric Vehicles

- Pack voltage below 40V before charging.
- Repeated protection shutdowns or abnormal operation.
- Damaged insulation, terminals, connectors, or battery case.
- Unusual odor, heat, swelling, deformation, or leakage.
- Questions about charger selection, mounting, phone compatibility, or temperature limits.

Recycle responsibly

Do not place the battery in household trash or burn it. Return an end-of-life battery to the supplier or an authorized battery recycling facility for proper handling.

Product support and information

Moto Electric Vehicles
motoelectricvehicles.com



06 / TECHNICAL REFERENCE

Performance and test data

The following ratings describe factory test conditions. Actual performance varies with charge and discharge current, temperature, vehicle demand, and care. Cycle ratings are not a warranty term.

Test	Acceptance criterion and method
Rated capacity	105Ah. After a standard charge, discharge at 0.5C to the discharge cut-off voltage. At least one of three test cycles must meet the rated capacity.
Charge retention	At least 97% of rated capacity after one month of storage following a standard charge, then a 0.2C discharge. Nominal test temperature: 77°F (25°C).*
Cycle life at 0.2C	At least 4,000 cycles at 100% depth of discharge. The test specifies standard charging, discharge at 0.2C to cut-off, and a one-hour rest; retained capacity must be at least 80% of rated capacity.
Cycle life at 1C	At least 2,500 cycles at 100% depth of discharge. The specification does not state an end-of-life capacity threshold for this rating.
AC internal impedance	No more than 50 mΩ, measured at 50% SOC with a 1kHz AC impedance tester.

*The factory source gives an inconsistent temperature tolerance for the charge-retention test. Confirm the tolerance with Moto Electric Vehicles when this test is required.

Capacity at different test temperatures

Discharge rate: 0.2C. Capacity is expressed as a percentage of capacity measured at 77°F (25°C).

Test temperature	Conditioning time	Minimum capacity
-4°F (-20°C)	6 hours	70%
32°F (0°C)	6 hours	90%
77°F (25°C)	4 hours	100%
131°F (55°C)	4 hours	97%

