



Customer Bulletin

Commercial Products

November 12, 2020

Storage Best Practices

Samsung® Lithium Ion Battery-Powered Products

Bulletin Type Information Only

Status Final Release

Affected Units Samsung lithium ion battery-powered products, including:

Model Number(s)	Serial Number(s)
04049 (Greensmaster® eFlex 2120 mower)	400000000 through 999999999
04861 (Greensmaster® eFlex 1021 mower)	400000000 through 999999999
04831 (Greensmaster® 1021e mower)	400000000 through 999999999
04590 (Greensmaster® eTriFlex 3370 mower)	400000000 through 999999999
07413LT and 07131TC (Workman® GTX utility vehicle)	400000000 through 999999999

Situation Important Information

For optimum lithium-ion battery life, it is important to correctly prepare the batteries for a long period of storage (e.g., winter storage).

Corrective Action Refer to the following information for best practices to store lithium ion battery-powered machines:

- Before storing the machine, charge or discharge (by operating the machine) the batteries between 40% to 60%.
 - Battery life (capacity) is shortened when batteries are charged to 100% before storage.
 - A 50% charge is optimal to ensure maximum battery life. Storing batteries at this percentage will have the battery-cell voltages at a specific range that greatly reduces parasitic reactions, which can cause inefficiencies that build up over time and reduce the amount of energy that the cell can store and output.
- The temperature that the batteries are stored at will affect their long-term life. Storage for long periods of time at extreme temperatures will reduce the battery life (capacity). Store the machine in a cool (not below

freezing) location.

If a machine is subjected to temps lower than -21°C (-5°F), the battery BMS will not engage the battery pack until the batteries are warmed up.

- For every 6 months of storage, check the battery-charge level and ensure that it is between 40% to 60%. If the charge is below 40%, charge the batteries to between 50% to 60%.
- After charging the battery, disconnect the battery charger from power and from the machine.
- For lithium ion battery-powered greensmowers: Disconnect the power connector from the machine during storage to minimize battery discharge.

Safety Awareness

Follow reasonable and customary safety precautions.

References

Find the latest operator's manuals, service manuals, schematics, parts catalogs, and customer bulletins at www.Toro.com.