



**Motive Energy Systems**  
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## **1 YEAR / 250 CYCLE REFURBISHED BATTERY LIMITED WARRANTY**

All refurbished batteries sold by Motive Energy Systems with 9 to 33 plates will be warranted against failure to deliver 70% of published rated capacity due to defective materials and/or workmanship for either 1 year from date of purchase or 250 cycles, whichever occurs first, when subjected to normal use. A cycle is one discharge (to 80% depth of discharge) and recharge (full charge on proper sized charger). Normal use is no more than one cycle per 24-hour period, no more than 250 cycles per year, operation in properly maintained equipment, under loads for which the battery is properly sized, and in standard operating conditions (no extremes of temperature, humidity or other environmental factors). Capacity is determined by load testing a fully charged battery over a three-and-a-half-hour period. 70% capacity is achieved if no cell will measure less than 1.7 volts (nominal cell voltage 2.1V x 0.60) at test completion.

**If a battery fails to deliver 70% of published rated capacity within 1 year or 250 cycles, Motive Energy Systems will provide parts & labour necessary for the battery to deliver 70% of published rated capacity. Travel outside of Greater Vancouver and any miscellaneous charges are not covered by this warranty and are the responsibility of the purchaser. Motive Energy Systems may at its option provide a comparable replacement battery. If a replacement battery is provided, the defective battery must be returned to Motive Energy Systems before a replacement battery is provided, unless Motive Energy Systems can pick up the defective battery at the same time as delivery of replacement battery. No freight costs are covered by this warranty outside of the Greater Vancouver District.**

### **PURCHASER'S RESPONSIBILITIES**

This warranty is null and void if upon inspection it is determined that the defective battery has been modified, reworked, tampered with, repaired in any way and/or not properly maintained. Purchaser has been provided instruction for proper battery care and maintenance (see reverse). This warranty is not applicable in cases where the battery is over-cycled, improperly charged, abused, physically damaged and/or exposed to extreme environmental conditions.

The following conditions must be met for this warranty to be valid:

1. The battery is properly charged and maintained (watered) as per the provided care and maintenance procedure.
2. Within ONE year of shipping date of battery or 250 cycles – whichever occurs first.
3. Any defect must be reported to Motive Energy Systems within five days from the time it is first discovered.
4. The charging equipment used with the battery meets the minimal requirements
5. Maximum discharge of the battery is limited to no more than 80% of the battery's rated capacity
6. The battery is not exposed to excessive cold, excessive heat, casualty, misuse, abuse, or other damage or deterioration. The average electrolyte temperature of the battery shall not exceed 110°F (43°C) nor drop below 60°F (15°C)

This warranty is in lieu of all other warranties, expressed or implied. The purchaser and/or user of the battery shall indemnify and hold Motive Energy Systems harmless from any claims or liabilities arising out of the use, maintenance, transportation and/or installation of any battery warranted herein. In no event shall Motive Energy Systems be held liable for special, indirect, punitive or consequential damages. Any liability is limited to the purchase price of the battery less reasonable freight costs.



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## Industrial Battery Operation & Maintenance Guide

### RECEIVING YOUR BATTERY

Inspect the battery carefully for damage or loss of electrolyte. Report any shipping damage to the carrier promptly. Check the electrolyte levels to assure it is above the separator protector. Reference "ADD WATER" section if needed. Keep vent plugs in place.

### PLACING IN SERVICE

The battery compartment should be level and clear of foreign matter. The battery should be blocked to provide 1/8 inch clearance. Do not wedge the battery tightly in place.

**CAUTION:** Check to make sure connector polarity of truck and battery are the same. Positive (plus)-to-positive (plus) and negative (minus)- to-negative (minus). Damage to the truck and battery can result if not properly connected.

### OPERATION AND MAINTENANCE

Over-discharge will shorten battery life and affect the vehicle. It is recommended that the battery not be discharged more than 80 percent or sp. gravity below 1.140. Recharge the battery when discharged. Never allow the battery to remain in the discharged condition.

### CHARGING

Recharging should be on a charger matched to the battery voltage and capacity for recharge in the time available. Use of an unapproved charger can ruin your battery and will void the warranty.

#### For proper charging, observe and record.

1. Hydrometer readings at the end of charge are at full charge value of **1.280 (+/-) 0.010**
2. Temperature at the end of charge is no more than 25°F higher than the start of charge and not higher than 115°F.
3. Normal water consumption should average 1/8 inch per day or per cycle of discharge and charge.
4. Do not disconnect battery from charger while the charger is operating.
5. Keep all flames and sparks away from the battery

### EQUALIZE CHARGE

In average motive power service, a periodic extended charge of about **three hours** is recommended. This is required weekly. The battery can be kept in a balanced state of charge between all cells without harmful overcharge.

### ADD WATER

Under normal operating conditions, check the water level weekly until a regular pattern is established. Add water to keep the level above the separator protector.

**It is best to fill at end of recharge. Adding water at other times could result in over filling the battery and therefore loss of acid.**

### CLEANLINESS

Keep the top of the battery clean and dry. Cleaning frequency is determined by the environment and care used in watering the cells. Many locations require washing only a couple of times per year, while sometimes every other week is desirable.

**WARNING:** Wash hands after handling. Ventilate spaces where used or charged. Not recommended for inverted use.

**WARNING:** Do NOT use any type of oil, organic solvent, alcohol, detergent, strong acids, strong alkalis, petroleum-based solvent, or ammonia solution to clean the jars or covers. These materials may cause permanent damage to the battery jar and cover and will void the warranty.

**WARNING:** Avoid short circuits. Do not use non-insulated tools. Do not place or drop metal objects on top of the battery. Before servicing, remove rings, wrist watches and articles of clothing with metal parts that might come into contact with the battery terminals. Metal parts of the battery are always live. Do not place tools or other objects on the battery.