

## Mighty Max Battery ML4DMP249

# Mighty Max Battery 12V 200Ah 4D SLA Battery Instruction Manual

Model: ML4DMP249

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## 1. INTRODUCTION

This manual provides essential information for the safe and efficient use of your Mighty Max Battery 12V 200Ah 4D Sealed Lead Acid (SLA) battery. Please read these instructions carefully before installation and operation to ensure optimal performance and longevity of your battery.

The Mighty Max ML4D SLA battery is a 12V 200Ah rechargeable, maintenance-free battery designed for various applications, including replacements for Wagner Mining Equipment. It features a high discharge rate, wide operating temperatures, long service life, and deep discharge recovery capabilities.

## 2. SAFETY INFORMATION

**WARNING: Risk of fire, explosion, or burns.**

- Do not short the battery terminals.
- Do not disassemble, heat above 40°C, or incinerate.
- The storage temperature should not exceed 50°C.
- Always wear appropriate personal protective equipment (PPE) such as safety glasses and gloves when handling batteries.
- Keep out of reach of children.

- Ensure proper ventilation during charging.
- This battery is non-spillable.
- Must be recycled or disposed of properly.

For detailed safety information, refer to the warning label on the battery itself.



Image: Mighty Max Battery showing the warning label with safety precautions.

### 3. PRODUCT FEATURES

- **Model:** ML4D SLA (Sealed Lead Acid)
- **Voltage:** 12V
- **Capacity:** 200Ah
- **Maintenance-Free:** Designed for convenience with no need for electrolyte top-ups.
- **Spill-Proof:** Utilizes Absorbent Glass Mat (AGM) technology, making it spill-proof and safe for various mounting positions.
- **High Discharge Rate:** Capable of delivering high current when needed.
- **Wide Operating Temperatures:** Performs reliably across a broad range of temperatures.

- **Long Service Life:** Engineered for durability and extended operational life.
- **Deep Discharge Recovery:** Designed to recover effectively from deep discharge cycles.
- **Shock and Vibration Resistant:** Robust construction to withstand demanding environments.
- **UL Certified:** Ensures compliance with safety standards.
- **Dimensions:** 20.87 inches x 9.45 inches x 8.74 inches.



Image: Mighty Max Battery with key dimensions highlighted, showing length, width, and height.

# CONFIGURATION

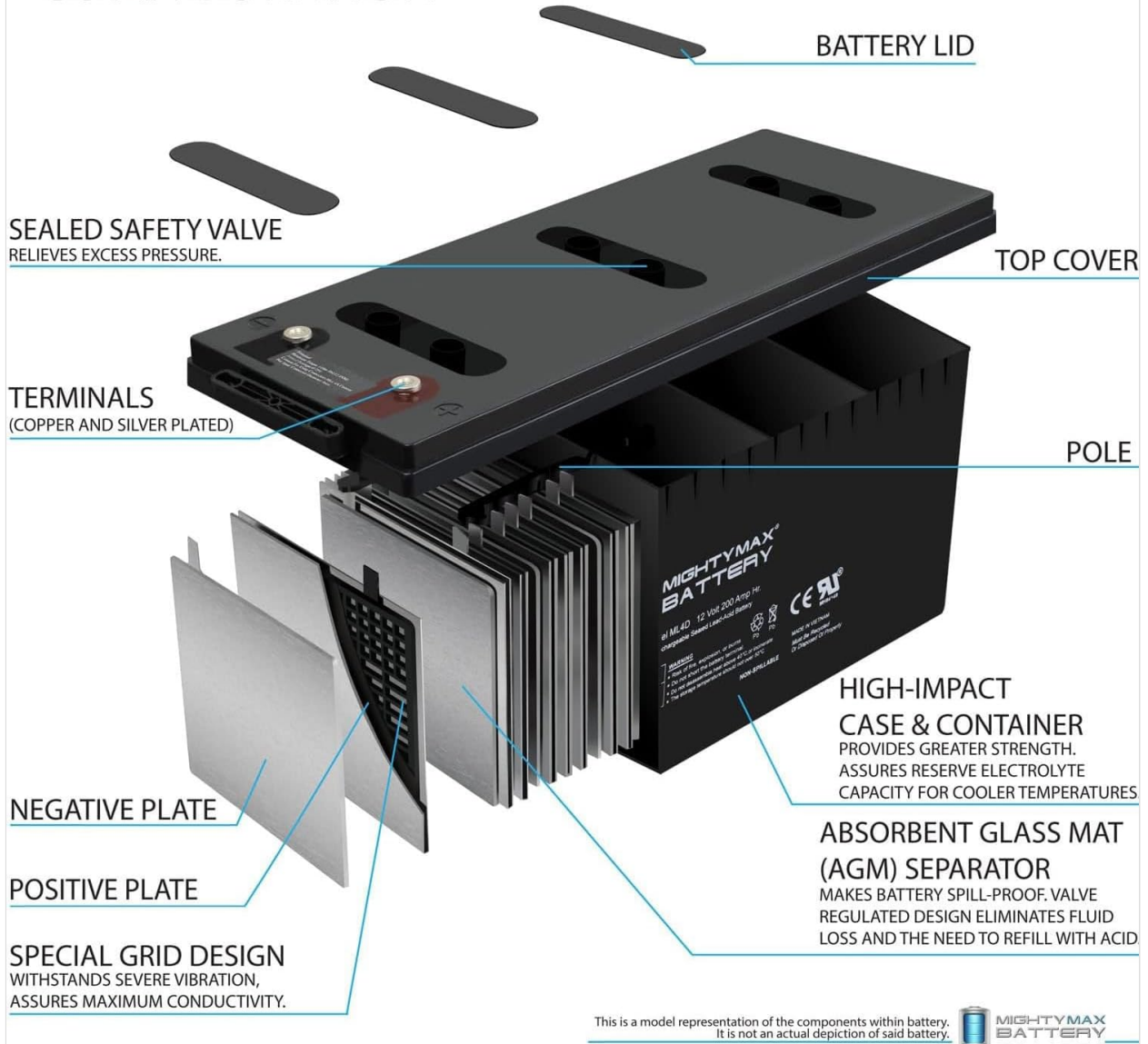


Image: Diagram illustrating the internal components and configuration of the Mighty Max Battery, including battery lid, sealed safety valve, top cover, terminals, negative plate, positive plate, special grid design, high-impact case & container, and absorbent glass mat (AGM) separator.

## 4. SETUP AND INSTALLATION

1. **Unpacking:** Carefully remove the battery from its packaging. Inspect for any visible damage.
2. **Safety Check:** Ensure you are wearing appropriate safety gear (gloves, eye protection).
3. **Terminal Identification:** Identify the positive (+) and negative (-) terminals. The positive terminal is typically marked with a red cap or a plus sign, and the negative with a black cap or a minus sign.
4. **Mounting:** The SLA/AGM design allows the battery to be mounted in any position or orientation, except inverted. Secure the battery firmly to prevent movement or vibration during operation.
5. **Connection:** Connect the battery to your equipment using appropriate cables and connectors.
  - Connect the positive (+) terminal of the battery to the positive terminal of your equipment.
  - Connect the negative (-) terminal of the battery to the negative terminal of your equipment.
  - Ensure all connections are tight and secure to prevent arcing or poor conductivity. The recommended terminal hardware torque is 110 in-lbs (12.4 Nm).

6. **Initial Charge:** It is recommended to fully charge the battery before its first use to ensure maximum capacity and lifespan. Refer to the "Charging" section for details.



Image: Close-up view of the Mighty Max Battery terminals, showing the positive and negative posts and the recommended torque for hardware.

## 5. OPERATING INSTRUCTIONS

The Mighty Max 12V 200Ah 4D battery is designed for reliable power delivery in various applications. Follow these guidelines for optimal performance:

- **Usage:** This battery is suitable for both floating use (standby power) and cyclic use (regular discharge and recharge).
- **Discharge:** Avoid excessively deep discharges, as this can reduce battery lifespan. While the battery has deep discharge recovery, consistent deep cycling should be minimized.
- **Temperature:** Operate the battery within its specified temperature range for optimal performance. Extreme temperatures can affect capacity and lifespan.
- **Charging:** Always use a charger compatible with 12V Sealed Lead Acid (SLA) batteries.
  - **Floating Use Voltage Regulation:** 13.6V - 13.8V
  - **Cycle Use Voltage Regulation:** 14.5V - 14.9V

- **Initial Current:** Less than 60A

Ensure the charger's output voltage and current settings match the battery's requirements. Overcharging or undercharging can damage the battery.

Your browser does not support the video tag.

Video: An official product video from Mighty Max Battery showcasing various features and applications of their batteries, including shock resistance, quick recharging, different terminal types, spill-proof design, mounting versatility, maintenance-free operation, and high performance in varying temperatures. This video demonstrates the general characteristics applicable to the ML4D battery.

## 6. MAINTENANCE

The Mighty Max SLA battery is designed to be maintenance-free, but following these guidelines will help prolong its life:

- **Cleaning:** Keep the battery terminals and casing clean and free from dirt, dust, and corrosion. Use a damp cloth to wipe the casing. For terminals, use a wire brush if corrosion is present, and apply a thin layer of dielectric grease to prevent future corrosion.
- **Terminal Connections:** Periodically check terminal connections to ensure they remain tight. Loose connections can lead to power loss and heat buildup.
- **Storage:** If storing the battery for an extended period, ensure it is fully charged. Store in a cool, dry place with temperatures not exceeding 50°C. Recharge the battery every 3-6 months to prevent self-discharge and maintain optimal condition.
- **Inspection:** Regularly inspect the battery for any signs of physical damage, swelling, or leaks. If any issues are observed, discontinue use and contact support.

## 7. TROUBLESHOOTING

If you encounter issues with your Mighty Max Battery, consider the following common troubleshooting steps:

Problem	Possible Cause	Solution
Battery not holding a charge	<ul style="list-style-type: none"><li>• Undercharging or overcharging</li><li>• Sulfation due to prolonged discharge</li><li>• Internal cell damage</li></ul>	<ul style="list-style-type: none"><li>• Verify charger settings and ensure proper charging voltage/current.</li><li>• Attempt a full charge cycle. If issue persists, battery may be at end of life.</li><li>• Contact customer support if battery is new or under warranty.</li></ul>

Problem	Possible Cause	Solution
Low power output	<ul style="list-style-type: none"> <li>Partially discharged battery</li> <li>Corroded or loose terminals</li> <li>Battery nearing end of life</li> </ul>	<ul style="list-style-type: none"> <li>Fully charge the battery.</li> <li>Clean and tighten terminal connections.</li> <li>Consider battery replacement if age and usage suggest end of life.</li> </ul>
Battery swelling or overheating during charge	<ul style="list-style-type: none"> <li>Overcharging</li> <li>Internal short circuit</li> <li>Faulty charger</li> </ul>	<ul style="list-style-type: none"> <li><b>Immediately disconnect the charger.</b></li> <li>Do not use the battery.</li> <li>Contact customer support for assistance.</li> </ul>

If these steps do not resolve the issue, please contact Mighty Max Battery customer support for further assistance.

## 8. SPECIFICATIONS

Attribute	Value
Model Number	ML4DMP249
Brand	Mighty Max Battery
Battery Cell Composition	Lead Acid (SLA/AGM)
Voltage	12 Volts
Battery Capacity	200 Amp Hours
Amperage	200 Amps
Reusability	Rechargeable
Item Dimensions (LxWxH)	20.87 x 9.45 x 8.74 inches
Item Weight	240 Pounds
Number of Batteries	2 (included in pack)
Recommended Uses	Scooter, Wagner Mining Equipment replacement, various deep cycle applications
Warranty	1 Year Manufacturers Warranty



# MIGHTYMAX BATTERY

# ML4D

(12V 200Ah)

## Overview

The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special oneway valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.



## Battery Construction

Component	Positive plate	Negative plate	Container	Cover	Safety valve	Terminal	Separator	Electrolyte
Raw material	Lead dioxide	Lead	ABS	ABS	Rubber	Copper	Fiberglass	Sulfuric acid

## General Features

- Positive and negative plates in lead-calcium-tin alloy;
- Stable Quality&High Reliability;
- Sealed Construction;
- Long Service Life;
- Maintenance-Free Operation;
- Low Pressure Venting System;
- Low Self Discharge;
- Six months shelf life at 20°C;
- Design life 10 years

## Battery Specification

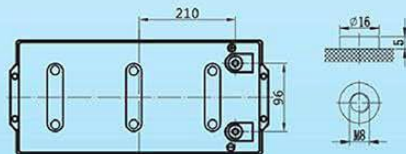
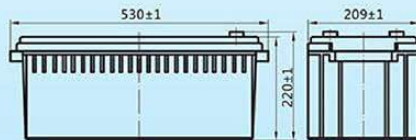
### Performance Characteristics

Nominal Voltage	12V
Number of cell	6
Design Life	10 years
Nominal Capacity 77°F(25°C)	
10 hour rate (17.5A, 10.8V)	200Ah
5 hour rate (31.5A, 10.5V)	157.5Ah
1 hour rate (115A, 9.6V)	115Ah
Internal Resistance	
Fully Charged battery 77°F(25°C)	≤4.3 mOhms
Self-Discharge	
3% of capacity declined per month at 20°C(average)	
Operating Temperature Range	
Discharge	-20-60°C
Charge	-10-60°C
Storage	-20-60°C
Max. Discharge Current 77°F(25°C)	1000A(5s)
Short Circuit Current	3430A
Charge Methods: Constant Voltage Charge 77°F(25°C)	
Cycle use	2.40-2.45VPC
Maximum charging current	52.5A
Temperature compensation	-30mV/°C
Standby use	2.20-2.30VPC
Temperature compensation	-20mV/°C

## Dimensions and Weight

Length(mm / inch)	530 / 20.9
Width(mm / inch)	209 / 8.23
Height(mm / inch)	215 / 8.46
Total Height(mm / inch)	220 / 9.45
Approx. Weight(Kg / lbs)	51.98 / 114.60

\* Weight deviation: ± 5%



## Discharge Constant Current (Amperes at 77°F25°C)

End Point	Volts/Cell	10min	15min	30min	45min	2h	3h	5h	10h
1.60V	--	324	195	141	67.1	51.1	33.5	18.0	
1.65V	--	309	187	137	65.3	49.9	32.7	17.9	
1.70V	--	298	183	134	64.1	49.4	32.1	17.7	
1.75V	--	280	178	130	62.6	48.4	31.5	17.6	
1.80V	--	246	169	125	60.3	46.2	31.0	17.5	

## Discharge Constant Power (Watts at 77°F25°C)

End Point	Volts/Cell	10min	15min	30min	45min	2h	3h	5h	10h
1.60V	--	584	368	269	125	96.8	64.2	35.4	
1.65V	--	554	347	261	123	95.5	63.1	34.3	
1.70V	--	528	341	254	121	94.2	62.2	33.7	
1.75V	--	511	333	249	115	91.6	61.2	33.1	
1.80V	--	490	327	246	116	89.4	60.2	32.3	

(Note) The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values.

Image: Detailed specification sheet for the Mighty Max ML4D 12V 200Ah battery, showing electrical characteristics, dimensions, and discharge curves.



# ML4D

(12V 200Ah)

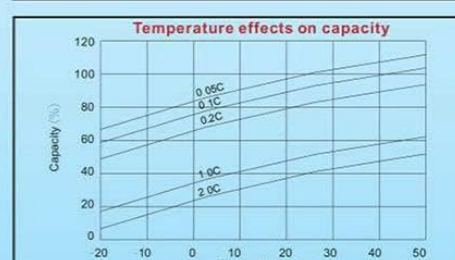
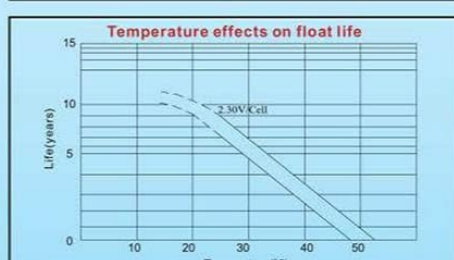
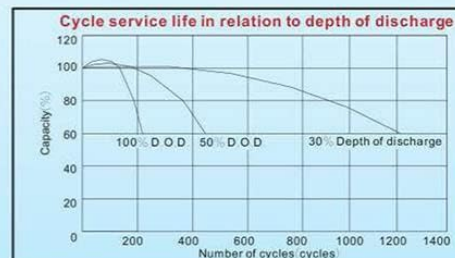
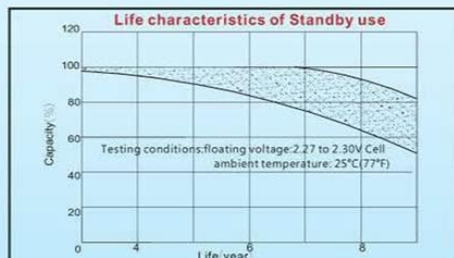
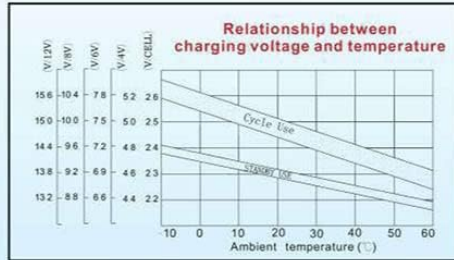
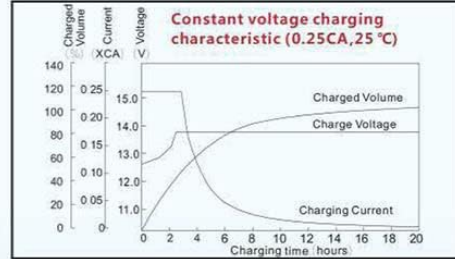
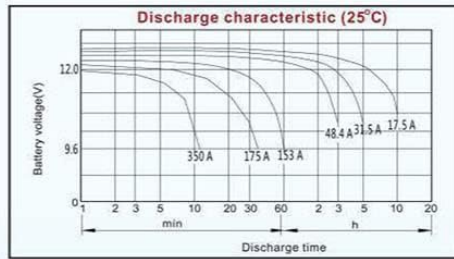
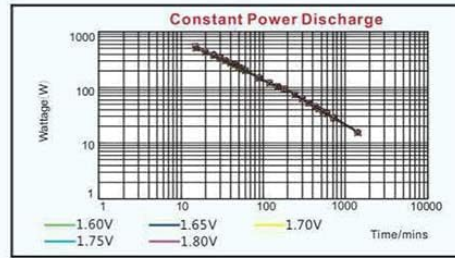
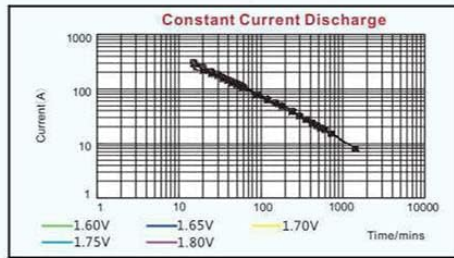


Image: Graphs illustrating the constant current discharge, constant power discharge, discharge characteristics, constant voltage charging characteristics, self-discharge characteristics, life characteristics of standby use, cycle service life in relation to depth of discharge, and temperature effects on float life and capacity for the Mighty Max ML4D battery.

## 9. WARRANTY INFORMATION

This Mighty Max Battery product is covered by a **Full One Year Manufacturer's Warranty** from the date of purchase.

The warranty covers defects in materials and workmanship under normal use. It does not cover damage caused by misuse, abuse, improper installation, unauthorized modifications, or natural disasters. For warranty claims or further details, please contact Mighty Max Battery customer support.

## 10. CUSTOMER SUPPORT

For any questions, technical assistance, or support regarding your Mighty Max Battery, please refer to the following resources:

- **Manufacturer Website:** [www.mightymaxbattery.com](http://www.mightymaxbattery.com)
- **Customer Service:** Refer to the contact information provided on the product packaging or the manufacturer's website.

When contacting support, please have your product model number (ML4DMP249) and purchase date available.