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› Mighty Max Battery ML9-12NB 12V 9Ah SLA AGM Rechargeable Battery User Manual

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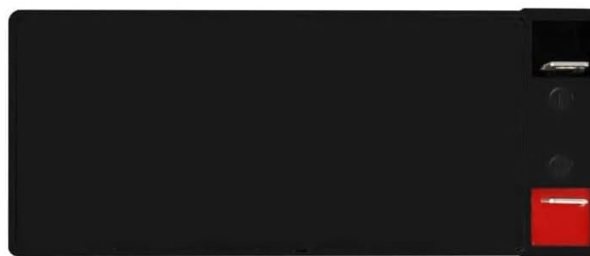
1. PRODUCT OVERVIEW

The Mighty Max Battery ML9-12NB is a 12 Volt 9 Ampere-hour (AH) Sealed Lead-Acid (SLA) Absorbent Glass Mat (AGM) rechargeable battery. This battery is designed for maintenance-free operation and is UL certified, ensuring safety and reliability. It features a nut and bolt (NB) terminal for secure connections.

Key characteristics include a high discharge rate, wide operating temperature range, long service life, and excellent deep discharge recovery. Its spill-proof design allows for mounting in various positions, making it versatile for diverse applications.



3.94in
 (10.00cm)
 Including Terminal



5.94in
 (15.08cm)



3.60in
 (9.14cm)
 Battery, Not Including Terminal

2.56in
 (6.50cm)

Image 1.1: Front view of the Mighty Max ML9-12NB battery, showing the model number and specifications label.



MIGHTYMAX
BATTERY
BY TITAN

Mighty Max Battery

BATERÍA ML9-12NB - 12V 9AH

- Batería original Mighty Max: confianza en un solo nombre.
- Máxima potencia para tus Sistemas Solares, dispositivos de Movilidad Médica, Sistemas , Portones y Cercas eléctricas, Puertas de Garaje y otras necesidades que funcionan con batería
- Batería 12 Volt 9 AH SLA
- Puede instalarse en múltiples posiciones (Por favor, NO la instale al revés)



¿Tienes la máxima potencia?

Image 1.2: Diagram illustrating the dimensions of the Mighty Max ML9-12NB battery, including terminal height.

2. SAFETY INFORMATION

Please read and understand all safety instructions before using the battery. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- **Do not short circuit:** Avoid connecting the positive and negative terminals directly, as this can cause severe damage to the battery and pose a fire hazard.
- **Do not disassemble:** The battery contains sulfuric acid. Disassembly can lead to acid leakage and exposure to hazardous materials.
- **Avoid excessive heat:** Do not expose the battery to temperatures above 40°C (104°F) or incinerate it. High temperatures can damage the battery and cause it to explode.
- **Proper ventilation:** Although sealed, ensure adequate ventilation during charging to prevent any potential gas buildup.
- **Handle with care:** The battery is heavy. Use proper lifting techniques to avoid injury.
- **Recycle properly:** When the battery reaches the end of its life, it must be recycled according to local regulations. Do not dispose of it with household waste.

CONFIGURATION

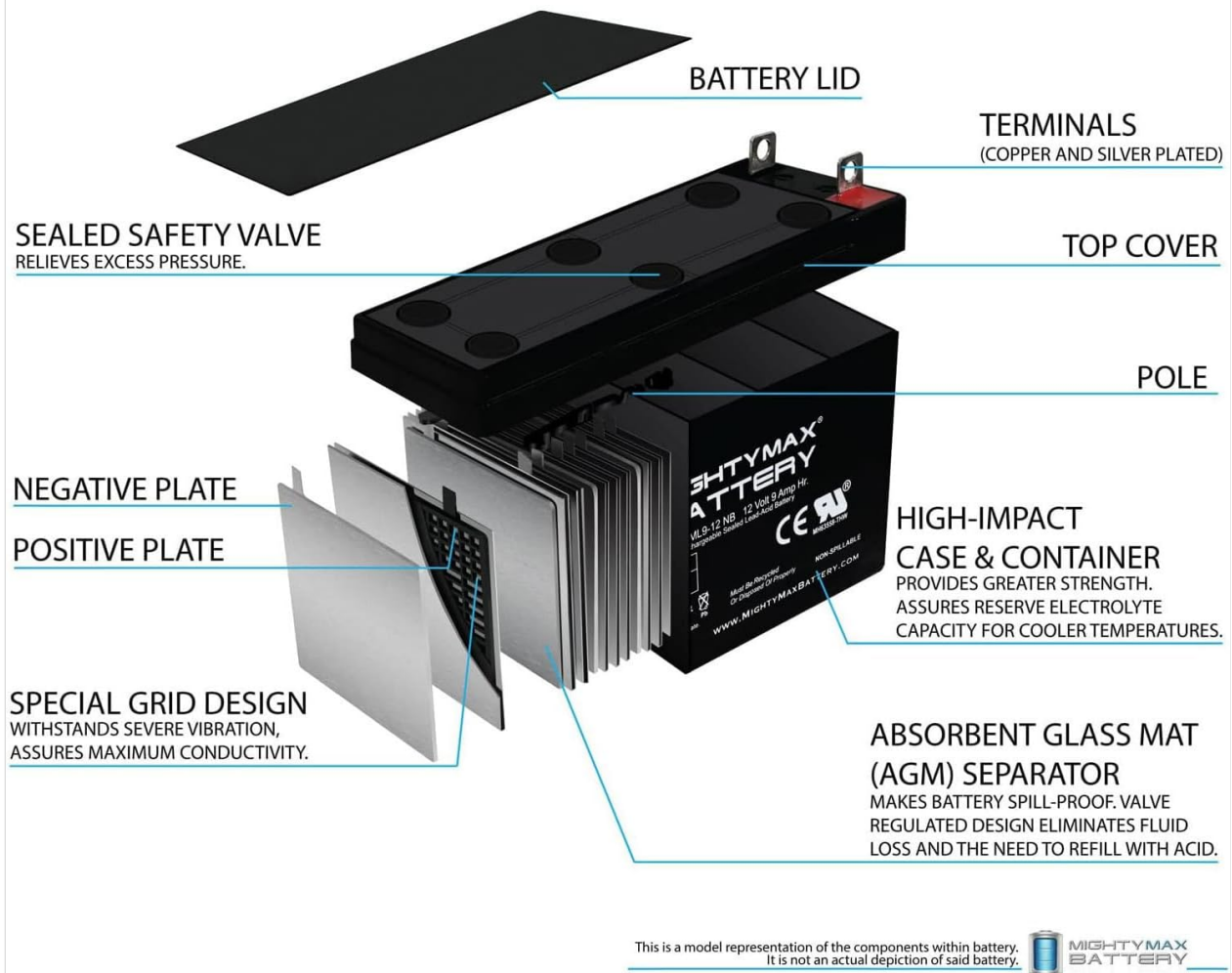


Image 2.1: Exploded view showing the internal components of the Mighty Max battery, including plates, separator, and sealed safety valve.

3. INSTALLATION AND SETUP

The ML9-12NB battery is designed for easy installation and flexible mounting.

3.1 Terminal Connection

This battery uses a Nut and Bolt (NB) terminal. Ensure connections are clean, tight, and secure to prevent arcing and ensure optimal power transfer.

1. Identify the positive (+) and negative (-) terminals. The positive terminal is typically marked with a red indicator or a plus sign.
2. Connect the positive cable to the positive terminal and the negative cable to the negative terminal.
3. Use appropriate tools to tighten the nuts and bolts firmly. Do not overtighten.



Image 3.1: Close-up view of the nut and bolt terminal on the Mighty Max battery.

3.2 Mounting Position

The sealed, spill-proof design of the SLA/AGM battery allows it to be mounted in any position without leakage. However, for optimal performance and longevity, it is generally recommended to mount the battery upright if possible. Avoid installing it upside down.

4. OPERATION

The ML9-12NB battery is designed for both float and cycle applications.

4.1 Charging

Use a charger specifically designed for 12V SLA/AGM batteries. Incorrect charging can reduce battery life.

- **Float Use:** For standby applications where the battery is continuously connected to a charger, maintain a voltage between 13.5V and 13.8V.
- **Cycle Use:** For applications involving regular discharge and recharge cycles, charge the battery to a voltage between 14.5V and 14.9V.
- **Maximum Charging Current:** Do not exceed 2.7A during charging.

4.2 Discharge

The battery is capable of high discharge rates. Avoid excessively deep discharges, as this can shorten the battery's lifespan. For optimal performance, recharge the battery as soon as possible after discharge.

5. MAINTENANCE

The ML9-12NB is a maintenance-free battery, meaning it does not require water additions. However, proper care can extend its lifespan.

- **Regular Charging:** Keep the battery charged, especially if it's not in active use. Storing a battery in a discharged state can lead to sulfation and permanent capacity loss.
- **Clean Terminals:** Periodically inspect terminals for corrosion. Clean them with a wire brush and a baking soda solution if necessary. Ensure they are dry before reconnecting.
- **Temperature Control:** Operate and store the battery within its specified temperature range. Extreme temperatures can negatively impact performance and lifespan. The recommended storage temperature is not over 40°C (104°F).
- **Physical Inspection:** Check the battery case for any signs of damage, cracks, or swelling. A damaged battery should be replaced immediately.

6. TROUBLESHOOTING

If you encounter issues with your ML9-12NB battery, consider the following common problems and solutions:

- **Battery not holding charge:**
 - Ensure the charger is functioning correctly and is appropriate for SLA/AGM batteries.
 - Check for loose or corroded terminal connections.
 - The battery may have reached the end of its service life.
- **Reduced capacity or short runtime:**
 - The battery may not be fully charged. Ensure proper charging cycles.
 - Operating in extreme temperatures can temporarily reduce capacity.
 - Repeated deep discharges can permanently reduce capacity.
- **Battery swelling or leakage:**
 - This indicates a serious issue, possibly overcharging or internal damage. Discontinue use immediately and replace the battery.

If troubleshooting steps do not resolve the issue, contact customer support.

7. SPECIFICATIONS

Detailed technical specifications for the Mighty Max Battery ML9-12NB:

Specification	Value
Brand	Mighty Max Battery

Specification	Value
Model	ML9-12NB
Voltage	12 Volts
Battery Capacity	9 Ah (Ampere-hour)
Battery Cell Composition	Sealed Lead-Acid (SLA)
Terminal Type	Nut and Bolt (NB)
Number of Cells	6
Dimensions (L x W x H)	15.1 cm x 6.5 cm x 10 cm (5.94 in x 2.56 in x 3.94 in)
Item Weight	5 Pounds
Manufacturer Part Number	ML9-12NB
Country of Origin	Vietnam
Included Components	NB Battery



ML9-12NB (12V/9.0Ah/20hr)

The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and thus immobilized.

Should the battery be accidentally overcharged producing hydrogen and oxygen, Special one-way 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	NB	Fiberglass	Sulfuric acid

General Feature

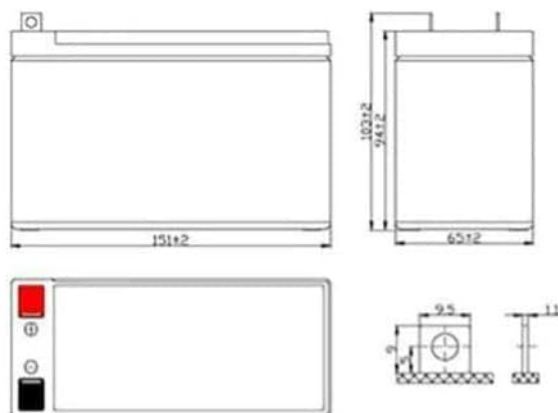
- Computer designed lead, calcium tin alloy grid for high power density.
Long service life, float or cyclic applications.
Maintenance-free operation.
- Low self discharge.

Performance Characteristics

Capacity 77°F(25°C)	20 hour rate (0.45A, 10.5V)	9.0Ah
	10 hour rate (0.85A, 10.5V)	8.5Ah
	5 hour rate (1.54A, 10.5V)	7.7Ah
	1 hour rate (5.8A, 9.6V)	5.8Ah
Internal Resistance	Full charged Battery 77°F(25°C): 20mΩ	
Capacity affected by Temperature (20 hour rate)	104° F(40°C)	102%
	77° F(25°C)	100%
	32° F(10°C)	85%
	5° F(-15°C)	65%
Self-Discharge 68°F(20°C)	Capacity after 3 month storage	90%
	Capacity after 6 month storage	80%
	Capacity after 12 month storage	60%
Max. discharge current 77°F(25°C): 135A(5S)		
Charge (Constant Voltage)	Float: 13.6~13.8 V/77° F(25°C)	
	Cycle: 14.5~14.9 V/77°F(25°C) Max. Current: 2.7A	

SPECIFICATION

Nominal voltage	12V
Number of cell	6
Length(mm/inch)	151/5.94
Width(mm/inch)	65/2.56
Height(mm/inch)	94/3.7
Total Height(mm/inch)	100/3.94
Approx. Weight(kg/lbs)	2.45/5.39



Discharge Constant Current (Amperes at 77° F 25°C)

End Point Volts/Cell	5min	10min	15min	20min	1h	2h	5h	10h	20h
1.60V	32.5	24.0	16.8	9.90	5.80	2.33	1.60	0.88	0.47
1.65V	31.7	23.5	16.3	9.79	5.75	2.29	1.56	0.87	0.46
1.70V	30.5	22.7	15.8	9.36	5.71	2.25	1.55	0.86	0.46
1.75V	29.8	21.8	14.8	8.93	5.66	2.20	1.54	0.85	0.45
1.80V	29.2	21.0	13.9	8.45	5.51	2.14	1.53	0.83	0.44

Discharge Constant Power (watts at 77° F 25°C)

End Point Volts/Cell	5min	10min	15min	20min	45min	1h	2h	5h
1.60V	21.7	14.8	14.6	19.6	14.5	11.5	6.30	4.34
1.65V	20.3	14.3	14.1	19.1	14.2	11.2	6.23	4.29
1.70V	18.8	12.9	12.1	18.5	13.7	11.0	6.08	4.20
1.75V	18.1	11.1	11.2	17.6	12.9	10.7	5.94	4.08
1.80V	16.0	10.2	10.4	16.6	12.2	10.4	5.77	3.97

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

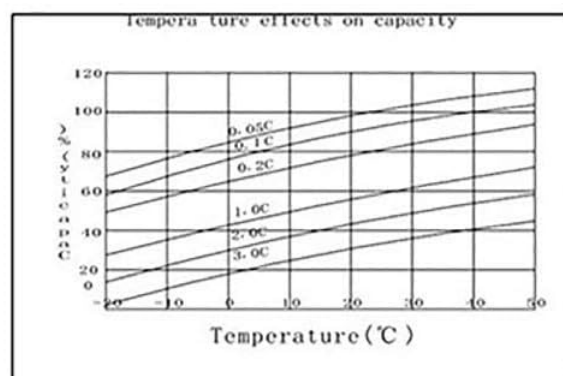
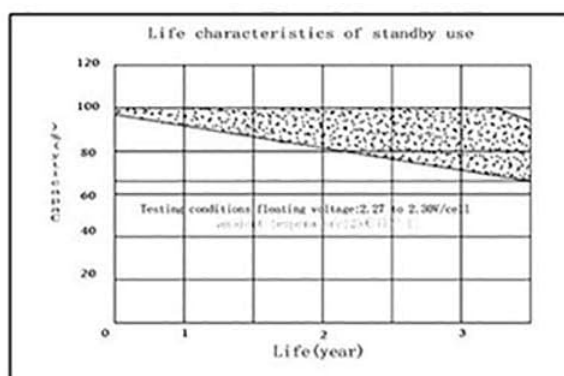
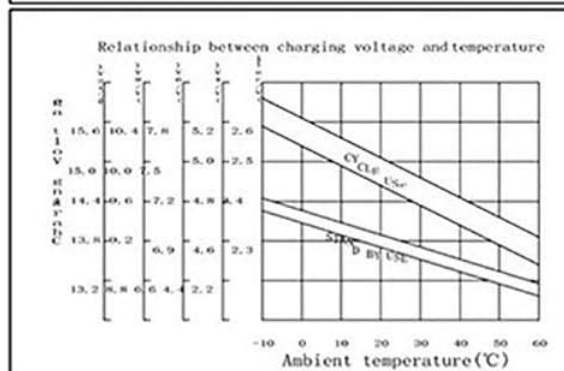
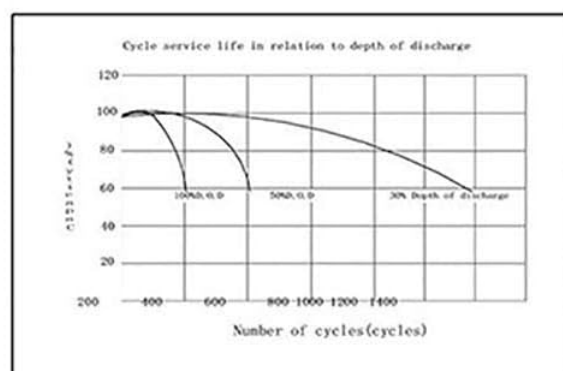
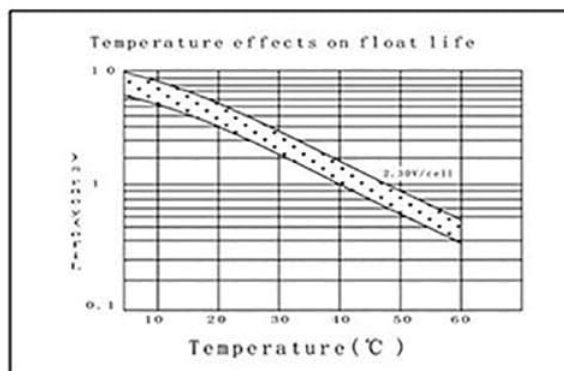
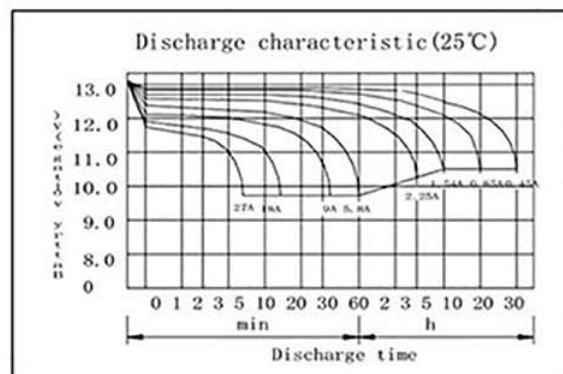
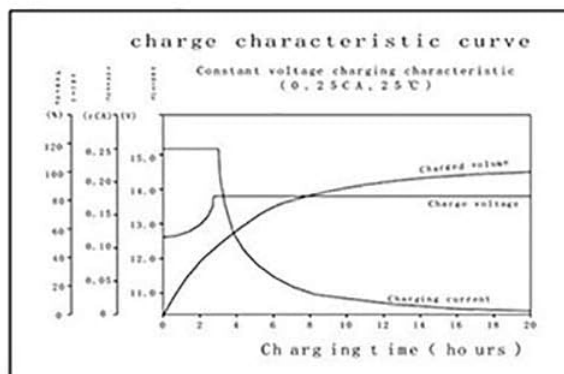


Image 7.2: Graphs illustrating charge characteristics, discharge curves, float life, and self-discharge rates.

8. WARRANTY AND SUPPORT

8.1 Manufacturer's Warranty

The Mighty Max Battery ML9-12NB comes with a **1-year manufacturer's warranty**. This warranty covers

defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims.

8.2 Customer Support

For technical assistance, warranty claims, or any questions regarding your Mighty Max Battery ML9-12NB, please refer to the contact information provided with your purchase or visit the official Mighty Max Battery website for support resources.