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# **BM Series**

**Multi-Purpose Battery Maintainers**

WET, GEL, MF, CA, EFB, AGM, LITHIUM ION

## **AUTOMATIC AC TO DC BATTERY MAINTAINER**

LiFePO4



**THBC-3.5-LI**



**THBC-6.0-LI**

SAVE THIS INSTRUCTION MANUAL FOR FUTURE REFERENCE.

Instruction Manual  
and Warranty Information

# ABOUT THE THBM BATTERY MAINTAINERS

The THBM Battery Maintainers from THOR Manufacturing represent some of the most innovative and state-of-the-art technologies in the market, making each charge simple and easy. These models are most likely the safest and most efficient chargers you can use. Each model is designed to charge 6 V and 12 lead-acid batteries, AGM batteries and Lithium Ion batteries and they are suitable for most battery sizes.

## SAFETY GUIDELINES & DEFINITIONS

### ■ GENERAL SAFETY GUIDELINES AND DEFINITIONS

It is important for you to read and understand this manual. The information it contains relates to protecting YOUR SAFETY and PREVENTING PROBLEMS. The symbols below are used to help you recognize this information.

■ **DANGER** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

■ **WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

■ **CAUTION** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**CAUTION:** Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

## IMPORTANT SAFETY INSTRUCTIONS

### ■ GENERAL SAFETY WARNINGS AND INSTRUCTIONS FOR ALL APPLIANCES

#### READ ALL INSTRUCTIONS

■ **WARNING:** Read all instructions before operating product. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

- **AVOID DANGEROUS ENVIRONMENTS.** Don't use appliances in damp or wet locations. Don't use appliances in the rain.
- **INTENDED FOR INDOOR AND HOUSEHOLD USE UNDER DRY CONDITION.**
- **KEEP CHILDREN AWAY.** All visitors should be kept at a distance from work area.
- **STORE IDLE APPLIANCES INDOORS.** When not in use, appliances should be stored indoors in dry, and high or locked-up place – out of reach of children.

■ **WARNING/ BURST HAZARD:** Do not use the unit for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage property. Use the unit for charging a LEAD-ACID battery only. It is not intended to supply power to a low-voltage electrical system other than in a starter-motor application.

## WARNING/ SHOCK HAZARD:

- If an extension cord is used, make sure that:
  - a) the pins of extension cord are the same number, size and shape as those in the battery maintainer,
  - b) the extension cord is properly wired and in good electrical condition,
- Do not operate unit with damaged cord or plug; or if the unit has received a sharp blow, been dropped, or otherwise damaged in any way. Do not disassemble the unit; take it to a qualified service technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire, and will void warranty.
- Use of an attachment not supplied, recommended or sold by manufacturer specifically for use with this unit may result in a risk of electrical shock and injury to persons.
- **NEVER** submerge this unit in water; do not expose it to rain, snow or use when wet.
- To reduce risk of electric shock, disconnect the unit from any power source before attempting maintenance or cleaning. Turning off controls without disconnecting will not reduce this risk.

## WARNING/ OF EXPLOSIVE GASES:

- Working in the vicinity of a lead acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of the utmost importance that each time before using the battery maintainer you read this manual and follow instructions exactly.
- To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products and on the engine.
- This equipment employs parts (switches, relays, etc.) that produce arcs or sparks. Therefore, if used in a garage or enclosed area, the unit **MUST** be placed not less than 18 inches above the floor.
- ***THIS UNIT IS NOT FOR USE BY CHILDREN AND SHOULD ONLY BE OPERATED BY ADULTS.***

## CAUTION TO REDUCE THE RISK OF INJURY OR PROPERTY DAMAGE:

- To reduce the risk of shock, unplug the battery charger before performing any maintenance or cleaning.
- Take special care to reduce the risk of dropping the battery as it may cause a short circuit.
- Pull cord by plug rather than cord when disconnecting the 120V AC Charging Adapter from the unit.
- ***NEVER ATTEMPT TO JUMP-START OR CHARGE A FROZEN BATTERY.***
- Vehicles that have on-board computerized systems may be damaged if vehicle battery is connected to the vehicle during the operation of the battery maintainer. Before maintaining the battery with the battery maintainer, read the vehicle's owner's manual to confirm proper method of maintaining vehicle battery.
- When working with lead acid batteries, always make sure immediate assistance is available in case of accident or emergency.
- Always wear protective eye wear when using this product: contact with battery acid may cause blindness and/or severe burns. Be aware of first aid procedures in case of accidental contact with battery acid.
- Have plenty of fresh water and soap nearby in case battery acid contacts skin. Battery acid is corrosive.
- If battery acid contacts skin or clothing, wash immediately with soap and water for at least 10 minutes and get medical attention immediately.
- Never smoke or allow a spark or flame in vicinity of vehicle battery, engine or battery maintainer.
- Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead acid battery. A lead acid battery can produce a short circuit current high enough to weld a ring, or the like of a metal, causing a severe burn.
- Never allow battery acid to come in contact with this unit. Do not place the charger on the battery while charging.
- Do not operate this unit in a closed area or restrict ventilation in any way.
- **FIRST AID – SKIN:** If battery acid comes in contact with skin, rinse immediately with water, then wash thoroughly with soap and water. If redness, pain, or irritation occurs, seek immediate medical attention.
- **EYES:** If battery acid comes in contact with eyes, flush eyes immediately, for a minimum of 15 minutes and seek immediate medical attention.

- While using lead-acid batteries, please remove rings, bracelets, necklaces, watches or any other personal metal items.

## Preparing to Charge

**⚠ WARNING:** Do not attempt to charge a non-rechargeable battery.

1. Determine voltage of battery to be maintained by referring to the vehicle manual.
2. If it is necessary to remove battery from vehicle to maintain, or to clean terminals, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
3. Clean battery terminals. Do not allow corrosion to come in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill and always replace caps. For a battery without cell caps (maintenance free), carefully follow battery manufacturer's charging and maintenance instructions.
5. Study all battery manufacturer's specific precautions, while charging, and recommended rates of charge.
6. Area around battery should be well ventilated while battery is being charged. Do not operate within an enclosed area.

**⚠ CAUTION** This battery maintainer does not detect, diagnose or analyze the condition of the battery. Attempting to charge/maintain a battery with an abnormal condition can further damage the battery. If in doubt, have the battery checked by a qualified professional prior to using the THBM Maintainer.

## Charger Location

1. Locate battery maintainer as far away from battery as cables permit.
2. Charge above freezing temperature and below 40 degree Celsius (C) (104 degree Fahrenheit).
3. NEVER place battery maintainer directly above battery being charged; gases from battery will corrode and damage charger.
4. NEVER allow battery acid to drip on battery maintainer when reading gravity or filling battery.
5. NEVER operate battery maintainer in a closed-in area or restrict ventilation in any way.
6. Marine batteries must be removed and charged on shore.
7. Do not set a battery on top of battery maintainer.

***Follow these steps when the battery is installed in a vehicle. A spark near the battery may cause an explosion.***

**⚠ WARNING TO REDUCE RISK OF A SPARK NEAR THE BATTERY: CONNECT AND DISCONNECT DC OUTPUT CLAMPS AND RING TERMINALS ONLY AFTER REMOVING AC CORD FROM ELECTRIC OUTLET.**

1. Position AC and DC cords away from hood, door, or moving engine parts.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
3. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
4. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see 5. If positive post is grounded to the chassis, see 6.
5. For negative-grounded vehicle, connect POSITIVE (RED) clamp from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to heavy gauge metal part of the frame or engine block.

6. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
7. When disconnecting charger, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.
8. Do not charge the battery while the engine is operating.
9. Refer to battery manufacturer's instruction on battery charging/maintaining procedures.

### DC Connection Precautions

1. Remove AC cord from electric outlet before connecting or disconnecting DC clamps and ring terminals.
2. Never allow clamps to touch each other.

***Follow these steps when the battery has been removed from a vehicle. A spark near the battery may cause an explosion.***

### **⚠ WARNING TO REDUCE RISK OF A SPARK NEAR THE BATTERY: CONNECT OR DISCONNECT DC OUTPUT CLAMPS ONLY AFTER REMOVING AC CORD FROM ELECTRICAL OUTLET.**

1. Check polarity of battery posts. Positive post (marked POS,P, +) usually has a larger diameter than the Negative battery post (marked NEG, N, -).
  2. Attach a 24-inch (minimum length) 6 AWG insulated battery cable to the Negative battery post (marked NEG, N, -).
  3. Connect the Positive (RED) battery clamp to the Positive battery post (marked POS, P, + or red).
  4. Stand as far back from the battery as possible, and do not face battery when making final connection.
  5. Carefully connect the NEGATIVE (BLACK) charger clamp to the free end of the battery cable connected to the negative terminal.
  6. Set the charge voltage to appropriate setting according to battery voltage .
  7. When disconnecting maintainer, always do so in reverse sequence of connecting procedure. Remove the connection from the 6AWG cable (mentioned in step #2) as far away from the battery as possible. Break first connection while as far away from battery as practical.
- Check unit periodically for wear and tear. Take to a qualified technician for replacement of worn or defective parts immediately.
  - Read This Instruction Manual Before Using This Unit.

## SAVE THESE INSTRUCTIONS

**⚠ WARNING TO REDUCE THE RISK OF INJURY!:** Follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use with this unit. Review cautionary markings on these products and on engine.

### INTRODUCTION

Thank you for selecting the THOR MANUFACTURING 3.5 Amp or 6 Amp Charge Rate Automatic Battery Maintainer. With proper care and use, it will give you years of dependable service. Please read and observe all safety warnings and cautions and this entire user's instruction manual, before installing or using this device.

The instruction manual should then be retained for quick reference whenever the unit is used. Figure 1 shows the battery maintainer and its components.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. This limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on.



THBM-3.5-LI



THBM-6.0-LI



AC Plug



Quick Connectors



O-Ring Connectors



Battery Clamps

**CHARGING MODES THBM-3.5-LI:**

<b>LED</b>	<b>DESCRIPTION</b>
Red LED flashes	1. When the DC output is connected in reverse, the charging red LED flashes once and goes off once. 2. When the AC output is short-circuited, the charging red LED flashes twice and goes out once. When the charging is in the overheat protection state, the charging red LED flashes three times and goes out once.
Red LED is always on	The battery is damaged when the charger is connected.
Red LED is always on	No AC input, DC output from charger connected to battery.
Green LED is always on	After the maintenance indicator turns twice, the power indicator (green) is always on.
Charging percentage LED light	During the charging process, the 25% or 50% or 75% charging LED will flash slowly. Indicates the charging status and displays the current battery capacity. When the battery is about to be fully charged, the 100% charge LED will slowly flash. When the battery is fully charged, the 100% charge LED will turn solid green. The charger can be connected to the battery indefinitely.

## CHARGING TIMES THBM-3.5-LI:

Battery Size (Ah)	Approx. Time to Charge in hours	
	6V	12V
8	2.5	2.5
12	3.5	3.5
18	5.2	5.2
24	7	7
30	8.6	8.6
40	11.5	11.5
50	14.2	14.2
60	17.0	17.0

## CHARGING MODES THBM-6.0-LI:






MODE	DESCRIPTION
Standby	Under standby mode: 1. The charger does not charge or supply power to the battery. The LCD screen displays FD2; 2. Under the normal charging mode: after a period of time, the LCD screen backlight turns off due to the energy-saving function is activated.
6V	Used for 6V lead-acid battery. When selected, it is charged only for 6V lead-acid battery.
6V	Used for 6V AGM battery. When selected, it is charged only for 6V AGM battery.
6V	Used for the winter mode of 6V lead-acid battery. When selected, it is charged only for 6V lead-acid battery in winter period.
6V	Used for 6V lithium battery. When selected, it is charged only for 6V lithium battery.
12V	Used for 12V lead-acid battery. When selected, it is charged only for 12V lead-acid battery.
12V	Used for 12V AGM battery. When selected, it is charged only for 12V AGM battery.
12V	Used for the winter mode of 12V lead-acid battery. When selected, it is charged only for 12V lead-acid battery in winter period.
12V	Used for 12V lithium battery. When selected, it is charged only for 6V lithium battery.
	An error in the battery, causing the charger not to work.
	The positive and negative poles of the battery clips are reversed.
	Charging percentage display, indicating the charging status and charging power display.



## CHARGING TIMES THBM-6.0-LI:

Battery Size (Ah)	Approx. Time to Charge in hours	
	6V	12V
8	1.5	1.5
12	2	2
18	3.5	3.5
24	4	4
30	5	5
40	7	7
50	9	9
60	11	11
80	14	14
100	18	18

## ERROR CODES THBM-6.0-LI:

MALFUNCTION	REASONS / SOLUTIONS
 E03	There is a reverse connection of the DC output. E03 The reverse connection icon is on. Solution: Check the positive and negative connections of the battery clip or connecting terminal. and coorrectly connect the positive and negative poles of the connection clip or terminal to the positive and negative poles of the battery. The icon disappears after the correct connection.
 E02	The output is floating E02 No battery is marked. Solution: Check whether the connecting clip or terminal is connected to the positive and negative poles of the battery. The icon disappears after the correct connection.
 E01	AC output short circuit, E01 Short circuit is on. After the error is eliminated, the icon disappears.
E04	Over temperature protection, when the temperature drops, the icon disappears.
E05	Non-rechargeable battery.
Charging percentage LED light	While the battery is charging, the charging bar icon of 20% or 40% or 60% or 80% will flash slowly. It shows the charging status and displays the current battery capacity. When the battery is about to be fully charged, the 1 00% charge icon will flash slowly. When the battery is fully charged, the 1 CXJ% charge icon will become stable. .

## Mounting Instructions:

THBM battery maintainers are designed to be able to mount to flat surface. The unit has incorporated two mounting holes at the corners of the unit.

**Note:** Always disconnect the maintainer at AC power source and at battery terminal when mounting the unit. To mount the unit:

Make sure the surface is flat and free of obstruction so the unit can rest flat on the surface.

1. Make sure the unit is disconnected from both AC power source and the battery.
2. Use 8/32 inches (6.35mm) wood screw to mount the unit through the mounting hole.
3. Do not over tighten the screw, it will damage the housing.
4. Connect the unit to AC power outlet and the unit is ready for use.

**⚠ WARNING** Do not put the screw through the plastic housing as this will permanently damage the unit and cause potential electrical hazard.

## OPERATING INSTRUCTIONS

Ensure that all installation and operating instructions and safety precautions are understood and carefully followed by anyone installing or using the charger. Follow the steps outlined in "Important Safety Instructions" at the front of this manual.

### Connecting the Charger with the Terminal Clamps

The charger's output leads have color-coded battery clamps (Figure 2) (RED-POSITIVE and BLACK-NEGATIVE).

1. Disconnect battery and remove the battery from vehicle.
2. Unplug the battery maintainer AC cord from the AC outlet.
3. Disconnect the battery clamps from the unit at output cord connector.
4. Connect the RED POSITIVE clamp to the POSITIVE post of the battery.
5. Connect the BLACK NEGATIVE clamp to the NEGATIVE post of the battery.
6. Connect the battery clamp connector with the unit connector, as far away from the battery as possible.
7. Short press to select battery type.
8. Confirm the voltage and chemical properties of the battery.
9. Monitor the unit periodically.



**⚠ WARNING** FOLLOW THE STEPS OUTLINED IN "IMPORTANT SAFETY INSTRUCTIONS" AT THE FRONT OF THIS MANUAL AND THE WARNING AT THE BOTTOM OF PAGE 4, "TO REDUCE RISK OF A SPARK NEAR THE BATTERY"

### Connecting the Charger with Terminal Rings

The charger's output leads have crimped, color-coded ring terminals (Figure 3) (RED-POSITIVE and BLACK-NEGATIVE). These rings connect directly to the corresponding connectors on the battery posts.

1. Remove the nuts from the bolts of the battery post's connectors.
2. Position the RED terminal on the bolt of the POSITIVE battery post connector.
3. Position the BLACK terminal on the NEGATIVE post connector; then replace the nuts.



### Charging With Ring Terminals

1. Disconnect AC power cord from AC power outlet
2. Disconnect battery terminal clamps and DC accessory plug from the maintainer output cable, at connector
3. With the ring terminals connected (fig. 3a) and with ring terminal connector held as far away from battery, connect to the maintainer output cord. If the maintainer red LED is lit, check ring terminal connections at battery.
4. Slide the voltage selector switch to 6V or 12V
5. Connect AC power
6. The unit should be working with blinking green LED, indicating the battery is being charged.

## ACCESSORIES

If you need assistance regarding accessories, please call: 1-866-955-THOR or visit [www.thorpowerproducts.com](http://www.thorpowerproducts.com).

**⚠ WARNING!** The use of any accessory not recommended for use with this tool could be hazardous and will void manufacturer's warranty.

## SERVICE INFORMATION

To locate your nearest service location or for details on replacement parts, contact the manufacturer at **1-866-955- THOR**.

## LIMITED ONE-YEAR HOME USE WARRANTY

### Limited Product Warranty and Exclusions

The limited warranty program is the only one that applies to this unit, and it sets forth all the responsibilities of THOR. There is no other warranty, other than those described herein. Any implied warranty of merchantability of fitness for a particular purpose on this unit is limited in duration to the duration of this warranty.

This unit is warranted, to the original purchaser only, to be free of defects in materials and workmanship for two years from the date of purchase without additional charge. The warranty does not extend to subsequent purchasers or users.

Manufacturer will not be responsible for any amount of damage in excess of the retail purchase price of the unit under any circumstances. Incidental and consequential damages are specifically excluded from coverage under this warranty.

This unit is not intended for commercial use. This warranty does not apply to damage to units from misuse or incorrect installation/connection. Misuse includes wiring or connecting to improper polarity power sources.

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## **RETURN / REPAIR POLICY**

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Before contacting THOR Manufacturing's customer service department, please read the "frequently asked questions" section of our website to troubleshoot the problem. If trouble persists: 1. Call your THOR Manufacturing's Technical Support team (1-866-955-THOR) or 2. Return defective product to place of purchase. Unless approved by THOR Manufacturing Management, all product shipped collect to THOR Manufacturing will be refused. Test items or items that are not under warranty, or units that are not defective, will be charged a minimum bench charge of (\$50.00 US) plus taxes and shipping. A 15% restocking charge will be applied on goods returned and accepted as "new" stock. An RMA number (Return Materials Authorization number) from THOR Manufacturing's Customer Service is required prior to returning any THOR Products. THOR Manufacturing reserves the right to refuse any items sent to THOR Manufacturing without an associated RMA number.

Out of Warranty THOR Product! electronic products are non-repairable, THOR Manufacturing, does not perform repairs on its products nor does it contract out those repairs to a third party. THOR Manufacturing does not supply schematics or replacement parts for any of its electronic products.

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## **WARRANTY ACTIVATION**

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Please complete the Warranty Registration Form on the THOR Manufacturing website <http://thorpowerproducts.com/register-product/>. Enter the model number and product type and serial number. All THOR Manufacturing products must be registered within 30 days of purchase to activate this warranty.

This warranty does not apply to accessories. This warranty gives you specific legal rights and you may have other rights which vary from state to state or province to province. Should you have any questions, contact the THOR Manufacturing at 1-866-955-THOR. This product is not intended for commercial

# SPECIFICATIONS

	<b>THBM-3.5-LI</b>	<b>THBM-6.0-LI</b>
AC Input Voltage:	110V~ 120VAC 60HZ	110V~ 120VAC 60HZ
AC Working Voltage:	110V~ 120VAC 60HZ	110V~ 120VAC 60HZ
Effectiveness:	80%	80%
Power:	45W Max	100W Max
Charging Voltage:	Various	Various
Recharging Current:	3500mA(6V) 3500mA(12V)	6000mA(6V) 6000mA(12V)
Low Voltage Detection:	2V(6V) 2V(12V)	2V(6V) 2V(12V)
No Load Current:	≥ 0.5mA	≥ 20mA
Ambient Temperature:	0°C to +40°C	0°C to +40°C
Charger Type:	8-Stage Smart Charger	8-Stage Smart Charger
Battery Voltage:	6V, 12V	6V, 12V
Battery Type:	Wet, Gel, MF, CA, EFB, AGM, Lithium	Wet, Gel, MF, CA, EFB, AGM, Lithium
Battery Capacity:	Less than 60AH, Can support all battery sizes.	Less than 100AH, Can support all battery sizes.
Shell Protection:	IP60	IP20
Cooling:	Natural Cooling	Natural Cooling
Dimensions (L x W x H):	6x2.8x1.7" (153x72x43mm)	7.92x2.97x1.93" (201.2x75.4x49.0 mm)

