

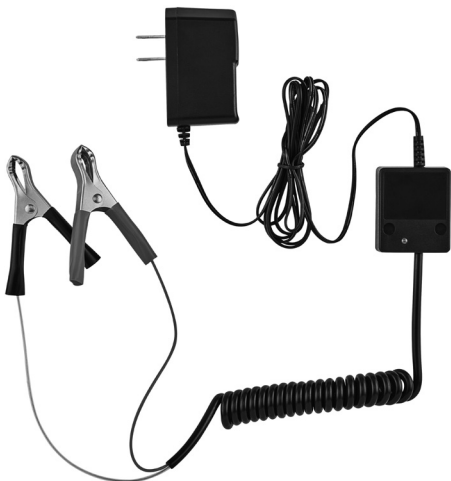
Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

22h

CEN-TECH®

12V AUTOMATIC BATTERY MAINTAINER



Visit our website at: <http://www.harborfreight.com>
Email our technical support at: productsupport@harborfreight.com

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When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

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⚠ WARNING

Read this material before using this product. Failure to do so can result in serious injury. **SAVE THIS MANUAL.**

IMPORTANT SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS**
 - This manual contains important safety and operating instructions for this battery Maintainer.
2. Do not expose Maintainer to rain or snow.
3. Use of an attachment not recommended or sold by the battery Maintainer manufacturer may result in a risk of fire, electric shock, or injury to persons.
4. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting Maintainer.
5. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - a. That pins on plug of extension cord are the same number, size, and shape as those of plug on Maintainer;
 - b. That extension cord is properly wired and in good electrical condition; and
 - c. That wire size is large enough for AC ampere rating of Maintainer as specified in Table A.
6. Do not operate Maintainer with damaged cord or plug – replace the cord or plug immediately.
7. Do not operate Maintainer if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
8. Do not disassemble Maintainer; take it to a qualified technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
9. To reduce risk of electric shock, unplug Maintainer from outlet before attempting any maintenance or cleaning.
10. **WARNING – RISK OF EXPLOSIVE GASES.**
 - a. **WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE MAINTAINER.**

Table A: Recommended minimum AWG size for extension cords for battery Maintainer

AC input rating, amperes*		AWG size of cord			
		Length of cord, feet			
Equal to or greater than	But less than	25	50	100	150
0	2	18	18	18	16
2	3	18	18	16	14
3	4	18	18	16	14
4	5	18	18	14	12
5	6	18	16	14	12
6	8	18	16	12	10
8	10	18	14	12	10
10	12	16	14	10	8
12	14	16	12	10	8
14	16	16	12	10	8
16	18	14	12	8	8
18	20	14	12	8	6

* If the input rating of a Maintainer is given in watts rather than in amperes, the corresponding ampere rating is to be determined by dividing the wattage rating by the voltage rating – for example: 1250 watts/125 volts = 10 amperes

- b. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.
11. **PERSONAL PRECAUTIONS**
 - a. Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
 - b. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
 - c. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.

- d. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- e. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- f. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
- g. 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 to metal, causing a severe burn.
- h. Use Maintainer for charging Gel, LEAD-ACID or Absorbed Glass Mat (AGM) batteries only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery Maintainer for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- i. NEVER charge a frozen battery.

12. PREPARING TO CHARGE

- a. If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- b. Be sure area around battery is well ventilated while battery is being charged.

- c. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- d. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overflow. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
- e. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
- f. Determine voltage of battery by referring to vehicle owner's manual and make sure it matches output rating of battery Maintainer.
- g. Do not place Maintainer or electrical connections on ground or floor.

13. MAINTAINER LOCATION

- a. Locate Maintainer as far away from battery as DC cables permit.
- b. Never place Maintainer directly above battery being charged; gases from battery will corrode and damage Maintainer.
- c. Never allow battery acid to drip on Maintainer when reading electrolyte specific gravity or filling battery.
- d. Do not operate Maintainer in a closed-in area or restrict ventilation in any way.
- e. Do not set a battery on top of Maintainer.


14. DC CONNECTION PRECAUTIONS

- a. Connect and disconnect DC output clips only after removing AC cord from electric outlet. Never allow clips to touch each other.
- b. Attach clips to battery and chassis as indicated in 15(e), 15(f), and 16(b) through 16(d).

15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
- b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- c. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- d. Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e). If positive post is grounded to the chassis, see (f).
- e. For negative-grounded vehicle, connect POSITIVE (RED) clip from battery Maintainer to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip 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.
- f. For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery Maintainer to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip 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.
- g. When disconnecting maintainer, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
- h. See operating instructions for length of charge information.

16. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

- a. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
 - b. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
 - c. Connect POSITIVE (RED) Maintainer clip to POSITIVE (POS, P, +) post of battery.
 - d. Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (BLACK) Maintainer clip to free end of cable.
 - e. Do not face battery when making final connection.
 - f. When disconnecting Maintainer, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
 - g. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.
17.  Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery. Battery acid can cause permanent blindness.
18. Maintain labels and nameplates on the Maintainer. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
 19. This product is not a toy. Keep it out of reach of children.

20. Unplug the Battery Maintainer from its electrical outlet before connecting its cables to a battery, or performing any inspection, maintenance, or cleaning procedures.
21. **Use this Maintainer with gel, lead-acid batteries or Absorbed Glass Mat (AGM) batteries only.** When charging a maintenance-free battery, always monitor the progress of the charge by viewing the ammeter.
22. Do not attempt to charge non-rechargeable, damaged, or defective batteries.
23. Do not charge more than one battery at one time.
24. Remove Maintainer AC Adapter from electrical outlet, then disconnect the battery clamps when finished.
25. Have your Maintainer serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the Maintainer is maintained.
26. Do not use Maintainer while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating Maintainer may result in serious personal injury.
27. Before moving Maintainer, disconnect power supply and battery, then allow Maintainer to cool.
28. This product is not a toy. Do not allow children to play with or near this item.
29. Use as intended only.
30. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:
 - Avoid operating alone.
 - Properly maintain and inspect to avoid electrical shock.
 - Properly ground power cord. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.
31. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.
32. Inspect before every use; do not use if parts are loose or damaged.
33. Use with 12 volt batteries only.



SAVE THESE INSTRUCTIONS.

Specifications

Input	120VAC, 60Hz, 190mA Max.
Rated Output	12VDC / 0.5A
Maximum Output	13.2 VDC
Battery Capacity	5 – 125 Ah
Cable Length	10ft.

Operation Instructions



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this document including all text under subheadings therein before set up or use of this product.

Note: This Float Maintainer is intended only to keep a fully charged battery from losing its charge. It will not work to charge a battery that is discharged or damaged.

NOTICE

Note: Check battery voltage with a multimeter before use. The Battery **MUST** be fully charged to at least 12 Volts.

The Float Maintainer prevents self-discharge of the battery, while maintaining the life of rechargeable 12 volt lead-acid, AGM, and gel batteries. It maintains a battery rated from 5 – 125 Ah (amp-hours), by providing a small current to the battery to bring the battery voltage to a fully charged level.

Connection



A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY follow these instructions exactly.

WARNING

TO PREVENT SERIOUS INJURY:



Wear ANSI-approved splash-resistant safety goggles and heavy-duty rubber work gloves whenever connecting, disconnecting, or working near battery. Battery acid can cause permanent blindness.

1. Place Float Maintainer within 3 feet of battery.
Unplug the AC Adapter.
2. To temporarily attach the Clip Connector to the battery,
 - a. Connect POSITIVE (RED) Clip Connector to POSITIVE (POS, P, +) post of battery.
 - b. Connect NEGATIVE (BLACK) Clip Connector to NEGATIVE (NEG, N, -) post of battery.

WARNING! TO PREVENT SHORT CIRCUIT AND FIRE: Do not leave Clips attached indefinitely.

WARNING! TO PREVENT SERIOUS INJURY: Do not connect Connector to carburetor, fuel lines, or sheet-metal body parts.

Note: The LED indicator shows solid yellow when AC adapter is connected to electrical outlet and clamps are not connected to battery, or, if the clamps contact each other and create a short circuit.

3. Plug AC Adapter into electrical outlet.

LED Functions

1. Flashing Red:
 - a. Clamps are reversely connected.
 - b. Battery voltage type is not supported. Only 12V batteries are supported.
 - c. Bad battery.
2. Solid Yellow: Clamps are not connected to battery.
3. Flashing Green: Battery is charging.
4. Solid Green: Battery is fully charged, and the Maintainer is monitoring the charged Battery.

After Use

1. Unplug the AC Adapter.
2. Remove the Black clip, then the Red clip from battery.
3. Wipe the Maintainer with a clean, dry cloth and store indoors out of reach of children.

Maintenance Instructions



Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠️ WARNING

TO PREVENT SERIOUS INJURY: Unplug the Maintainer, disconnect any battery, and allow Maintainer to cool completely before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:

Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

1. **BEFORE EACH USE**, inspect the general condition of the Maintainer. Check for:
 - loose hardware,
 - cracked or broken parts,
 - damaged electrical wiring or cable insulation, and
 - any other condition that may affect its safe operation.
2. **AFTER USE**, wipe external surfaces of the tool with clean cloth.
3. **⚠️ WARNING! TO PREVENT SERIOUS INJURY:** If the supply cord of this Maintainer is damaged, it must be replaced only by a qualified service technician. **DO NOT OPEN MAINTAINER HOUSING, NO USER-SERVICEABLE PARTS INSIDE.**

Record Serial Number Here:

Note: If product has no serial number, record month and year of purchase instead.

Note: Refer to UPC 193175454416. Replacement parts are not available for this item.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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