

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.

17i

CENTTECH®

60581

10/2/50 AMP 12 VOLT

BATTERY CHARGER/STARTER



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



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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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

⚠ WARNING






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



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WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

	Canadian Standards Association
	Underwriters Laboratories, Inc.
VAC	Volts Alternating Current
A	Amperes
CCA	Cold Cranking Amps
RC	Reserve Capacity
Ah	Ampere-hours

	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved splash-resistant safety goggles.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Fire. Follow connection procedure.

IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS –

This manual contains important safety and operating instructions for this battery charger.

2. Do not expose charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger 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 charger.
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 charger;
 - 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 charger as specified in Table A.

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

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 charger 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:
 $1250 \text{ watts} / 125 \text{ volts} = 10 \text{ amperes}$

6. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.

7. Do not operate charger 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 charger; take it to a qualified serviceman 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 charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
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 CHARGER.
 - 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 charger 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. Do not use battery charger 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 overfill. 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. Charge battery initially at lowest rate.

13. CHARGER LOCATION

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

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 charger 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 charger 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 charger, 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) charger 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) charger clip to free end of cable.
 - e. Do not face battery when making final connection.
 - f. When disconnecting charger, 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. Do not use Start setting to charge batteries. Use to jump start only.
 19. Maintain labels and nameplates on the charger. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
 20. This product is not a toy. Keep it out of reach of children.
 21. Unplug the Battery Charger from its electrical outlet before connecting its cables to a battery, or performing any inspection, maintenance, or cleaning procedures.
 22. **Although this Charger has an automatic cut off; do NOT depend solely on automatic cut off. Leaving Charger unattended can result in fire and property damage.**
 23. **Use this Charger with flooded lead-acid or AGM batteries only.**
When charging a maintenance-free battery, always monitor the progress of the charge by viewing the Charge Meter. Do not overcharge a maintenance-free battery. **DO NOT USE WITH GEL BATTERIES.**
 24. Do not attempt to charge non-rechargeable or defective batteries.
 25. Do not charge more than one battery at one time.
 26. Have your charger serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the charger is maintained.
 27. Do not use charger while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating charger may result in serious personal injury.
 28. Before moving charger, disconnect power supply and battery, then allow charger to cool.
 29. 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.
 30. 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.



SAVE THESE INSTRUCTIONS.

Grounding and AC Power Cord Connection Instructions

Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

CAUTION – Risk of Fire or Electric Shock. Connect battery charger directly to grounding receptacle (three-prong). An adapter should not be used with battery charger.

Specifications

Input	120VAC, 60Hz, 2.2A		
Output	12 VDC	-	10* A
	12 VDC	-	2* A
	12 VDC Engine Start	-	50 A

*Amperage is only present when the unit is connected to a battery or in START mode.

Operation Instructions



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



TO PREVENT SERIOUS INJURY:

DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

Controls

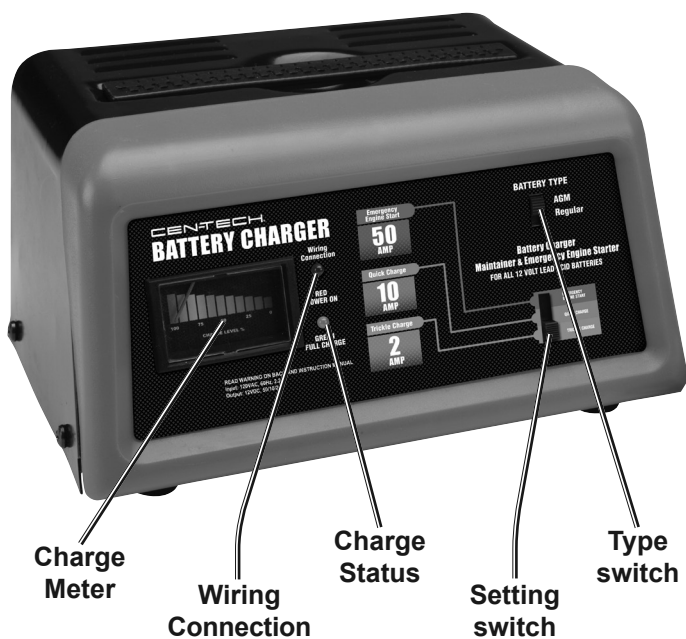


Figure A: Controls

Wiring Connection:

This indicates that the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

Charge Status:

This will light up red when the power is connected.
This will light up green when the battery is fully charged.
This is disabled in start mode.

Setting switch:

Use this to switch between charging and start modes and change the output amperage.

Battery Type switch:

Use this to set the battery type:

- Set to Regular for flooded and maintenance-free batteries.
- Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.

Charge Meter (10 amp charge mode only):

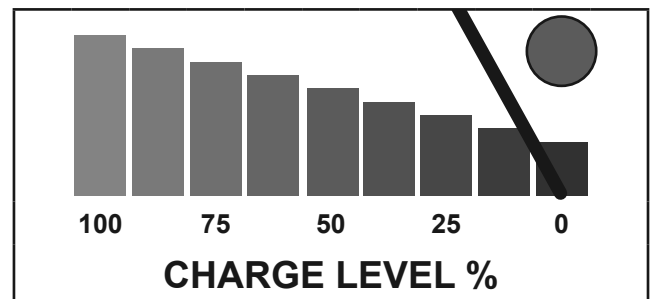


Figure B: DISCHARGED BATTERY

Initial charge current to the battery is at maximum.

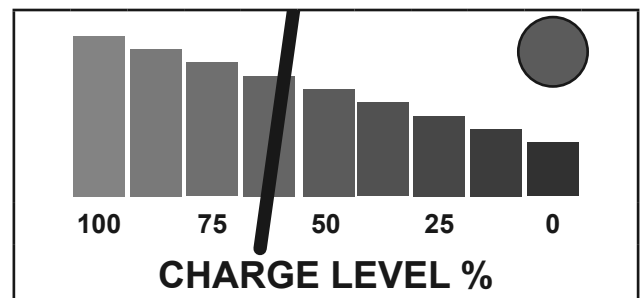


FIGURE C: BATTERY ALMOST FULLY CHARGED

Charge current to the battery is reduced.

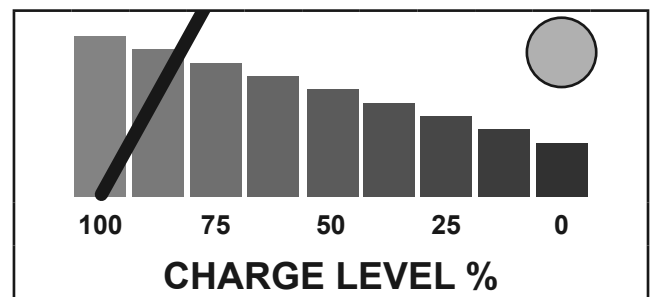


Figure D: FULLY CHARGED BATTERY

Charge current to the battery is minimal and the green LED is on.

Sometimes conditions such as a cold battery, a sulfated battery, or a deeply discharged lead calcium battery may cause Charge Meter to read near a full charge when charging process is only beginning.

Note: The Charge Meter shows the amount of current being drawn from the charger. It does not show what the charger is capable of delivering. When the battery is fully charged and registering 100% on the Charge Meter, a small charge will continue to move from the charger to the battery. If the charger is not disconnected from the battery, eventually heat build up will cause the battery acid to boil and overcharge the battery causing damage to the battery. Monitor battery charging progress constantly and if battery gets warm, stop charging it immediately.

Preparing to Charge

WARNING

Use this charger only on flooded lead-acid batteries.
Other batteries may be damaged or may overheat, leak, or catch fire.



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. 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.
2. Make sure area around battery is well ventilated while battery is being charged.
3. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
5. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
6. Charge battery initially at lowest rate.
7. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

SHORTED BATTERIES - will read on Charge Meter as a high end peg at beginning of charging process. If after 5-10 minutes, needle does not move off high end, the battery probably has a short circuit. Unplug charger and discontinue use. Have battery checked by a qualified technician.

COLD BATTERIES - begin charging at a low rate, increase as battery reaches a normal temperature, then rate will decrease normally.

DO NOT CHARGE A FROZEN BATTERY.

BATTERIES WITH HYDROMETER EYE:

Do not depend on hydrometer eye to determine battery charge level.

Charger Location

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

Charging Battery Installed in Vehicle

⚠ WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.



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.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

1. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
 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) clip from battery charger 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.
- NOTICE:** If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.
6. For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger 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.

Note: If the charger cycles between maximum charge level and a lower charge level when first connected, then the battery may be fully charged or nearly fully charged. Further charging may not be needed. If charging is attempted, charge at a lower rate and carefully monitor charge level to avoid battery damage.

7. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

**WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.**

8. Set Setting switch to 2A Trickle Charge or 10A Quick Charge.

WARNING! Do not use 50A Emergency Engine Start function for charging.

9. After switches are set, plug in charger.
10. Monitor the charging process.
The Charge Complete indicator will light up and blink when the battery is fully charged.
11. When disconnecting charger, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
12. After use clean, then store the charger indoors out of children's reach.

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Charging Battery Outside Vehicle

⚠ WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.



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.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

1. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
2. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
3. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
4. Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (BLACK) charger clip to free end of cable.
5. Do not face battery when making final connection.

NOTICE: If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

6. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.

7. Set Setting switch to 2A Trickle Charge or 10A Quick Charge.

WARNING! Do not use 50A Emergency Engine Start function for charging.

8. After switches are set, plug in charger.
9. Monitor the charging process.
The Charge Complete indicator will light up and blink when the battery is fully charged.
10. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
11. After use clean, then store the charger indoors out of children's reach.

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12V Engine Starting

NOTICE

Some vehicles with onboard computers may be damaged from the high-current starting output. Thoroughly read the vehicle service manual before using this procedure.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

Note: During extremely cold weather or when battery is severely exhausted, charge the battery for about five minutes before attempting to turn on engine.

1. Unplug the Charger AC power cord from the AC outlet.
2. For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger 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.

NOTICE: If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

3. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.

4. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION: DO NOT USE WITH GEL BATTERIES.

5. Set Setting switch to 50A Emergency Engine Start.
6. After switches are set, plug in charger.
7. **WARNING! TO PREVENT SERIOUS INJURY, FIRE, AND DAMAGE TO CHARGER AND BATTERY, follow 5 second maximum with 4 minute minimum rest duty cycle for the Start mode.**
8. To start the engine, turn ignition key. **ONLY KEEP CHARGER IN START MODE UP TO 5 SECONDS AT A TIME.**
9. If engine fails to start, charge battery for an additional five minutes before attempting to start.
10. After the engine starts, unplug the power cord from outlet before disconnecting the DC cable clamps.

Maintenance Instructions



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

⚠ WARNING

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

TO PREVENT SERIOUS INJURY FROM CHARGER 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 charger. 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 charger with clean cloth.
3. **⚠ WARNING!** If the supply cord of this charger is damaged, it must be replaced only by a qualified service technician. **DO NOT OPEN CHARGER HOUSING, NO USER-SERVICEABLE PARTS INSIDE.**

Troubleshooting

Problem	Possible Causes	Likely Solutions
Charger will not start.	1. Cord not connected. 2. No power at outlet. 3. Clamps are not securely connected to battery terminals.	1. Check that cord is plugged in. 2. Check power at outlet. If outlet is unpowered, turn off charger and check circuit breaker. If breaker is tripped, make sure circuit is right capacity for charger and circuit has no other loads. 3. Unplug charger and check that the clamps are securely connected to the battery terminals.
Red Reverse Connection LED turns on.	Clamps are attached to wrong battery terminals.	Unplug charger if it is plugged in and reverse the connections.
Charge Meter stays at high end of dial for more than 5-10 minutes.	Battery has a short circuit.	Unplug the charger and discontinue use. Have the battery checked by a qualified technician.
Charger will not start vehicle.	Setting switch is set to Charge.	Change the Setting switch to Start.
⚠ Follow all safety precautions whenever diagnosing or servicing the charger. Disconnect power supply before service.		

Record Product's Serial Number Here: _____

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

Note: Internal parts are not user-serviceable. Replacement parts are not available.

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 above 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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Garantía limitada de 90 días

Harbor Freight Tools Co. hace todo lo posible para asegurar que sus productos cumplen con altos estándares de calidad y durabilidad, y garantiza al comprador original que este producto está libre de defectos en sus materiales y mano de obra durante un plazo de 90 días a partir de la fecha de compra. Esta garantía no corresponde a los daños resultantes, directa o indirectamente, del mal uso, abuso, negligencia o accidentes, reparaciones o alteraciones fuera de nuestras instalaciones, actividad delictiva, instalación incorrecta, desgaste normal o falta de mantenimiento. En ningún caso seremos responsables por muerte, lesiones a personas o bienes, o en el caso de daños incidentales, contingentes, especiales o consecuentes derivados del uso de nuestro producto. Algunos estados no permiten la exclusión o limitación de daños incidentales o consecuentes, por lo cual es posible que la anterior limitación de exclusión no sea aplicable a usted. ESTA GARANTÍA SUSTITUYE EXPRESAMENTE TODAS LAS DEMÁS GARANTÍAS, EXPRESAS O IMPLÍCITAS, INCLUIDAS LAS GARANTÍAS DE COMERCIABILIDAD Y ADECUACIÓN.

Para obtener los beneficios de esta garantía, deberá remitirnos el producto o pieza con los gastos de transporte prepagados. Junto con el artículo, deberá remitir, además, el comprobante de la fecha de compra y una explicación de su reclamo. Si nuestra inspección verifica el defecto, repararemos o sustituiremos el producto, a nuestra elección, o podremos optar por reintegrar el precio de compra si no podemos fácil y rápidamente proporcionar un reemplazo. Los gastos de envío de los productos reparados correrán por nuestra cuenta, pero si determinamos que no existe ningún defecto, o que el defecto fue resultado de circunstancias que no se encuentran dentro del alcance de nuestra garantía, usted deberá hacerse cargo de los costos de envío del producto.

Esta garantía le otorga derechos legales específicos y también puede tener otros derechos que varían entre estados.



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Un técnico calificado debe realizar los procedimientos que no se expliquen específicamente en este manual.



ADVERTENCIA

PARA EVITAR LESIONES GRAVES: Desenchufe el cargador, desconecte cualquier batería y permita que el cargador se enfríe por completo antes de realizar cualquier inspección, tarea de mantenimiento o procedimiento de limpieza.

PARA EVITAR LESIONES GRAVES OCASIONADAS POR UN FUNCIONAMIENTO DEFECTUOSO DEL CARGADOR:

No utilice el equipo si está dañado. Si detecta ruidos extraños o vibración, haga corregir el problema antes de continuar con el uso.

1. **ANTES DE CADA USO,** inspeccione el estado general del cargador. Verifique que no haya:

- componentes sueltos,
- piezas rajadas o rotas,
- cables eléctricos o aislantes de cables dañados, o
- cualquier otra condición que pueda afectar el funcionamiento seguro de la unidad.

2. **DESPUÉS DE UTILIZAR,** limpie las superficies externas del cargador con un paño limpio.

3. **ADVERTENCIA!** Si el cable de alimentación de este cargador está dañado, únicamente un técnico calificado debe reemplazarlo. **NO ABRA LA CARCASA DEL CARGADOR; EN SU INTERIOR NO HAY PIEZAS QUE PUEDA REPARAR EL USUARIO.**

Resolución de problemas

Problema	Causas posibles	Soluciones probables
----------	-----------------	----------------------

El cargador no arranca.	1. El cable no está conectado. 2. No hay energía en el tomacorriente. 3. Las pizas no están conectadas de manera firme a los bornes de la batería.	1. Verifique que el cable esté enchufado. 2. Verifique si hay energía en el tomacorriente. Si no hay energía en el tomacorriente, apague el cargador y verifique el disyuntor. Si el disyuntor se disparó, asegúrese de que el circuito tenga la capacidad correcta para el cargador y que no tenga otras cargas. 3. Desenchufe el cargador y verifique que las pizas estén firmemente conectadas a las terminales de la batería.
La luz LED roja de "Invertir conexión" se enciende.	Las pizas están conectadas a las terminales incorrectas de la batería.	Desenchufe el cargador si está enchufado, e invierta las conexiones.
El <i>Charge Meter</i> se mantiene en el lado del dial correspondiente a las cargas altas por más de 5-10 minutos.	La batería tiene un cortocircuito.	Desenchufe el cargador y discontinúe el uso. Haga que un técnico calificado revise la batería.
El cargador no hace arrancar el vehículo.	El <i>Setting Switch</i> (Interrupor de configuración) está colocado en <i>Charge</i> (Carga).	Cambie el <i>Setting Switch</i> (Interrupor de configuración) a <i>Start</i> (Arranque).



Siga todas las precauciones de seguridad cada vez que realice tareas de diagnóstico o reparación al cargador.
Desconecte el suministro de energía eléctrica antes de realizar el servicio de mantenimiento.

Anote el número de serie del producto aquí: _____

Nota: Si el producto no posee número de serie, tome nota del mes y el año de la compra.

Nota: El usuario no puede reparar ni reemplazar las piezas internas. Las piezas de repuesto no están disponibles.

AVISO

Algunos vehículos que poseen computadoras integradas pueden resultar dañados por las altas corrientes de salida durante el arranque.

Lea detalladamente el manual de servicio del vehículo antes de utilizar este procedimiento.

Nota: En condiciones de clima extremadamente

frío o cuando la batería esté muy agotada,

cargue la batería durante unos cinco minutos

antes de intentar encender el motor.

1. Desenchufe el cable de CA del cargador

del tomacorriente de CA.

2. En el caso de un vehículo que tenga el borne

negativo conectado a tierra, conecte la pínza

POSITIVA (ROJA) del cargador de baterías al borne

POSITIVO (POS, P, +) no conectado a tierra de

la batería. Conecte la pínza NEGATIVA (NEGRA)

al chasis o al bloque del motor del vehículo, lejos

de la batería. No conecte la pínza al carburador,

a tuberías de combustible o a piezas de chapa de

la carrocería. Conecte a una pieza de metal de

alto calibre del bastidor o del bloque del motor.

AVISO: Si se enciende el indicador de "Invertir

conexión", los cables están conectados de

manera incorrecta. Desconecte los cables

de inmediato y conéctelos correctamente

para impedir que la batería sufra daños.

3. Coloque los cables de CA y CC de modo tal

de reducir el riesgo de daños causados por el

capó, la puerta o alguna pieza móvil del motor.

4. Configure el interruptor de tipo de batería

de acuerdo al tipo de batería:

• Coloque en Regular para baterías líquidas

y baterías libres de mantenimiento.

• Coloque en AGM para baterías de

separador de fibra de vidrio absorbente.

¡ADVERTENCIA! PARA EVITAR EXPLOSIONES:

NO UTILICE CON BATERÍAS DE GEL.

5. Coloque el *Setting Switch* (Interruptor de

configuración) en *Emergency Engine Start*

(Arranque de emergencia del motor) de 50A.

6. Una vez configurados los interruptores,

enchufe el cargador.

7. **¡ADVERTENCIA! PARA EVITAR LESIONES**

GRAVES, INCENDIO Y DAÑOS AL CARGADOR

Y LA BATERÍA, siga un ciclo de trabajo de

5 segundos máximo con 4 minutos de descanso

mínimo para el modo Start (Arranque).

8. Para encender el motor, gire la llave de

encendido. **MANTENGA EL CARGADOR**

EN MODO START (ARRANQUE) SOLO

HASTA 5 SEGUNDOS POR VEZ.

9. Si el motor no arranca, cargue la batería otros

cinco minutos antes de intentar hacerlo arrancar.

10. Cuando el motor haya arrancado, desenchufe el

cable del tomacorriente antes de desconectar las

pínzas del cable de CC.



Cómo cargar una batería fuera del vehículo

⚠️ ADVERTENCIA

UNA CHISPA CERCA DE LA BATERÍA PODRÍA HACER QUE ESTA EXPLOTE.
PARA REDUCIR EL RIESGO DE QUE SE GENEREN CHISPAS CERCA DE LA BATERÍA, SIGA ESTAS INSTRUCCIONES AL PIE DE LA LETRA:

PARA EVITAR LESIONES GRAVES:

Utilice gafas de seguridad a prueba de salpicaduras y guantes de trabajo de caucho de alta resistencia aprobados por el ANSI cada vez que conecte, desconecte o trabaje cerca de la batería. El ácido de la batería puede causar ceguera permanente.



1. Verifique la polaridad de los bornes de la batería. El borne POSITIVO (POS, P, +) de la batería generalmente tiene un diámetro mayor que el del borne NEGATIVO (NEG, N, -).

2. Conecte un cable de batería con aislante que tenga al menos 24 pulgadas de longitud y calibre americano 6 al borne NEGATIVO (NEG, N, -) de la batería.

3. Conecte la pínza POSITIVA (ROJA) del cargador al borne POSITIVO (POS, P, +) de la batería.

4. Coloque usted y coloque el extremo libre del cable tan lejos como sea posible de la batería; luego, conecte la pínza NEGATIVA (NEGRA) del cargador al extremo libre del cable.

5. No se ponga de frente a la batería cuando realice la conexión final.

AVISO: Si se enciende el indicador de "Invertir conexión", los cables están conectados de manera incorrecta. Desconecte los cables de inmediato y conéctelos correctamente para impedir que la batería sufra daños.

11. Después de utilizar el cargador, límpielo y guárdelo bajo techo, fuera del alcance de los niños.

10. Al desconectar el cargador, hágalo siempre en secuencia inversa a la secuencia seguida para el procedimiento de conexión e interrumpa primero la conexión mientras se encuentre tan alejado de la batería como resulte práctico.

9. Monitoree el proceso de carga. El indicador de "Carga completa" se encenderá y parpadeará cuando la batería esté totalmente cargada.

8. Una vez configurados los interruptores, enchufe el cargador.

7. Configure el *Setting Switch* (Interruptor de configuración) en el amperaje de carga deseado.

⚠️ ADVERTENCIA! PARA EVITAR EXPLOSIONES: NO UTILICE CON BATERÍAS DE GEL.

• Colóquelo en AGM para baterías de

separador de fibra de vidrio absorbente.

• Colóquelo en Regular para baterías líquidas y baterías libres de mantenimiento.

• Colóquelo en Regular para baterías líquidas de acuerdo al tipo de batería:

6. Configure el interruptor de tipo de batería

Cómo cargar una batería instalada en un vehículo

ADVERTENCIA

UNA CHISPA CERCA DE LA BATERÍA PODRÍA HACER QUE ESTA EXPLOTE.
 PARA REDUCIR EL RIESGO DE QUE SE GENEREN CHISPAS CERCA DE LA BATERÍA, SIGA ESTAS INSTRUCCIONES AL PIE DE LA LETRA:

PARA EVITAR LESIONES GRAVES:



Utilice gafas de seguridad a prueba de salpicaduras y guantes de trabajo de caucho de alta resistencia aprobados por el ANSI cada vez que conecte, desconecte o trabaje cerca de la batería. El ácido de la batería puede causar ceguera permanente.

SEGURIDAD

CONFIGURACIÓN

- Coloque los cables de CA y CC de modo tal de reducir el riesgo de daños causados por el capó, la puerta o alguna pieza móvil del motor.
- Manténgase alejado de aspas de ventilador, correas, poleas y otras piezas que puedan causar lesiones a las personas.
- Verifique la polaridad de los bornes de la batería. El borne POSITIVO (POS, P, +) de la batería generalmente tiene un diámetro mayor que el del borne NEGATIVO (NEG, N, -).
- Determine qué borne de la batería posee conexión a tierra (está conectado) al chasis. Si el borne negativo está conectado al chasis (como sucede en la mayoría de los vehículos), vea 5. Si el borne positivo está conectado al chasis, vea 6.
- En el caso de un vehículo que tenga el borne negativo conectado a tierra, conecte la pínza POSITIVA (ROJA) del cargador de baterías al borne POSITIVO (POS, P, +) no conectado a tierra de la batería. Conecte la pínza NEGATIVA (NEGRA) al chasis o al bloque del motor del vehículo, lejos de la batería. No conecte la pínza al carburador, a tuberías de combustible o a piezas de chapa de la carrocería. Conecte a una pieza de metal de alto calibre del bastidor o del bloque del motor.
- En el caso de un vehículo que tenga el borne positivo conectado a tierra, conecte la pínza NEGATIVA (NEGRA) del cargador de baterías al borne POSITIVO (POS, P, +) no conectado a tierra de la batería. Conecte la pínza NEGATIVA (NEGRA) al cargador de baterías al borne POSITIVO (NEG, N, -) no conectado a tierra de la batería. Conecte la pínza POSITIVA (ROJA) para impedir que la batería sufra daños.
- En el caso de un vehículo que tenga el borne positivo conectado a tierra, conecte la pínza POSITIVA (ROJA) del cargador de baterías al borne POSITIVO (NEG, N, -) no conectado a tierra de la batería. Conecte la pínza NEGATIVA (NEGRA) del cargador de baterías al borne POSITIVO (NEG, N, -) no conectado a tierra de la batería. Conecte la pínza POSITIVA (ROJA) para impedir que la batería sufra daños.

FUNCIONAMIENTO

MANTENIMIENTO

- Configure el interruptor de tipo de batería de acuerdo al tipo de batería:
- Colóquelo en Regular para baterías líquidas y baterías libres de mantenimiento.
- Colóquelo en AGM para baterías de separador de fibra de vidrio absorbente.
- Monitoree el proceso de carga. El indicador de "Carga completa" se encenderá y parpadeará cuando la batería esté totalmente cargada.
- Al desconectar el cargador, desconecte el cable de CA, quite la pínza del chasis del vehículo y luego retire la pínza de la terminal de la batería.
- Después de utilizar el cargador, límpielo y guárdelo bajo techo, fuera del alcance de los niños.
- Configure el Setting Switch (interruptor de configuración) en el amperaje de carga deseado.
- Una vez configurados los interruptores, enchufe el cargador.
- Monitoree el proceso de carga. El indicador de "Carga completa" se encenderá y parpadeará cuando la batería esté totalmente cargada.
- Al desconectar el cargador, desconecte el cable de CA, quite la pínza del chasis del vehículo y luego retire la pínza de la terminal de la batería.
- Después de utilizar el cargador, límpielo y guárdelo bajo techo, fuera del alcance de los niños.

ADVERTENCIA! PARA EVITAR EXPLOSIONES: NO UTILICE CON BATERÍAS DE GEL.

MANTENIMIENTO

FUNCIONAMIENTO

CONFIGURACIÓN

SEGURIDAD

1. Coloque el cargador tan lejos de la batería como los cables de CC lo permitan.
2. Nunca coloque el cargador directamente encima de la batería que está siendo cargada; de lo contrario, los gases de la batería corroerán y dañarán el cargador.

Ubicación del cargador

1. De ser necesario extraer la batería del vehículo para cargarla, siempre quite primero de la batería el terminal con conexión a tierra. Asegúrese de que todos los accesorios del vehículo estén apagados, para no generar un arco voltaico.
2. Asegúrese de que el área que rodea a la batería esté bien ventilada mientras carga la batería.
3. Limpie las terminales de la batería. Sea cuidadoso y evite que la corrosión entre en contacto con los ojos.
4. Agregue agua destilada en cada celda hasta que el ácido de la batería llegue al nivel especificado por el fabricante de la batería. No supere el límite máximo. En el caso de las baterías cuyas celdas no poseen tapones extraíbles, como las baterías de plomo-ácido reguladas por válvula, siga cuidadosamente las instrucciones del fabricante para la recarga.
5. Analice todas las precauciones específicas indicadas por el fabricante de la batería relativas al proceso de carga, y no supere las tasas de carga recomendadas.



PARA EVITAR LESIONES GRAVES:

Utilice gafas de seguridad a prueba de salpicaduras y guantes de trabajo de caucho de alta resistencia aprobados por el ANSI cada vez que conecte, desconecte o trabaje cerca de la batería. El ácido de la batería puede causar ceguera permanente.

ADVERTENCIA

Preparativos para la carga

Note: The Charge Meter shows the amount of current being drawn from the charger. It does not show what the charger is capable of delivering. When the battery is fully charged and registering 100% on the Charge Meter, a small charge will continue to move from the charger to the battery. If the charger is not disconnected from the battery, eventually heat build up will cause the battery acid to boil and overcharge the battery causing damage to the battery. Monitor battery charging progress constantly and if battery gets warm, stop charging it immediately.

Sometimes conditions such as a cold battery, a sulfated battery, or a deeply discharged lead calcium battery may cause Charge Meter to read near a full charge when charging process is only beginning.

- Battery Type switch (interruptor de tipo de batería):** Utilícelo para configurar el tipo de batería:
- Colóquelo en Regular para baterías líquidas y baterías libres de mantenimiento.
 - Colóquelo en AGM para baterías de separador de fibra de vidrio absorbente.
- ADVERTENCIA! PARA EVITAR EXPLOSIONES:**
- NO UTILICE CON BATERÍAS DE GEL.**

Especificaciones

Entrada	120VAC, 60Hz, 2,2A		
Salida	12 VCC	-	10* A
	12 VCC	-	2* A
	12 VCC Arranque de motor	-	50 A

*El amperaje únicamente está presente cuando la unidad está conectada a una batería o en modo START (ARRANQUE).

Funcionamiento Instrucciones



Antes de instalar o usar este producto, lea la TOTALIDAD DE LA SECCIÓN "INFORMACIÓN IMPORTANTE SOBRE SEGURIDAD" que se encuentra al comienzo de este manual, incluyendo todos los textos debajo de los subtítulos.

PARA EVITAR LESIONES GRAVES:

ADVERTENCIA

NO ENCHUFE EL CARGADOR HASTA QUE SE LE INDIQUE QUE LO HAGA.

Controles

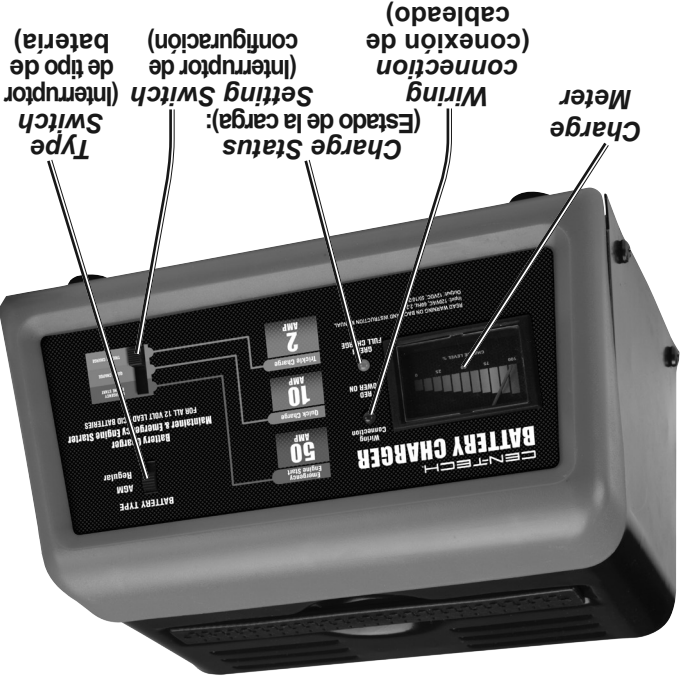


Figura A: Controles

Wiring connection (conexión de cableado):

Esto indica que los cables están conectados de manera incorrecta. Desconecte los cables de inmediato y conéctelos correctamente para impedir que la batería sufra daños.

Charge Status (Estado de la carga):

Se iluminará de color rojo cuando esté conectado el suministro eléctrico. Se iluminará de color verde cuando la batería esté totalmente cargada. En el modo Start (Arranque), esta función está desactivada.

Setting Switch (Interruptor de configuración):

Utilice este interruptor para alternar entre los modos Charging (Cargando) y Start (Arranque) y cambiar el amperaje de salida.

SEGURIDAD

CONFIGURACIÓN

FUNCIONAMIENTO

MANTENIMIENTO

Charge Meter (10 amp charge mode only):

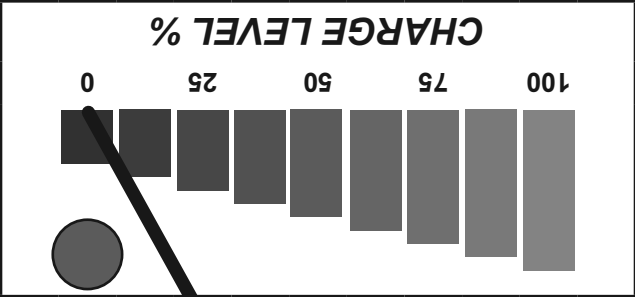


Figura B: DISCHARGED BATTERY
Initial charge current to the battery is at maximum.

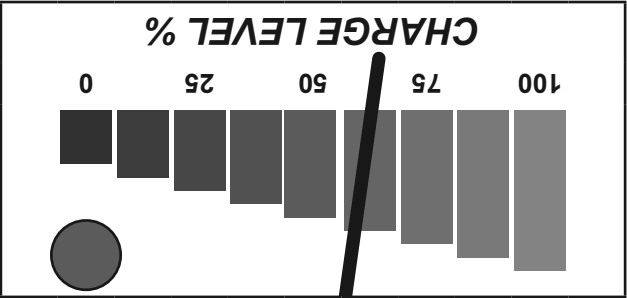


FIGURA C: BATTERY ALMOST FULLY CHARGED
Charge current to the battery is reduced.

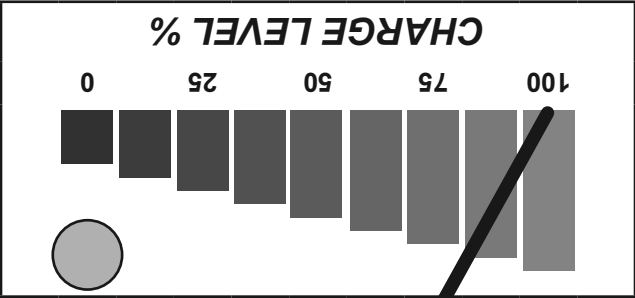


Figura D: FULLY CHARGED BATTERY
Charge current to the battery is minimal and the green LED is on.

Instrucciones para la puesta a tierra y la conexión del cable de alimentación de CA




CONSERVE ESTAS INSTRUCCIONES.

Se debe conectar a tierra el cargador para reducir el riesgo de descargas eléctricas. El cargador está equipado con un cable que posee un conductor que conecta a tierra el equipo y un enchufe para conexión a tierra. El enchufe debe conectarse a un tomacorriente que esté adecuadamente instalado y conectado a tierra y que cumpla con todos los códigos y ordenanzas locales.

PELIGRO – Nunca altere el cable de CA ni el enchufe provistos; si el enchufe no calza en el tomacorriente, haga que un técnico calificado instale un tomacorriente adecuado. Una conexión incorrecta puede generar riesgo de descarga eléctrica.

PRECAUCION – Riesgo de incendio o descarga eléctrica. Conecte el cargador para baterías directamente a un tomacorriente con conexión a tierra (tres patas). No debe utilizarse un adaptador con el cargador para baterías.

21. Si bien este cargador posee un disyuntor, NO dependa únicamente de él. Desatender el cargador puede generar un incendio y daños a la propiedad.
20. Desenchufe el cargador para baterías del tomacorriente antes de conectar sus cables a una batería o realizar cualquier procedimiento de inspección, mantenimiento o limpieza.
19. Este producto no es un juguete. Manténgalo fuera del alcance de los niños.
18. Conserve las etiquetas y placas del cargador. Contienen información de seguridad importante. Si faltan o son ilegibles, póngase en contacto con Harbor Freight Tools para solicitar un reemplazo.
17.  Utilice gafas de seguridad a prueba de salpicaduras y guantes de trabajo de caucho de alta resistencia aprobados por el ANSI cada vez que conecte, desconecte o trabaje cerca de la batería. El ácido de la batería puede causar ceguera permanente.
- g. Las baterías náuticas (embarcaciones) deben extraerse y cargarse en tierra firme. Para cargarlas a bordo, hacen falta equipos especialmente diseñados para usos náuticos.
- f. Al desconectar el cargador, haga lo siguiente:
 - e. No se ponga de frente a la batería cuando realice la conexión final.
 - d. Colóquese usted y coloque el extremo libre del cable tan lejos como sea posible de la batería; luego, conecte la piza NEGATIVA (NEGRA) del cargador al extremo libre del cable.

22. Utilice este cargador únicamente con baterías de plomo-ácido líquido o baterías con separadores de fibra de vidrio absorbente. Cuando cargue una batería libre de mantenimiento, monitoree siempre el avance de la carga revisando el *Charge Meter*. No cargue de más las baterías libres de mantenimiento.
23. No intente cargar baterías defectuosas o no recargables.
24. No cargue más de una batería a la vez.
25. El servicio técnico de su cargador debe estar a cargo de una persona calificada que utilice únicamente piezas de repuesto idénticas a las del equipo. Esto garantizará que se mantenga la seguridad del cargador.
26. Cuando esté cansado o bajo la influencia de drogas, alcohol o medicamentos, no utilice el cargador. La más breve falta de atención al operar un cargador puede ocasionar graves lesiones personales.
27. Antes de mover el cargador, desconecte el suministro eléctrico y la batería; luego, permita que el cargador se enfríe.
28. Las personas que utilizan marcapasos deben consultar a su(s) médico(s) antes de utilizar el equipo. Los campos electromagnéticos próximos a un marcapasos podrían interferir con el funcionamiento del marcapasos o hacer que este funcione mal. Además, las personas que utilizan marcapasos deben:
 - Evitar operar el cargador estando solos.
 - Inspeccionar y realizar un mantenimiento adecuado del equipo, para evitar descargas eléctricas.
 - Conectar a tierra correctamente el cable de alimentación. También debe implementarse un interruptor de circuito por falla a tierra (GFCI) que impide las descargas eléctricas prolongadas.
29. Las advertencias, precauciones e instrucciones que se ofrecen en este manual de instrucciones no pueden cubrir todas las situaciones y condiciones posibles que pueden ocurrir. El operador del equipo debe entender que el sentido común y la cautela son factores que no pueden fabricarse e incorporarse al producto, sino que corren por cuenta del operador.

- a. Conecte y desconecte las pinzas de salida de CC únicamente después de quitar el cable de CA del enchufe. Nunca permita que las pinzas entren en contacto.
- b. Conecte las pinzas a la batería y al chasis como se indica en 15(e), 15(f), y 16(b) a 16(d).
15. SIGA ESTOS PASOS CUANDO LA BATERÍA ESTÉ INSTALADA EN EL VEHÍCULO. UNA CHISPA CERCA DE LA BATERÍA PODRÍA HACER QUE ESTA EXPLOTE. PARA REDUCIR EL RIESGO DE QUE SE GENEREN CHISPAS CERCA DE LA BATERÍA:
 - a. Coloque los cables de CA y CC de modo tal de reducir el riesgo de daños causados por el capó, la puerta o alguna pieza móvil del motor.
 - b. Manténgase alejado de aspas de ventilador, correas, poleas y otras piezas que puedan causar lesiones a las personas.
 - c. Verifique la polaridad de los bornes de la batería. El borne POSITIVO (POS, P, +) de la batería generalmente tiene un diámetro mayor que el del borne NEGATIVO (NEG, N, -).
 - d. Determine qué borne de la batería posee conexión a tierra (está conectado al chasis. Si el borne negativo está conectado al chasis (como sucede en la mayoría de los vehículos), vea (e). Si el borne positivo está conectado al chasis, vea (f)).
 - e. En el caso de un vehículo que tenga el borne negativo conectado a tierra, conecte la pinza POSITIVA (ROJA) del cargador de baterías al borne POSITIVO (POS, P, +) no conectado a tierra de la batería. Conecte la pinza NEGATIVA (NEGRA) al chasis o al bloque del motor del vehículo, lejos de la batería. No conecte la pinza al carburador, a tuberías de combustible o a piezas de chapa de la carrocería. Conecte a una pieza de metal de alto calibre del bastidor o del bloque del motor.
 - f. En el caso de un vehículo que tenga el borne positivo conectado a tierra, conecte la pinza NEGATIVA (NEGRA) al chasis o al bloque del motor del vehículo, lejos de la batería. No conecte la pinza al carburador, a tuberías de combustible o a piezas de chapa de la carrocería. Conecte a una pieza de metal de alto calibre del bastidor o del bloque del motor.
- f. Al desconectar el cargador, desconecte el cable de CA, quite la pinza del chasis del vehículo y luego retire la pinza de la terminal de la batería.
- h. Para obtener información sobre el tiempo de carga, consulte las instrucciones para la operación.
16. SIGA ESTOS PASOS CUANDO LA BATERÍA ESTÉ FUERA DEL VEHÍCULO. UNA CHISPA CERCA DE LA BATERÍA PODRÍA HACER QUE ESTA EXPLOTE. PARA REDUCIR EL RIESGO DE QUE SE GENEREN CHISPAS CERCA DE LA BATERÍA:
 - a. Verifique la polaridad de los bornes de la batería. El borne POSITIVO (POS, P, +) de la batería generalmente tiene un diámetro mayor que el del borne NEGATIVO (NEG, N, -).
 - b. Conecte un cable de batería con aislante que tenga al menos 24 pulgadas de longitud y calibre americano 6 al borne NEGATIVO (NEG, N, -) de la batería.

- g. Quite cualquier artículo personal de metal, como anillos, brazaletes, collares y relojes cuando trabaje con una batería de plomo-ácido. Una batería de plomo-ácido puede generar una corriente de cortocircuito lo suficientemente alta como para soldar un anillo o elemento similar al metal, y causar, así, una grave quemadura.
- h. Utilice el cargador para cargar únicamente baterías de PLOMO-ÁCIDO. El cargador no debe utilizarse para suministrar energía eléctrica a un sistema eléctrico de bajo voltaje que se utilice para aplicaciones que no sean las de un motor de arranque. No utilice el cargador de baterías para cargar las baterías secas que generalmente se utilizan con los electrodos húmedos. Esas baterías pueden estallar y causar lesiones a las personas y daños a la propiedad.
- i. NUNCA cargue una batería helada.
12. PREPARATIVOS PARA LA CARGA
 - a. De ser necesario extraer la batería del vehículo para cargarla, siempre quite primero de la batería el terminal con conexión a tierra. Asegúrese de que todos los accesorios del vehículo estén apagados, para no generar un arco voltaico.
 - b. Asegúrese de que el área que rodea a la batería esté bien ventilada mientras carga la batería.
 - c. Limpie los terminales de la batería. Sea cuidadoso y evite que la corrosión entre en contacto con los ojos.
 - d. Agregue agua destilada en cada celda hasta que el ácido de la batería llegue al nivel especificado por el fabricante de la batería. No supere el límite máximo. En el caso de las baterías cuyas celdas no poseen tapones extraíbles, como las baterías de plomo-ácido reguladas por válvula, siga cuidadosamente las instrucciones del fabricante para la recarga.
 - e. Analice todas las precauciones específicas indicadas por el fabricante de la batería relativas al proceso de carga, y no supere las tasas de carga recomendadas.
 - f. Inicialmente, cargue la batería a la tasa más baja de carga.
13. UBICACIÓN DEL CARGADOR
 - a. Coloque el cargador tan lejos de la batería como los cables de CC lo permitan.
 - b. Nunca coloque el cargador directamente encima de la batería que está siendo cargada; de lo contrario, los gases de la batería corroerán y dañarán el cargador.
 - c. Nunca permita que el ácido de la batería gotee sobre el cargador mientras realiza la lectura de la gravedad específica del electrolito o llena la batería.
 - d. No opere el cargador en áreas cerradas ni restrinja la ventilación.
 - e. No coloque la batería encima del cargador.
14. PRECAUCIONES PARA LA CONEXIÓN A CC

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

1. **CONSERVE ESTAS INSTRUCCIONES** – Este manual contiene instrucciones importantes sobre seguridad y funcionamiento de este cargador de baterías.

2. No exponga el cargador a la lluvia o la nieve.
3. La utilización de un accesorio no recomendado o vendido por el fabricante del cargador de baterías puede generar riesgo de incendio, descarga eléctrica o lesiones.

4. Para reducir el riesgo de que el cable y el enchufe resulten dañados, al desconectar el cargador tire del enchufe y no del cable.

5. No debe utilizarse un cable de extensión a menos que sea absolutamente necesario. La utilización de un cable de extensión inadecuado podría ocasionar riesgo de incendio y descarga eléctrica. De ser necesario utilizar un cable de extensión, asegúrese de que:

- a. El enchufe del cable de extensión tenga la misma cantidad de patas que el enchufe del cargador, y que dichas patas sean del mismo tamaño y forma;
- b. El cable de extensión esté bien conectado y en buenas condiciones eléctricas;
- c. El cable sea lo suficientemente grande para la potencia nominal de amperios de CA del cargador, según se especifica en la Tabla B.

Tabla B: Calibre americano para cables (AWG) mínimo recomendado para cables de extensión para cargadores de baterías

Potencia nominal de CA de entrada, en amperios*	Longitud del cable, en pies			
	AWG del cable			
Igual o mayor que	Pero menor que	25	50	100
0	2	18	18	16
2	3	18	18	16
3	4	18	18	16
4	5	18	18	14
5	6	18	16	14
6	8	18	16	12
8	10	18	14	12
10	12	16	14	10
12	14	16	12	10
14	16	16	12	8
16	18	14	12	8
18	20	14	12	8
* Si la potencia nominal de entrada de un cargador está indicada en vatios y no en amperios, la potencia nominal correspondiente en amperios debe determinarse dividiendo la potencia nominal de vatios por la potencia nominal de voltaje – por ejemplo: 1250 vatios/125 voltios= 10 amperios				

6. No opere el cargador si el cable o el enchufe están dañados; reemplace el cable o el enchufe de inmediato.

7. No opere el cargador si este ha recibido un golpe fuerte, si se ha caído o ha sufrido algún otro daño; hágalo revisar por un técnico calificado.
8. No desarme el cargador; cuando sea necesario repararlo o hacerle tareas de mantenimiento, acuda a un técnico calificado. Un reensamblaje incorrecto puede ocasionar riesgo de descarga eléctrica o incendio.
9. Para reducir el riesgo de sufrir una descarga eléctrica, desenchufe el cargador del tomacorriente antes de realizar tareas de limpieza o mantenimiento. Apagar los controles no reducirá ese riesgo.
10. **ADVERTENCIA – RIESGO DE GASES EXPLOSIVOS.**
- a. **TRABAJAR EN LAS PROXIMIDADES DE UNA BATERÍA DE PLOMO-ÁCIDO ES PELIGROSO. DURANTE SU FUNCIONAMIENTO NORMAL, LAS BATERÍAS GENERAN GASES EXPLOSIVOS. POR LO TANTO, ES DE VITAL IMPORTANCIA QUE SIGA LAS INSTRUCCIONES CADA VEZ QUE UTILICE EL CARGADOR.**
- b. Para reducir el riesgo de que la batería explote, siga estas instrucciones y las publicadas por el fabricante de la batería y por el fabricante de cualquier equipo que desee utilizar en las proximidades de la batería. Repase las señales de precaución que aparecen en estos productos y en el motor.

11. PRECAUCIONES PERSONALES

- a. Tenga en cuenta la posibilidad de tener a alguien lo suficientemente cerca de usted como para que acuda en su ayuda cuando trabaje cerca de una batería de plomo-ácido.
- b. Tenga abundante agua y jabón cerca por si el ácido de la batería entra en contacto con su piel, ropa u ojos.
- c. Utilice protectores totales de ojos y ropa. Evite tocarse los ojos cuando trabaje cerca de la batería.
- d. Si el ácido de la batería entra en contacto con la piel o la ropa, lave inmediatamente con agua y jabón. Si el ácido ingresa en los ojos, lávelos inmediatamente con abundante agua fría del grifo durante al menos 10 minutos y solicite atención médica de inmediato.
- e. **NUNCA fume ni permita que haya chispas o llama en las proximidades de la batería o del motor.**
- f. Sea extra precavido para reducir el riesgo de dejar caer una herramienta de metal sobre la batería. Podrían hacer que la batería u otras piezas eléctricas generen chispas o entren en cortocircuito y ocasionen explosiones.

SEGURIDAD

CONFIGURACIÓN





FUNCIONAMIENTO




MANTENIMIENTO

CENTECH®

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Contenido

SÍMBOLOS DE ADVERTENCIA Y DEFINICIONES	
	Este es el símbolo de alerta de seguridad. Se utiliza para alertarlo sobre potenciales riesgos de sufrir lesiones personales. Para evitar posibles lesiones o la muerte, acate todos los mensajes de seguridad que acompañan a esta señal.
	Indica una situación peligrosa que, de no evitarse, provocará la muerte o lesiones graves.
	Indica una situación peligrosa que, de no evitarse, podría provocar la muerte o lesiones graves.
	Indica una situación peligrosa que, de no evitarse, podría provocar lesiones menores o de moderada gravedad.
AVISO PRECAUCIÓN	Hace referencia a prácticas no relacionadas con lesiones personales.

	Señal de ADVERTENCIA que refiere a riesgo de sufrir lesiones oculares. Utilice gafas de seguridad a prueba de salpicaduras aprobadas por el ANSI.
	Lea el manual antes de la instalación y/o el uso.
	Señal de ADVERTENCIA que refiere a riesgo de incendio. Siga el procedimiento para la conexión.

	Canadian Standards Association
	Underwriters Laboratories, Inc.
VAC	Volttos corriente alterna
A	Amperios
CCA	Amperios de arranque en frío
RC	Capacidad de reserva
Ah	Amperios-hora

Manual del Usuario y Instrucciones de Seguridad

Conserve Este Manual Guarde este manual para consultas futuras sobre las advertencias y precauciones de seguridad y los procedimientos de montaje, funcionamiento, inspección, mantenimiento y limpieza. Escriba el número de serie del producto en el dorso del manual junto al esquema de montaje (o el mes y año de la compra si el producto no tiene número). Conserve este manual y el comprobante de compra en un lugar seco y seguro para futuras consultas.

CENTECH®

ARTÍCULO
60581

10/2/50 AMPERIOS 12 VOLTIOS CARGADOR/ARRANCADOR DE BATERÍAS



AVISO

!IMPORTANTE! Esta edición en español del manual es una traducción del manual original inglés. El manual original inglés reemplaza a esta información si hay una inconsistencia.

!ADVERTENCIA

Lea el siguiente material antes de usar este producto. De no hacerlo, podría sufrir lesiones graves. CONSERVE ESTE MANUAL.

Visite nuestro sitio web: <http://www.harborfreight.com>
Si lo necesita, envíe un correo electrónico a nuestro Servicio Técnico: productsupport@harborfreight.com

REV S14a

BC

Al desembalar el producto, asegúrese de que esté intacto y no haya sufrido daños. Si alguna pieza falta o está rota, llame al 1-888-866-5797 tan pronto como sea posible.
Copyright © 2012 por Harbor Freight Tools®. Todos los derechos reservados. Queda prohibido cualquier tipo de reproducción de los contenidos de este manual, incluyendo sus ilustraciones gráficas, sin el expreso consentimiento escrito de Harbor Freight Tools. Es posible que los diagramas incluidos en este manual no hayan sido dibujados guardando las proporciones. Debido a las mejoras continuas, el producto real puede diferir ligeramente del descrito en este documento. Es posible que las herramientas necesarias para el montaje y el mantenimiento técnico no estén incluidas.

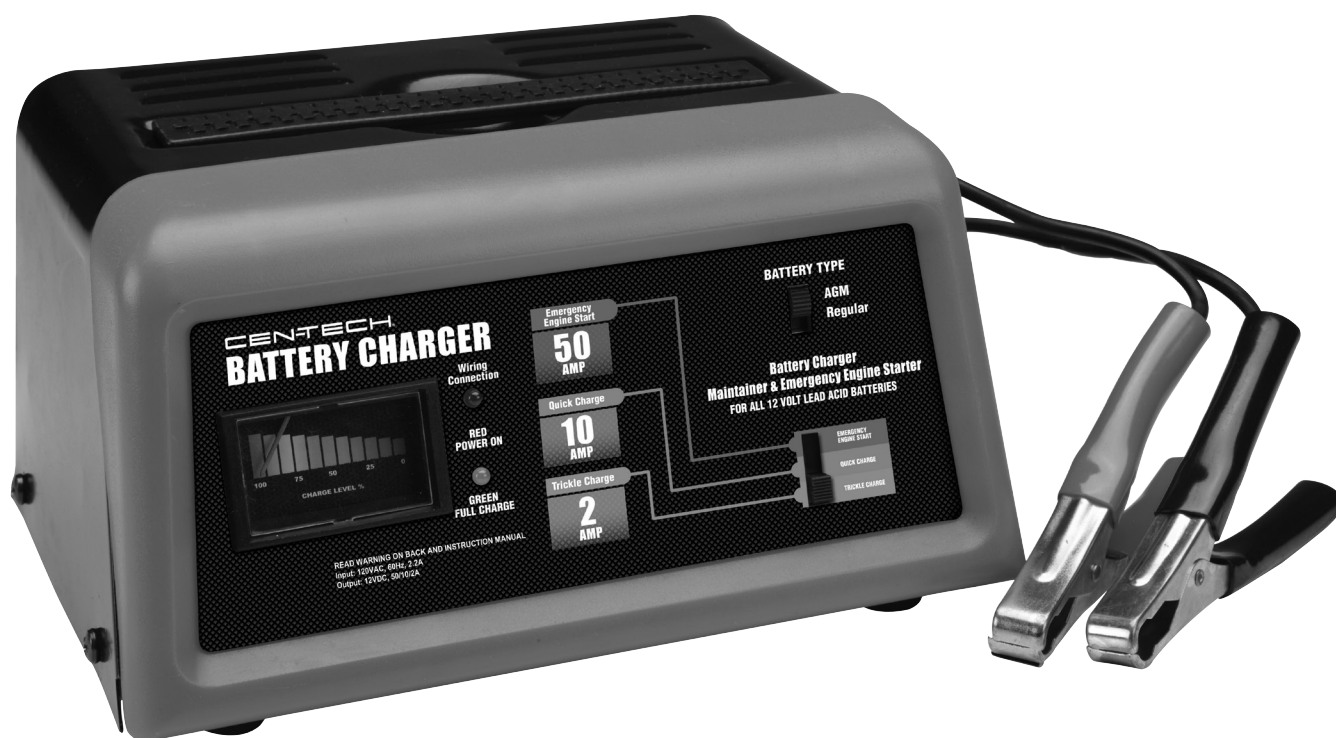
Owner's Manual & Safety Instructions

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.

21j

CEN-TECH®

10/2/50 AMP 12 VOLT BATTERY CHARGER/STARTER



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

60581

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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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

⚠ WARNING






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

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CEN-TECH®

WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

VAC	Volts Alternating Current
A	Amperes
CCA	Cold Cranking Amps
RC	Reserve Capacity
Ah	Ampere-hours

	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved splash-resistant safety goggles.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Fire. Follow connection procedure.

IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS –

This manual contains important safety and operating instructions for this battery charger.

2. Do not expose charger to rain or snow.
3. Use of an attachment not recommended or sold by the battery charger 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 charger.
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 charger;
 - 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 charger as specified in Table A.

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

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 charger 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

6. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.

7. Do not operate charger 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 charger; take it to a qualified serviceman 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 charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
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 CHARGER.
 - 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 charger 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. Do not use battery charger 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 overfill. 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. Charge battery initially at lowest rate.

13. CHARGER LOCATION

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

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 charger 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 charger 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 charger, 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) charger 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) charger clip to free end of cable.
 - e. Do not face battery when making final connection.
 - f. When disconnecting charger, 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. Do not use Start setting to charge batteries. Use to jump start only.
 19. Maintain labels and nameplates on the charger. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
 20. This product is not a toy. Keep it out of reach of children.
 21. Unplug the Battery Charger from its electrical outlet before connecting its cables to a battery, or performing any inspection, maintenance, or cleaning procedures.
 22. **Although this Charger has an automatic cut off; do NOT depend solely on automatic cut off. Leaving Charger unattended can result in fire and property damage.**
 23. **Use this Charger with flooded lead-acid or AGM batteries only.**
When charging a maintenance-free battery, always monitor the progress of the charge by viewing the Charge Meter. Do not overcharge a maintenance-free battery. **DO NOT USE WITH GEL BATTERIES.**
 24. Do not attempt to charge non-rechargeable or defective batteries.
 25. Do not charge more than one battery at one time.
 26. Have your charger serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the charger is maintained.
 27. Do not use charger while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating charger may result in serious personal injury.
 28. Before moving charger, disconnect power supply and battery, then allow charger to cool.
 29. 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.
 30. 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.



SAVE THESE INSTRUCTIONS.

Grounding and AC Power Cord Connection Instructions

Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

CAUTION – Risk of Fire or Electric Shock. Connect battery charger directly to grounding receptacle (three-prong). An adapter should not be used with battery charger.

Specifications

Input	120VAC, 60Hz, 2.2A		
Output	12 VDC	-	10* A
	12 VDC	-	2* A
	12 VDC Engine Start	-	50 A

*Amperage is only present when the unit is connected to a battery or in START mode.

Operation Instructions



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

⚠ WARNING

TO PREVENT SERIOUS INJURY:

DO NOT PLUG IN CHARGER UNTIL DIRECTED TO DO SO.

Controls

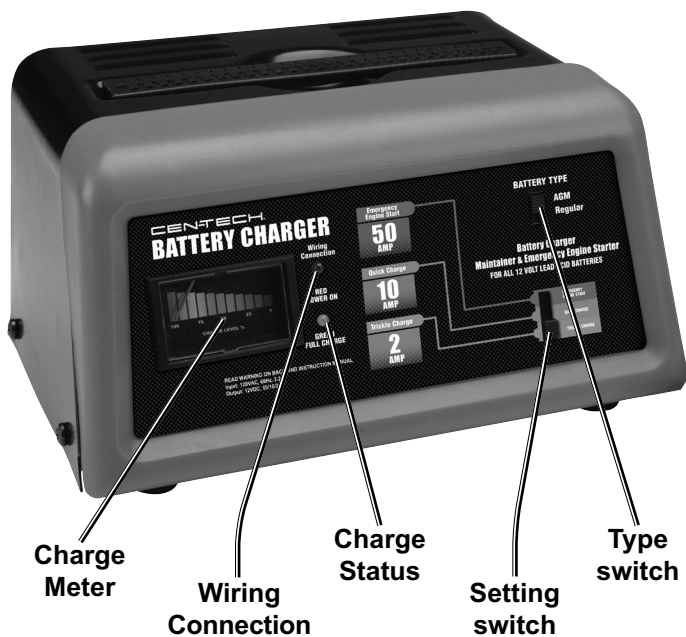


Figure A: Controls

Wiring Connection:

This indicates that the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

Charge Status:

This will light up red when the power is connected.
This will light up green when the battery is fully charged.
This is disabled in start mode.

Setting switch:

Use this to switch between charging and start modes and change the output amperage.

Battery Type switch:

Use this to set the battery type:

- Set to Regular for flooded and maintenance-free batteries.
- Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.

Charge Meter (10 amp charge mode only):

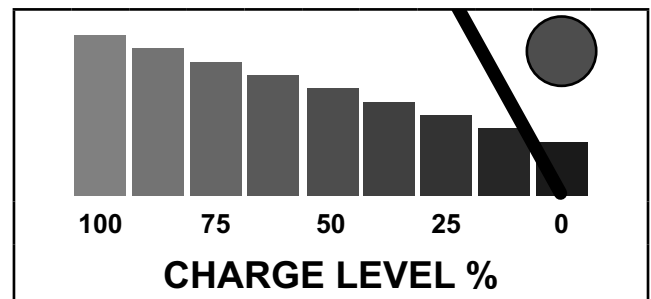


Figure B: DISCHARGED BATTERY

Initial charge current to the battery is at maximum.

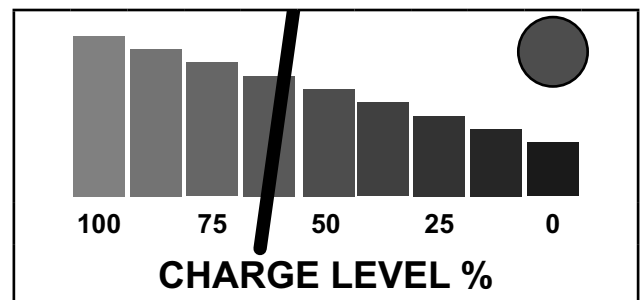


FIGURE C: BATTERY ALMOST FULLY CHARGED

Charge current to the battery is reduced.

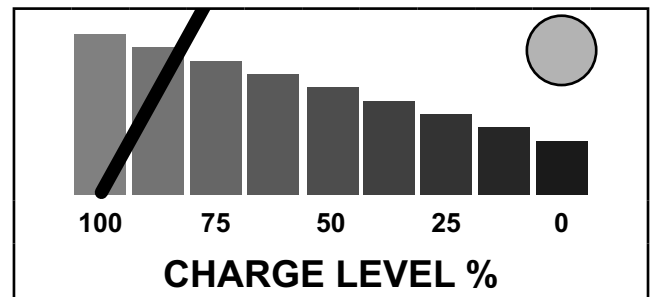


Figure D: FULLY CHARGED BATTERY

Charge current to the battery is minimal and the green LED is on.

Sometimes conditions such as a cold battery, a sulfated battery, or a deeply discharged lead calcium battery may cause Charge Meter to read near a full charge when charging process is only beginning.

Note: The Charge Meter shows the amount of current being drawn from the charger. It does not show what the charger is capable of delivering. When the battery is fully charged and registering 100% on the Charge Meter, a small charge will continue to move from the charger to the battery. If the charger is not disconnected from the battery, eventually heat build up will cause the battery acid to boil and overcharge the battery causing damage to the battery. Monitor battery charging progress constantly and if battery gets warm, stop charging it immediately.

Preparing to Charge

⚠ WARNING

Use this charger only on flooded lead-acid batteries.
Other batteries may be damaged or may overheat, leak, or catch fire.



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. 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.
2. Make sure area around battery is well ventilated while battery is being charged.
3. Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries, carefully follow manufacturer's recharging instructions.
5. Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
6. Charge battery initially at lowest rate.
7. A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

SHORTED BATTERIES - will read on Charge Meter as a high end peg at beginning of charging process. If after 5-10 minutes, needle does not move off high end, the battery probably has a short circuit. Unplug charger and discontinue use. Have battery checked by a qualified technician.

COLD BATTERIES - begin charging at a low rate, increase as battery reaches a normal temperature, then rate will decrease normally.

DO NOT CHARGE A FROZEN BATTERY.

BATTERIES WITH HYDROMETER EYE:

Do not depend on hydrometer eye to determine battery charge level.

Charger Location

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

Charging Battery Installed in Vehicle

⚠ WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.



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.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

1. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.
 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) clip from battery charger 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.
- NOTICE:** If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.
6. For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger 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.

Note: If the charger cycles between maximum charge level and a lower charge level when first connected, then the battery may be fully charged or nearly fully charged. Further charging may not be needed. If charging is attempted, charge at a lower rate and carefully monitor charge level to avoid battery damage.

7. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

**WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.**

8. Set Setting switch to 2A Trickle Charge or 10A Quick Charge.

WARNING! Do not use 50A Emergency Engine Start function for charging.

9. After switches are set, plug in charger.
10. Monitor the charging process.
The Charge Complete indicator will light up and blink when the battery is fully charged.
11. When disconnecting charger, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.
12. After use clean, then store the charger indoors out of children's reach.

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Charging Battery Outside Vehicle

⚠ WARNING

A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION.
TO REDUCE RISK OF A SPARK NEAR BATTERY FOLLOW THESE INSTRUCTIONS EXACTLY.



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.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

1. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.
2. Attach at least a 24-inch-long 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
3. Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
4. Position yourself and free end of cable as far away from battery as possible – then connect NEGATIVE (BLACK) charger clip to free end of cable.
5. Do not face battery when making final connection.

NOTICE: If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

6. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION:
DO NOT USE WITH GEL BATTERIES.

7. Set Setting switch to 2A Trickle Charge or 10A Quick Charge.

WARNING! Do not use 50A Emergency Engine Start function for charging.

8. After switches are set, plug in charger.
9. Monitor the charging process.
The Charge Complete indicator will light up and blink when the battery is fully charged.
10. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
11. After use clean, then store the charger indoors out of children's reach.

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12V Engine Starting

NOTICE

Some vehicles with onboard computers may be damaged from the high-current starting output. Thoroughly read the vehicle service manual before using this procedure.

WARNING! Do not use Start setting to charge batteries. Use to jump start only.

Note: During extremely cold weather or when battery is severely exhausted, charge the battery for about five minutes before attempting to turn on engine.

1. Unplug the Charger AC power cord from the AC outlet.
2. For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger 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.

NOTICE: If the Reverse Connection indicator lights, the cables are connected improperly. Immediately disconnect the cables and connect them properly to prevent damage to the battery.

3. Position AC and DC cables to reduce risk of damage by hood, door, or moving engine part.

4. Set Battery Type switch according to battery type:
 - Set to Regular for flooded and maintenance-free batteries.
 - Set to AGM for Absorbed Glass Mat batteries.

WARNING! TO PREVENT EXPLOSION: DO NOT USE WITH GEL BATTERIES.

5. Set Setting switch to 50A Emergency Engine Start.
6. After switches are set, plug in charger.
7. **WARNING! TO PREVENT SERIOUS INJURY, FIRE, AND DAMAGE TO CHARGER AND BATTERY, follow 5 second maximum with 4 minute minimum rest duty cycle for the Start mode.**
8. To start the engine, turn ignition key. **ONLY KEEP CHARGER IN START MODE UP TO 5 SECONDS AT A TIME.**
9. If engine fails to start, charge battery for an additional five minutes before attempting to start.
10. After the engine starts, unplug the power cord from outlet before disconnecting the DC cable clamps.

Maintenance Instructions



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

⚠ WARNING

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

TO PREVENT SERIOUS INJURY FROM CHARGER 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 charger. 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 charger with clean cloth.
3. **⚠ WARNING!** If the supply cord of this charger is damaged, it must be replaced only by a qualified service technician. **DO NOT OPEN CHARGER HOUSING, NO USER-SERVICEABLE PARTS INSIDE.**

Record Product's Serial Number Here: _____

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

Note: Internal parts are not user-serviceable. Replacement parts are not available. Reference UPC 792363605816.

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 above 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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