

STRONGWAY™

6/12V SMART BATTERY MAINTAINER AND FLOAT CHARGER

Owner's Manual



⚠ WARNING: Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item #5820331

SAVE THESE INSTRUCTIONS

Thank you very much for choosing a Strongway product!

For future reference, please complete the owner's record below:

Serial Number/Lot Date Code: _____

Purchase Date: _____

Save the receipt, warranty, and this manual. It is important that you read the entire manual to become familiar with this product before you begin using it.

This product is designed for certain applications only. Northern Tool and Equipment is not responsible for issues arising from modification or improper use of this product such as an application for which it was not designed. We strongly recommend that this product not be modified and/or used for any application other than that for which it was designed.

For technical questions, please call **1-800-222-5381**.

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WARNING

- Explosive gases! Prevent flames and sparks. Provide adequate ventilation during charging.
- For indoor use. Do not expose to rain.
- For charging 6/12V rechargeable lead acid automotive type of the size detailed in the specifications table.
- Do not attempt to charge non-rechargeable batteries. Never charge a frozen battery.
- Do not charge other types of batteries like Nickel Cadmium (NiCad), Nickel-Metal Hydride (Ni-MH), Dry-Cell, etc.
- During charging, the battery must be placed in a well-ventilated area, as far as possible from any flame or ignition sources.
- This battery charger is not intended for persons with reduced physical, mental and/or sensory abilities. Similarly, persons who lack experience or knowledge (including children) should be supervised or given suitable instruction.
- Young children should be supervised to ensure that they do not play with the appliance.
- Disconnect the 120V mains supply before making or breaking the connections to the battery.
- The battery charger must be plugged into an earthed or grounded socket outlet.
- Connection to mains supply must be in accordance with National wiring rules
- If the AC cord is damaged, do not use it. Have the cord replaced or repaired by a qualified person.
- Corrosive substances can escape from the battery. Use suitable personal protective equipment (PPE) including eye protection and keep skin covered where possible. If contact with battery acid occurs, flush the area with plenty of water for at least 10 minutes and promptly seek medical attention.

WARNING

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when operating the jump starter.
- Do not use the unit while you are tired or under the influence of drugs, alcohol, or medication.
- Dress properly. Do not wear loose clothing, dangling objects, or jewelry. Keep your hair, clothing, and gloves away from the battery.
- Wear the proper personal protective equipment when necessary. Use ANSI Z87.1 compliant safety goggles (not safety glasses) with side shields, or when needed, a face shield.
- Ensure the power switch is off after each use.

WARNING

WORK AREA SAFETY

- Inspect the work area before each use. Keep work area clean, dry, free of clutter, and well-lit.
- Cluttered, wet, or dark work areas can result in injury. Using the product in confined work areas may put you dangerously close to cutting tools and rotating parts.
- Do not use this battery charger where there is a risk of causing a fire or an explosion, e.g., in the presence of flammable liquids, gases, or dust. The product can create sparks, which may ignite flammable liquids, gases, or dust.
- Keep children and bystanders away from the work area while operating the tool. Do not allow children to handle the product.
- Be aware of all power lines, electrical circuits, water pipes, and other mechanical hazards in your work area. Some of these hazards may be hidden from your view and may cause personal injury and/or property damage if contacted.

TECHNICAL PARAMETERS

Part Number	5820331
Charger Type	7 Stage Intelligent Charger and Maintainer
Input Voltage	120 VAC / 60Hz
Input Current	0.6A
Nominal Output Voltage	6V & 12V
Output Current	2A
Battery Type	Lead-acid (STD, AGM, GEL)

MAIN FEATURES

MICROPROCESSOR TECHNOLOGY

This smart maintainer and float charger convert 120VAC to 6/12V DC charging power using electronic components, which allows the charger to be lightweight and compact without sacrificing performance. To increase safety, polarity protection prevents the output leads from sparking due to accidental reverse connection or short circuit.

MAXIMISING BATTERY PERFORMANCE

Your battery will run longer when charged using a 7-stage charger, ensuring you get the most from your battery.

MAXIMISE BATTERY LIFE

Batteries used regularly will last longer when charged using a 7-stage charger and maintainer, extending battery work life.

AUTOMATIC MICROPROCESSOR CONTROL

The charger can be left connected to the battery without the risk of overcharging. Once the battery is full, the battery charger will automatically monitor the battery and top up the battery when required to ensure it is always ready for use.

LED INDICATOR DISPLAY

The LED indicators provide a clear, easy-to-understand display in poor light or when dark. With 6V and 12V LED indicators, users will identify the correct battery Volts selected to avoid wrong operation, also will report the charging status by switching LED flash frequency. Moreover, Error LED will indicate any abnormal condition during charging.

PRODUCT ILLUSTRATION



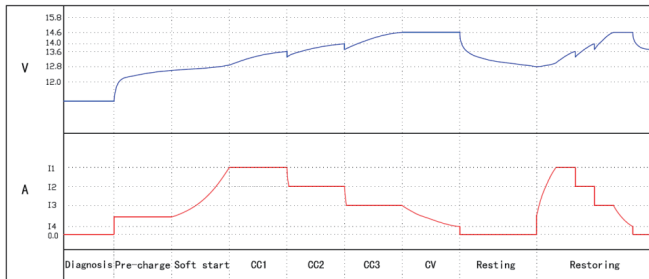
1. Power cord
2. Status LED indicators (6V / 12V/ ERROR)
3. START/STOP button
4. Output cord

ACCESSORIES

Accessories	Qty
Main unit	1
Clamp cable sets	1
O-ring cable sets	1
Manual	1

7 CHARGING STAGE INSTRUCTION

The following tables detail the VOLTAGE (Volts) and CURRENT (Amps) applied to the battery over time. These different settings and charge values are necessary to achieve maximum battery charge and optimize battery condition.



Stage	Function	Description
1	Diagnosis	The charger checks the battery condition and calculates the required charging parameters.
2	Pre-Charge	Pre-charge the battery voltage below 12V to a safe voltage above 11V with a small current, and automatically move to the next step.
3	Soft Start	At an increased voltage, the current is slowly increased over time to activate the battery and improve battery charging efficiency.
4	Bulk Charge (Constant Current)	The Bulk Charge settings will reduce the time to charge and ensure better battery health.
	CC1	Quickly charge to 13.6V with maximum current and automatically turn to the next step.
	CC2	Current is reduced.
	CC3	The current is further reduced for an improved charge while minimizing electrolytic loss and excess temperature.
5	Constant Voltage	With the increase of battery voltage, the charging current to the battery will then be reduced to avoid battery overcharge.
6	Resting	When the voltage is less than the set value of the judgement for the bad battery, enter the float charging to the battery for a short time of maintenance, and then move to the error mode; if the voltage is greater than the set value, wait for the battery to re-charge.
7	Restoring	The charger will continue charging the battery with a small current to keep the battery voltage in a full state. If the battery voltage drops below 12V, stages 1-5 will repeat.

PREPARE TO USE

The charger is designed for indoor, out-of-weather use only. The position selected for the charging of the battery must be cool, dry, clean, and well-ventilated, away from flammable or ignition sources.

1. If necessary to remove the battery from the vehicle to charge, always remove the grounded terminal from the battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
2. Be sure the area around the battery is well-ventilated while the battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
3. Clean battery terminals. Be careful to keep corrosion from coming into contact with eyes.
4. Add distilled water in each cell until battery acid reaches the level specified by the battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow the manufacturer's recharging instructions.
5. Study all the battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
6. Determine the voltage of the battery by referring to the car owner's manual and make sure that the output voltage selector switch is set at the correct voltage.
7. Charging location:
 - a. Locate the charger as far away from the battery as DC cables permit.
 - b. Never place the charger directly above battery being charged; gases from the battery will corrode and damage the charger.
 - c. Never allow battery acid to drip on the charger when reading gravity or filling the battery.
 - d. Do not operate the charger in a closed-in area, or restrict ventilation in any way.
 - e. Do not set a battery on top of the charger.

OPERATION INSTRUCTION

BEFORE CHARGE

1. Remove the battery from the vehicle before charging if possible.
2. Ensure that **all** the electrical accessories in the vehicle are off.
3. Carefully follow the battery manufacturer's instructions to recharge.
4. Ensure the surrounding area is well-ventilated during charging.

Note - BEFORE attaching the battery clamps, disconnect (unplug) the battery charger from any supply socket outlet, or ensure the mains supply power is switched to OFF.

STEP 1 - BATTERY MANUFACTURER RECOMMENDATIONS

Before using the battery charger, study the battery manufacturer's recommendations, rates of charge, and any condition peculiar to the battery being charged.

STEP 2 - CHECK THE ELECTROLYTE LEVEL

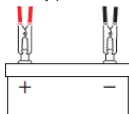
Prior to charging the battery, remove the vent caps and check the electrolyte level.

Note - For batteries without cell caps, follow the battery manufacturer's maintenance and charging instructions.

STEP 3A - CONNECTION WITH BATTERY OUT OF THE VEHICLE

Connect the POSITIVE (RED) lead/battery-clamp from the charger to the POSITIVE battery post. Connect the NEGATIVE (BLACK) lead/battery clamp from the charger to the NEGATIVE battery post.

Note - The POSITIVE terminal of a battery is defined in RED color and may be represented by POS, P, or (+); The NEGATIVE terminal of a battery is defined in BLACK color and may be represented by NEG, N, or (-). Wiggle or swivel the clamps several times – this action ensures integrity of the connection and minimizes sparks/arcing.



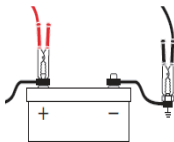
STEP 3B - CONNECTION WITH THE BATTERY MOUNTED IN THE VEHICLE

Determine if the vehicle is Positively (+) or Negatively (-) earthed.

Note - The battery terminal NOT connected to the chassis MUST be connected to the Battery Charger first (1st). The second (2nd) clamp from the Battery Charger must be connected to the chassis, away from the battery and fuel lines. Refer to the following guides for the correct battery clamp connection sequence:

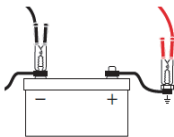
Negatively Earthed (Most Vehicles)

Note - Negatively earthed vehicles usually have a cable (usually BLACK or GREEN) connecting the Negative battery terminal to the vehicle's chassis. Connect the POSITIVE (RED) lead/battery clamp from the battery charger to the Positive (+) battery terminal. Connect the NEGATIVE (BLACK) lead/ battery clamp from the battery charger to the vehicle's chassis - away from the fuel lines or moving parts.



Positively Earthed

Connect the NEGATIVE (BLACK) lead/battery clamp from the battery charger to the Negative (-) battery terminal. Connect the POSITIVE (RED) lead/battery clamp from the battery charger to the vehicle's chassis - away from the fuel lines or moving parts.



STEP 4 - CONNECT TO MAINS POWER

Connect the battery charger to a 120V mains power socket, then 6V and 12V green LED indicator alternating flashing to remind user choose correct charging Volts based on actual battery.

If battery wrong connect, reverse polarity or battery damage seriously, red color ERROR LED will keep on.

STEP 5 - SELECT VOLTAGE

Users shall select 6V or 12V charging voltage by pressing the button, and the corresponding LED will light up during selection.

Note - If the battery charger does not detect a properly connected battery, or detects an incorrect battery voltage, red ERROR LED indicator will keep on.

STEP 6 – CHARGING

The unit will start charging 3 seconds after correct charging Volts was selected. Then corresponding Volts LED keep flashing during charge process.

STEP 7 - DISCONNECTION

Once charging is completed, the corresponding Volts green color LED switch from flashing to solid. BEFORE removing the battery clamps, disconnect (unplug) the battery charger from the supply socket outlet.

Note - If left connected, the charger will monitor the battery and maintain the battery ready for use - preventing slow discharge over time, which is detrimental to lead acid batteries.

Battery out of the Vehicle

Remove the NEGATIVE (BLACK) connection first. Then remove the POSITIVE (RED) terminal clamp.

Battery mounted in the Vehicle

Remove the chassis connection first.

Then remove the other battery clamp from the battery terminal.

Q&A

Q. Can I use the charger as a power supply?

A. This maintainer is designed to only supply power to the battery clips when correctly connected to a battery; this is to prevent sparks or damage to the charger or battery if connected incorrectly. Consequently, this safety feature prevents the charger from being used as a 'Power Supply'.

Q. Why is there no output on the battery charger's battery clamps when it is turned on?

A. The charger incorporates reverse polarity and short circuit protection that makes it much safer to use. For this reason, the charger will only output power when connected to a battery exhibiting a voltage above 0.5 volts (0.5V).

Q. Why won't the battery accept a charge?

A. A number of conditions may cause this behavior. Check the voltage selection for the battery, and/or ensure adequate time is provided to allow sufficient charge cycles (up to 48 hours).

Q. What is a Faulty Cell?

A. 12 Volt batteries contain 6 cells (24 volts batteries contain 12 cells) - one faulty cell is enough to ruin your battery. If the "ERROR" LED illuminates after a period of charge, you should test the cells using a hydrometer. If one reading is lower than the rest it indicates a faulty cell. It is pointless to continue charging, as the battery needs replacing.

LIMITED WARRANTY

Northern Tool and Equipment Company, Inc. "We" or "Us" warrants to the original purchaser only ("You" or "Your") that the Strongway product purchased will be free from material defects in both materials and workmanship, normal wear and tear excepted, for a period of **one year** from date of purchase. The foregoing warranty is valid only if the installation and use of the product is strictly in accordance with product instructions. There are no other warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose. If the product does not comply with this limited warranty, your sole and exclusive remedy is that We will, at our sole option and within a commercially reasonable time, either replace the product or product component without charge to You or refund the purchase price (less shipping). This limited warranty is not transferable.

Limitations on the Warranty

This limited warranty does not cover: (a) normal wear and tear; (b) damage through abuse, neglect, misuse, or as result of any accident or in any other manner; (c) damage from misapplication, overloading, or improper installation; (d) improper maintenance and repair; and (e) product alteration in any manner by anyone other than Us, with the sole exception of alterations made pursuant to product instructions and in a workmanlike manner.

Obligations of Purchaser

You must retain Your product purchase receipt to verify date of purchase and that You are the original purchaser. To make a warranty claim, contact Us at 1-800-222-5381, identify the product by make and model number, and follow the claim instructions that will be provided. The product and the purchase receipt must be provided to Us in order to process Your warranty claim, any returned product that is replaced or refunded by Us becomes our property. You will be responsible for return shipping costs or costs related to Your return visit to a retail store.

Remedy Limits

Product replacement or a refund of the purchase price is Your sole remedy under this limited warranty or any other warranty related to the product. We shall not be liable for: service or labor charges or damage to Your property incurred in removing or replacing the product; any damages, including, without limitation, damages to tangible personal property or personal injury, related to Your improper use, installation, or maintenance of the product or product component; or any indirect, incidental or consequential damages of any kind for any reason.

Assumption of Risk

You acknowledge and agree that any use of the product for any purpose other than the specified use(s) stated in the product instructions is at Your own risk.

Governing Law

This limited warranty gives You specific legal rights, and You also may have other rights which vary from state to state. Some states do not allow limitations or exclusions on implied warranties or incidental or consequential damages, so the above limitations may not apply to You. This limited warranty is governed by the laws of the State of Minnesota, without regard to rules pertaining to conflicts of law. The state courts located in Dakota County, Minnesota shall have exclusive jurisdiction for any disputes relating to this warranty.

STRONGWAY™

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