

## 1.1 and 4.3 AMP Charge Pro™ Portable Chargers

**MODELS:** 27101 and 27104



The Maringo 27101 and 27104 chargers are designed to recharge, maintain and extend your battery's life in applications where your battery is stored for long periods of time. These chargers are very versatile with selectable battery chemistries, voltages and connectors for your battery. The chargers operate on 120/230 Volts 50/60Hz AC and show the charge level of your battery.

**WARNING THIS CHARGER SHOULD BE USED TO CHARGE ONLY 6 OR 12 VOLT DC LEAD ACID, AGM OR GEL CELL TYPE BATTERY SYSTEMS. USE ON OTHER THAN 6 OR 12 VOLT DC SYSTEMS CAN CAUSE THE BATTERY TO EXPLODE AND CAUSE PERSONAL INJURY.**

# Charge Pro™ Portable Chargers Instructions

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## IMPORTANT SAFETY INSTRUCTIONS

- A) **SAVE THESE INSTRUCTIONS** - This manual contains important safety and operating instructions for the battery chargers. Read the entire manual before using. Also read all instructions and cautions for and on the charger, batteries and equipment in the vicinity of the batteries.
- B) Do not expose the charger to rain or snow.
- C) Use of an attachment not recommended or sold by Marincos may result in a risk of fire, electric shock, or injury to persons.
- D) To reduce the risk of damage to electric plug and cord, pull by the plug rather than the cord when disconnecting charger.
- E) Do not use an extension cord unless absolutely necessary. Improper extension cords result in a risk of fire and electric shock. If you must use an extension cord, make sure that:
  - i. The pins on plug of extension cord are the same number, size and shape as those of plug on charger
  - ii. The extension cord is properly wired and in good electrical condition
  - iii. The wire size is large enough for the AC ampere rating of charger as specified in the table below

Extension Cord Length Feet (M)	AWG Size of Cord
25 (7.6)	18
50 (15.2)	18
100 (30.5)	18
150 (45.6)	16

- F) Do not operate the charger with a damaged cord or plug. If the cord or plug is damaged, replace it immediately.
- G) Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.
- H) Do not disassemble charger. Incorrect reassembly may result in a risk of electric shock or fire.
- I) To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce risk.

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## **WARNING – RISK OF EXPLOSIVE GASES**

- 1) **WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL OPERATION. FOR THIS REASON, IT IS UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.**
- 2) To reduce the risk of battery explosion, follow these instruction 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.

## **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 the risk of dropping a metal tool onto the 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 any of these items 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.

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## **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 the manufacturer's recharging instructions.
- E) Study all battery manufacturer's specific precautions while charging and recommended rates of charge.
- F) Determine voltage of battery by referring to car owner's manual and make sure that output voltage selector switch is set at correct voltage.

## **Charger Location**

- A) Locate charger as far away from battery as DC cables permit.
- B) Never place charger directly above the battery being charged; gases from the 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 the charger in a closed-in area or restrict ventilation in any way.
- E) Do not set a battery on top of the charger.

## **DC Connection Precautions**

- A) Connect and disconnect DC output clips and remove AC cord from electric outlet.
- B) Never allow clips to touch each other.
- C) Attach clips to battery and chassis.

**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 cords to reduce risk of damage by hood, door or moving engine part.

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- 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 gage 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 gage 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.

## **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) Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
- C) Do not face battery when making final connection.
- D) When disconnecting charger, always do so in reverse sequence of connecting procedure (disconnect AC power, then disconnect charger clips).
- E) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

## **Operation**

- A) Avoid operation under adverse ambient conditions under all circumstances. Adverse ambient conditions include: ambient temperatures above 104° F (40 °C), flammable gases, solvents, vapors, dust, and relative humidity above 80%.
- B) Do not use the battery charger inside a vehicle. The battery charger must not be used in the vicinity of flammable substances or gases.

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- C) Ensure that there is sufficient ventilation during operation. Never cover the battery charger or the connected battery.
- D) Never charge lead acid batteries in containers or poorly ventilated rooms. Explosive gases can be generated during the charging process!
- E) Keep the battery charger as well as the battery away from ignition sources. Do not smoke while handling the battery charger or the battery! There is danger of explosion!
- F) Never operate the device immediately after it has been taken from a cold to a warm room. The condensation generated can cause malfunctions and there is also the risk of a deadly electric shock!
- G) Persons (including children) who have insufficient knowledge or experience in using the device or who are physically, sensorial or mentally handicapped may only use the device under the supervision of a person responsible for their safety. Children must be kept under supervision and may not play with the device.
- H) Check the battery voltage before starting the charging process. Only 6 and 12 Volt batteries can be recharged.

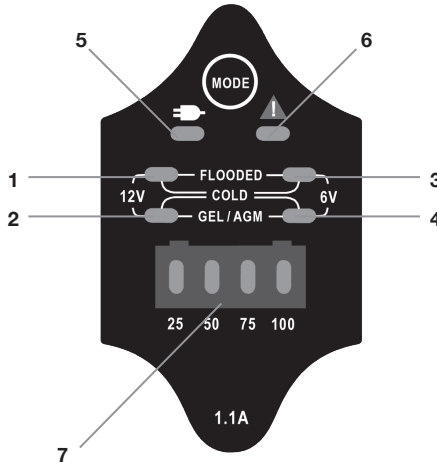
## **Notes on rechargeable batteries**

- A) Make sure you observe all safety instructions and charging instructions of the battery manufacturer.
- B) Before connecting the battery to the battery charger, disconnect the battery from any loads or cables (turn off the loads first!).
- C) Always disconnect the ground connection from the battery before disconnecting the positive terminal.
- D) Disconnect the battery from the battery charger before connecting any loads to the battery.
- E) When connecting or disconnecting the battery, sparks might be produced. Therefore, make sure there is sufficient ventilation!
- F) Observe the polarity when connecting the battery to the battery charger (red charger terminal = positive/+, black charger terminal = negative/ ).
- G) Lead acid batteries contain aggressive and corrosive acids. Avoid skin or eye contact with battery fluids! Never dismantle lead acid batteries! On skin contact, clean the affected areas thoroughly with water and soap. On eye contact, rinse the effected eye immediately with clear and cold running water! Then consult a doctor immediately!
- H) Batteries must not be short circuited or thrown into fire. Risk of fire and explosion!

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## Disposal

At the end of its useful life, do not dispose this product together with normal household waste. Drop it off at a collection center for the recycling of electrical and electronic devices. This is indicated by the symbol on the product, on the instruction manual or on the packaging. The materials of which this product is made are recyclable pursuant to their labeling. With the reuse, the recycling of the materials or other forms of scrap usage you are making an important contribution to the protection of the environment. Please ask your local administration office for the appropriate disposal center.



LED Illuminated	Description
1	12V FLOODED - for charging 12V Flooded batteries
2	12V GEL/AGM - for charging 12V GEL/AGM
1 & 2	12V Cold - for charging 12V Flooded Batteries at low temp (below 40° F, 4°C).
3	6V FLOODED - for charging 6V Flooded batteries
4	6 V GEL/AGM - for charging 6V GEL/AGM
3 & 4	6 V COLD - for charging 12V Flooded Batteries at low temp (below 40° F, 4°C).
5	Power is applied to the charger
6	There is a problem (short circuit / battery is defective / reversed polarity)
7	Lights indicate charge status (25%, 50%, 75%, 100%)

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## Charging A Lead Acid Battery

Observe the instructions and safety information of the vehicle to find out how the vehicle battery should be charged. Modern vehicles are equipped with sensitive electronic parts and controls that can be damaged if you do not proceed properly!

- A) First make sure your lead acid battery is a 6V or 12V battery. Do not charge batteries with different operating voltages!
- B) Determine the chemistry of your battery. This should be on the battery or contact the battery manufacturer.
- C) Disconnect all loads from the battery. If the battery is installed in a vehicle, turn off the ignition and any other loads.
- D) The red and black DC cable coming out of the charger has a connector at the end. This connector will connect to the alligator and ring terminal cables supplied with the charger. Connect the cable needed and make sure the connection is secure.
- E) When the battery cables are connected to the battery, and the charger is plugged in to the power supply (120/230 Volts 50/60Hz AC), **all LED's will illuminate for 2 seconds.**
- F) If this is the first time the charger is powered, only the power "ON" LED will be illuminated. The "Mode" button needs to be pushed to select the battery voltage and chemistry.

**The charger remembers the last setting and will start in that setting again the next time the charger is used.**

- G) If the "Error" LED is illuminated, unplug AC connection of the charger from the electric outlet, check to make sure the connections are secure and the polarity of the cables to the battery is correct. Plug the charger back into the electric outlet. If the "Error" LED continues to illuminate there is a problem with the battery.
- H) Now you can select a function using the mode button. See "Operating Modes" for a description of the individual operating modes.
- I) Push the "Mode" button once for 12V, flooded battery. Continue to push the "Mode" button until you select the correct voltage and chemistry that matches your battery.
- J) There will be a five second delay until the charger starts the charge. This is to provide time to select the correct voltage and battery chemistry. When the charge cycle starts, the charge status LED's 25, 50, 75, 100% will illuminate letting you know the battery charge level.
- K) When the 100% LED is illuminated the charge is complete and the charger can be disconnected first from the AC power then the DC connection removed.
- L) First remove the clamp from the negative terminal and then from the positive terminal.



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## **Operating Modes**

### **12V FLOODED mode**

- This mode is suitable for 12V Flooded battery size found in the specifications section at ambient temperature.
- To select this mode, press the MODE button until LED 1 lights up. The charging process starts automatically, LED 1 is lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

### **12V GEL/AGM mode**

- This mode is suitable for all 12V GEL or AGM battery size found in the specifications section at ambient temperature.
- To select this mode, press the MODE button until LED 2 lights up. The charging process starts automatically, LED 1 is lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

### **12V COLD mode**

- This mode is suitable for all 12V Flooded, GEL, AGM or spiral wound AGM battery size found in the specifications section at low temperature.
- To select this mode, press the MODE button until LEDs 1 & 2 light up. The charging process starts automatically, LEDs 1 & 2 are lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

### **6V FLOODED mode**

- This mode is suitable for 6V Flooded battery size found in the specifications section at normal ambient temperature.
- To select this mode, press the MODE button until LED 3 lights up. The charging process starts automatically, LED 3 is lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

### **6V GEL/AGM mode**

- This mode is suitable for all 6V GEL or AGM battery size found in the specifications section at ambient temperature.
- To select this mode, press the MODE button until LEDs 3 & 4 light up. The charging process starts automatically, LEDs 3 & 4 are lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

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## **6V COLD mode**

- This mode is suitable for all 6V Flooded, GEL, AGM and spiral wound AGM battery size found in the specifications section at low temperature.
- To select this mode, press the MODE button until LED 4 lights up. The charging process starts automatically, LED 4 is lit.
- When the battery is being charged, charge status (LED 7) lights up to indicate the battery charging level.

## **Regeneration function:**

This function is designed to regenerate deep discharged batteries. It is selected automatically if required by the battery. If a deep discharged rechargeable battery is connected to the charger, the regeneration mode is the first mode to start. Low charging currents are used to allow a discharged battery to reach a normal battery voltage again. The maximum time for regeneration is 20 minutes. If no normal battery voltage is reached in this time, the charger stops the process and LED 6 is on.

## **Defective rechargeable batteries**

The charger recognizes defective rechargeable batteries automatically. In this case the selected charging program will not be started. LED 6 is on. Have your battery tested to see if there is a problem.

## **Mode Select**

Press the MODE button to select a mode.

## **Cleaning**

Disconnect the battery charger from the battery and the mains voltage before cleaning it.

Clean the outside of the product with a clean, dry and soft cloth. Do not use aggressive cleaning agents to avoid discoloration.

## **TROUBLE SHOOTING**

- A) No LED's illuminate – Check AC supply and voltage output with a meter.
- B) Mode cannot be changed – Disconnect battery first and then change mode.
- C) Error LED is on – Check if the battery is connected.
  - Check if alligator or ring terminal leads are connected to the charger output.
  - Check if plus (red) output is connected to +/positive terminal of battery and minus (black) output is connected to -/minus terminal of the battery.
  - Check if battery terminals are clean and free of corrosion.
  - Check the fuse

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- D) Charger is at 25% but a full battery is connected – Leave the charger connected for 30 minutes before the charger status correctly shows the battery status.
- E) Charger does not charge after mode has been changed. – Wait for 5 seconds before charging will start.

## Specifications

	27101	27104
Input voltage:	120/230 Volts 50/60Hz AC	
Charge end voltage:	7.1 V +/- 0.20 V (6V mode) 14.25 V +/- 0.2 V (12V mode)	
Charging current:	1.1 amp	4.3 amp
Rechargeable battery type:	Any 6V or 12 V lead acid batteries (Flooded, AGM, GEL)	
Battery Maintenance Capacity:	2.2 – 40 Ah	14 – 120 Ah
Battery Charge capacity:	2.2 – 25 Ah	14 – 90 Ah
Protection type:	IP65 (casing)	
Weight	1.1 pounds (0.5 Kg)	3.5 pounds (1.6 Kg)

## WARRANTY Statement

### LIMITED WARRANTY

For two (2) years from the date of purchase, Maringo will, at its discretion, repair or replace for the original consumer, free of charge, any part or parts found upon examination by Maringo to be defective in material or workmanship or both. All transportation charges under this warranty must be borne by the consumer. Proof of purchase is required. Proof of purchase must be a computerized receipt. Handwritten receipts are not accepted.

### Warranty Claim

Thank you for contacting Maringo regarding the product concerns as related to Form, Fit and Function.

Maringo offers an online warranty (RMA) request form on our website. [www.maringo.com](http://www.maringo.com) in the resources tab. Please fill in the online form titled Maringo Warranty Request.

For more information and installation guides, visit our website: [maringo.com](http://maringo.com)

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