



## 3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER

Thank you for selecting this quality GRIOT'S product. The **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** will work with 12 volt Lead Acid, VRLA, AGM, or Gel type batteries designed for automotive type uses. The **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** is a microprocessor controlled unit. It is possible to plug a battery in, charge it, maintain it, and actually rejuvenate it! That way the next time the battery is used, it is in better shape than before it was plugged in. This will extend the life of your battery and keep it 100% charged and ready to go. Enjoy the best!

### USEFUL INSTRUCTIONS



### CONNECTING TO YOUR VEHICLE

There are three different ways to connect the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to your vehicle.

1. **ALLIGATOR CLIP** - The Alligator Clip-On Cable connects directly to the battery post. Make sure that battery terminals are clean, that the clip-on connectors are making good contact, and that they are firmly attached to the battery posts. This is the most common way of connecting the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to a battery for temporary use. Before connecting make sure that the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** is plugged in and the Power LED is on. As you connect to the terminals watch the Battery and Fault LEDs on the charger/maintainer. If connected properly to a battery that is chargeable, the Battery LED will come on and the Fault LED will not.
2. **BATTERY RING TERMINAL** - The Battery Terminal Cable connects directly to the battery using the existing nut and bolt that hold the terminal to the battery post. This is a permanent connection and should be done with care. When working with the battery always remove the ground terminal from the battery post first. Leave the negative terminal disconnected as you work with the positive terminal. Remove the positive terminal from the battery post and attach the positive ring terminal to the positive terminal. After the ring terminal has been installed on the positive terminal, you can then connect the positive terminal to the positive post on the battery. Next attach the negative ring terminal to the

negative terminal that is disconnected from the battery. Now you can reconnect the negative terminal to the negative battery post. After connecting the wires from the ring terminals to the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**, turn on the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** and monitor that the Power LED comes on. Next, watch the Battery and Fault LEDs on the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**. If connected properly to a battery that is chargeable, the Battery LED will come on and the Fault LED will not. The in-line 5 amp fuse is designed to protect the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** and battery from accidental short circuits.

3. **CIGARETTE LIGHTER OR AUXILIARY POWER** - The Cigarette Lighter or Auxiliary Power Cable connects the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to the vehicles built-in cigarette lighter connection or auxiliary input connector. Most of these connectors are on all the time. By simply plugging in the cable to the power port the battery will be charged and maintained.

**NOTE:** To test if your vehicle has power when the ignition is off via the cigarette lighter or auxiliary port; first plug the adaptor into the port, then plug the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**, into AC power, turn off the ignition key, and then look at the Battery LED and the LCD display on the Tester. The LED should stay on and the LCD display will show the battery voltage when the key is turned off. If the LED stays on, watch the Battery and Fault LEDs on the unit, if connected properly to a battery that is chargeable, the Battery LED will come on and the Fault LED will not.

### CHARGING/REJUVINATING A BATTERY

1. Connect the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to the battery and read the voltage of the battery. If it reads below 11 volts plug the battery into the AC outlet and let it begin charging.
2. When the Status LED goes on solid, indicating that the battery is charged, disconnect the AC power and switch on the Load Tester and the Low Voltage Alarm switches.
3. When the Alarm sounds (which might take a few days or weeks on a good battery or just a few hours on a weak battery) turn off the Load Tester Switch and Alarm Switch. You can then connect the AC power again. Wait for the Status LED to go on solid and repeat the procedure as needed until the battery takes longer and longer to discharge when the Load Tester is on. On average 3 - 4 cycles will improve the performance of recoverable batteries. Some batteries are simply not recoverable and it will be made known because the Alarm will come on immediately or the Status LED will never go on solid.

**NOTE:** To speed the process of discharging a battery you can turn on the headlights to put a heavier load on the battery. This will discharge a weak battery in only a few minutes and will take a few hours on a strong battery.

### MONITORING A BATTERY

When the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** monitor is set to the Low Voltage Alarm mode, an audible alarm will sound if the battery goes down below 11 volts. This feature can be used in a variety of ways. This unit can simply be connected to a battery to monitor the batteries state of charge. The tester circuit uses virtually no power and can be connected to a battery indefinitely. This guarantees that a battery will not get damaged because it was left unattended for a long period of time. Secondly, the Alarm Monitor can be used in conjunction with the Load Tester allowing the battery to be cycled and conditioned. By turning on the Load Tester the battery will slowly discharge. When the Alarm Monitor sounds you plug the charger into AC power and recharge it. The Alarm Monitor will not allow the battery to get damaged between the charging and discharging procedure. This is a simple way to use the Load Tester feature and improve the performance of a battery.

1. Connect the AC power.
2. Connect the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to the vehicle using one of the three methods listed above.
3. Move the switch on the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to the Low Voltage Alarm setting.

## TESTING A BATTERY

Determining if the battery is good or bad can be done using the Load Tester. When a battery has been left for a long period without a charge, it can appear to not be able to be recharged. This may not be the case if these steps are followed, it may be able to be brought back to life.

1. Use the included testing probes to see if there is any life left in the battery. A battery that read 10 volts or more is likely to be able to be recharged and rejuvenated. If the battery is below 10 volts the likelihood diminishes as the voltage goes down. A battery reading 0 volts will probably not recharge... but it is worth trying anyhow.
2. If the battery needs to be charged attach the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to the vehicle using one of the three methods listed above.
3. Plug in the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** to an AC outlet to do its work. The longer the better... this can take as little as a few hours to as much as a week depending on the size and state of the battery. Monitor the LCD which should read over 13.4 volts when the battery is near full charge.
4. Once the Status LED comes on solid, unplug the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** from the AC power cable and turn on the Load Switch and Low Voltage Alarm. A weak battery will go down in voltage very quickly... a good battery will last days before the alarm sounds. Repeat these steps until the length of time between alarms increases to a long period of time. This indicates that the battery capacity has increased enough to be used again.
5. With the AC power disconnected a good battery will read approximately 12.6 volts and be able to hold this voltage. Smaller batteries hold their voltage less than large batteries. The bigger the battery, the longer the voltage will stay up.

## MAINTENANCE AND CARE

A minimal amount of care can keep your **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** working properly for years.

1. Clean the clamps each time you are finished charging. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion.
2. Coil the input and output cords neatly when storing the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**. This will help prevent accidental damage to the cords and charger.

## HELPFUL REMINDERS:

- Never charge a frozen battery. If battery fluid (electrolyte) becomes frozen, bring battery into a warm area to allow the battery to thaw before you begin charging.
- Never place the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** directly above the battery being charged. The gases from the battery will corrode and damage the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**.
- Never operate the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** if it has received a hard blow, been dropped, or otherwise damaged.
- Position the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** power cord so as to prevent it being stepped on, tripped over, or damaged.
- Do not operate the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** if it has a damaged power cord or plug.
- Connect and disconnect DC clamps only after removing **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** AC power cord from the wall outlet. Do not permit clamps to touch each other.

## PERSONAL SAFETY PRECAUTIONS

- Read all instructions and cautions printed on the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**, battery and vehicle or equipment before using battery.
- Wear complete eye and clothing protection when working with lead-acid batteries.
- Make sure that someone is within range of your voice to come to your aid if needed while you work with or are near a lead-acid battery.
- Have plenty of fresh water and soap nearby for use in case battery acid contacts your eyes, skin, or clothing. If this happens, wash immediately with soap and water. Then get medical attention.
- Avoid touching your eyes while working with a battery. Wear safety glasses. Acid particles (corrosion) may get into your eyes. If this occurs, flush eyes immediately with running cold water for at least 15 minutes. Then immediately get medical attention.

- Use the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** for charging automotive type batteries only.
- Remove all personal metal items from your body such as rings, bracelets, necklaces and watches, while working with a lead-acid battery. A battery can produce a short circuit current high enough to weld a ring (or the like) to metal, causing a severe burn.
- Take care not to drop any metal tool or metal object onto the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**. This may result in a spark or short circuit across the battery or another electrical device that may cause an explosion.
- Always operate the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** in an open, well-ventilated area.
- Never smoke or allow a spark or flame in the vicinity of the battery or engine. Batteries generate explosive gases.
- Neutralize any acid spills thoroughly with baking soda before attempting to clean up.
- If necessary to remove battery from vehicle to charge, always remove grounded terminal from the battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.

#### DISCLAIMER

GRIOT'S GARAGE is not responsible for any misuse of the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** for any injury or damage incurred to any person or object related to the **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER**.

#### ANSWERS TO YOUR QUESTIONS

Should you want to order another **3-IN-1 BATTERY CHARGER/MAINTAINER/TESTER** or for a complete selection of quality GRIOT'S GARAGE products, please write or call us toll-free at 800-345-5789. You may also use the internet at [www.griotsgarage.com](http://www.griotsgarage.com). Reorder item number 77495.

*Have fun in your garage!®*

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