



OPERATING INSTRUCTIONS

OBE, OBEXU, ON BOARD Battery Chargers

INTRODUCTION:

These chargers are designed for the permanent installation on battery powered vehicles and equipment. They are an electronically controlled float charger. The batteries are charged to the gassing threshold and held indefinitely. Finish current is below 1 amp. Designed for wet starting batteries or gel cycle type batteries. In addition, the float voltage automatically adjusts for ambient air temperature changes to maximize battery life.

SOME APPLICATIONS:

Stand-by power, UPS systems, any application where batteries must be kept in a full state of charge.

INITIAL INSTALLATION:

Before making AC connections, refer to the AC requirements labeled on the charger. If your charger is not equipped with an AC plug (*a 220 volt model*) have a qualified electrician install one.

- ▲ **CAUTION:** To reduce the risk of fire, use this charger only on circuits provided with a maximum of 20 ampere branch circuit protection (circuit breaker or fuse), in accordance with the National Electric Code, ANSI/NFPA 70, and all local codes and ordinances.

GROUNDING INSTRUCTIONS:

This battery charger must be grounded to reduce the risk of electric shock. If the charger is equipped with a grounding type plug, it must be plugged into a nominal 115 volt, 60 hertz circuit. If the charger is supplied with no plug, have a qualified service person install one.

- ▲ **WARNING:** Improper connection of the equipment grounding conductor can result in a risk of an electric shock. **DO NOT USE THIS CHARGER ON A TWO POLE UNGROUNDED OUTLET OR ATTEMPT TO BREAK OFF THE GROUND PRONG FOR USE ON A RECEPTACLE OR EXTENSION CORD NOT HAVING A GROUND.**

The use of an extension cord with this charger should be avoided. The use of an improper extension cord could result in a risk of a fire or electric shock. If an extension cord must be used, make sure it is in good condition. Use a three conductor cord no smaller than 14 AWG. Keep it as short as possible. Locate all cords so that they will not be stepped on, tripped over, or otherwise subjected to damage or stress.

Do not operate this charger if it shows signs of physical damage.

PROPER CARE AND USE OF BATTERIES:

- ▲ **CAUTION:** Always wear protective eye shields and clothing when working with batteries. Batteries contain acids which can cause bodily harm. Do not put wrenches or other metal objects across the battery terminal on top. Arcing or explosion of the battery can result. Do not wear jewelry when working around batteries. Arcing can cause severe burns.

New batteries will not deliver their full performance until after several cycles.

The tops of the batteries and battery hold downs must be kept clean and dry at all times to prevent excessive self discharge and flow of current between the battery post and frame.

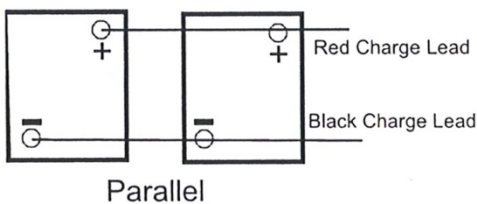
Maintain the proper electrolyte level by adding water when necessary. Never allow the electrolyte level to fall below the top of the battery plates. Electrolyte levels fall during discharge and rise during charging. Therefore, to prevent the overflow of electrolyte when charging, add water **ONLY AFTER** the batteries have been fully charged. **DO NOT OVERFILL.** Old batteries require more frequent additions of water than do new batteries.

Do not over discharge the batteries. Excessive discharge can cause polarity reversal of individual cells resulting in complete battery failure.

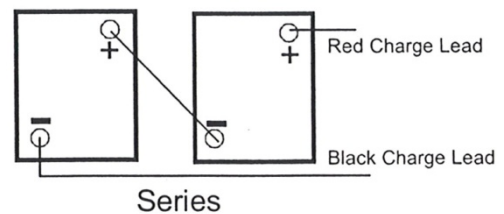
Provide adequate ventilation for the batteries and charger. Do not obstruct the flow of cooling air around the charger. Provide at least 1" of space around the charger. Do not allow clothing, blankets, or other material to cover the charger. Mount the charger firmly in place.

- ▲ **WARNING:** Chargers can ignite flammable materials and vapors. Do not use near fuels, grain, dust, solvents, or other flammables.
- ▲ **CAUTION:** Before connecting the charger to the batteries, make sure the battery pack is of the same voltage rating of the charger. If you are unsure, count the number of cells on the battery pack and multiply by two. This figure should be the same as the DC voltage rating of the charger. (*see ratings label on charger*).

Below is an illustration of Parallel and Series battery packs



When batteries are connected in parallel, the battery amp hour rating is additive, and the voltage remains the same. Example: Two 180 amp hour, 12 volt batteries would equal 12 volts, and 360 amp hours capacity.



When batteries are connected in series, the voltage is additive, and the amp hour rating remains the same. Example: Two 180 amp hour, 12 volt batteries would equal 24 volts, and 180 amp hours capacity.

▲ WARNING: Make sure the DC output leads, terminals or connector are all in good working condition.

DO NOT USE THE CHARGER IF:

The DC output connector, (*if equipped*) is loose or does not make good contact; is cracked or broken; the leads are cut or have exposed wires; the DC output leads or connector feel hot when used. Using this charger with any of the above symptoms could result in a fire, property damage, or personal injury. Have a qualified service person make the necessary repairs. Repairs should not be made by people who are not qualified.

NORMAL OPERATION:

- 1). When connecting charge leads directly to the battery, apply grease to the terminals to inhibit corrosion.
- 2). Plug the charger into AC power having the same ratings as that of the charger.
- 3). The LED on the charger will light, indicating charge current is flowing.
- 4). Batteries are brought to the gassing threshold, (2.3 volts per cell @ 70 degrees F. See table for additional settings) at the same time charge current is tapering. When the charge indicator LED begins to blink, batteries can be assumed to be 80% charged. The charger should be left on for at least an hour more to be assured of fully charged batteries. Eventually current should diminish to below one amp is all cells in the battery are good. The charger can be left connected indefinitely, but the water level in wet batteries should be checked periodically.

Temp. F	VPC
32	2.38
40	2.36
50	2.34
60	2.32
70	2.3
80	2.27
90	2.25
100	2.23

- 5). To discontinue charging, unplug the AC power cord. Plugging the AC power cord back in will cause the charger to repeat the cycle.

▲ WARNING: Do not disconnect the DC output leads or unplug the connector from the batteries when the charger is on. The resulting arcing could cause the batteries to explode. If the charger must be stopped, unplug the AC power.

▲ WARNING: Failure to unplug AC power before moving or driving equipment will result in damage to cords, plugs and receptacles.

TROUBLESHOOTING:

▲ **CAUTION:** DO NOT DISASSEMBLE THE CHARGER. Incorrect assembly may result in a risk of electric shock or fire. Contact factory.

▲ **DANGER:** To reduce the risk of electric shock, always disconnect both the AC power supply cord and the output leads or connector before attempting any maintenance cleaning.

1). LED DOES NOT COME ON WHEN POWER IS APPLIED

Be sure you are plugged into a live circuit. Check the AC cord for breaks in the cord or plug. Check the DC leads for breaks. Check the DC connections to the battery, clean if heavily corroded. Place a volt meter across the battery terminals where the charger is connected. Apply AC power. If the voltage rises on the battery, the charger is working and the LED is defective.

NOTE: LED's do not burn out, but is has probably received a sharp blow causing physical damage. No harm will come from operating the charger without a working LED.

2). LED NEVER BLINKS

The batteries have one or more shorted cells which are not allowing the charger current to decline low enough to start the LED blinking. Overheating of the defective cell and excessive water usage are symptoms of this condition. Replace defective battery.

3). AC LINE FUSE OR CIRCUIT BEAKER BLOWS

Either the circuit breaker or fuse is weak, or the charger is shorted internally.

4). NO POWER IS PRESENT ACROSS THE DC LEADS WHEN A VOLT METER IS CONNECTED.

Good. The charger will not turn on until leads are connected, correct polarity to the battery.

5). BATTERIES STILL DON'T RECEIVE FULL CHARGE

The battery you are charging may be too large for the charger, or if you have the charger plugged into a long extension cord that is too small, a voltage drop will cause a decrease in charger output, extending charge times. If you are charging deep cycle batteries that need to be gassed, this charger will not charge beyond the gassing threshold.