Lester Electrical

DUAL MODE, 24V FULLY AUTOMATIC WORLDWIDE BATTERY CHARGER

MODEL 16470 TYPE 24EL8

PLEASE SAVE THESE IMPORTANT SAFETY AND OPERATING INSTRUCTIONS

For correct operation of the equipment, it is important to read and be familiar with this entire manual before installing and operating the charger.
DO NOT DISCARD THIS MANUAL AFTER READING.

LOOK FOR THIS SYMBOL TO POINT OUT SAFETY PRECAUTIONS. IT MEANS: *BECOME ALERT—YOUR SAFETY IS INVOLVED.* IF YOU DO NOT FOLLOW THESE SAFETY INSTRUCTIONS, INJURY OR PROPERTY DAMAGE CAN OCCUR.

This manual contains important safety and operating instructions for battery charger Model 16470. Before using battery charger, read all instructions and cautionary markings on battery charger and battery. Use of an attachment not recommended or sold by battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.

INTRODUCTION

The Dual-Mode wheelchair battery charger is designed to recharge either conventional liquid electrolyte motive power batteries, or gel cell and sealed maintenance-free motive power batteries. The different charge characteristics required by these different types of battery design are selected by sliding the BATTERY TYPE selector switch to the correct setting. A patented electronic circuit turns the charger on and off automatically.

INITIAL INSTALLATION

The charger is designed for input voltages of 100-125 VAC and 200-250 VAC and frequencies of 50 and 60 Hertz. Ensure that voltage selector switch is set to the proper voltage range before use. Circuit breaker or fuse protection in the AC outlet to which the charger is to be plugged should allow 3 amps per charger for 200-250 VAC outlets and for 6 amps for 100-125 VAC outlets. Do not overload electrical outlet. Use of an extension cord with the charger should be avoided unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord is needed, use a three-conductor, No. 16 AWG (or larger) cord with ground, properly wired, in good electrical condition and keep as short as possible. Make sure that the pins on the plug of the extension cord are the same number, size, and shape as that of the plug on the battery charger. Locate all cords so that they will not be stepped on, tripped over, or otherwise subjected to damage or stress. Do not operate the battery charger with a damaged cord or plug. Do not operate the battery charger if it received a sharp blow, was dropped or otherwise damaged in any manner. Refer to a qualified service agent.

Provide adequate ventilation for both batteries and charger. The convection cooled design requires an unobstructed flow of cooling air for proper operation. Keep all charger ventilation openings at least two inches (2") (5.08cm) away from walls and other objects. Do not allow clothing, blankets, or other material to cover charger.

WARNING: CHARGERS CAN IGNITE FLAMMABLE MATERIALS AND VAPORS. DO NOT USE NEAR FUELS, GRAIN DUST,

SOLVENTS, THINNERS, OR OTHER FLAMMABLES.

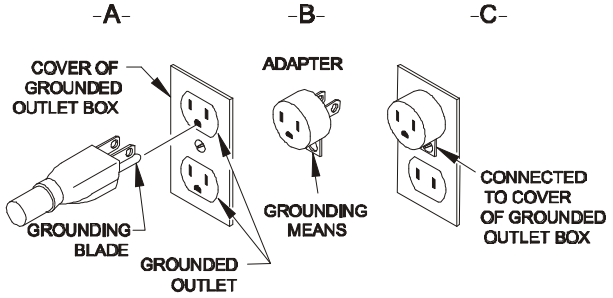
⚠WARNING: KEEP DRY; DO NOT EXPOSE TO RAIN. FOR STORAGE, KEEP CHARGER IN A BUILDING. REPLACE WORN, CUT, OR DAMAGED ELECTRICAL CORDS AND PLUGS IMMEDIATELY.

GROUNDING INSTRUCTIONS

This battery charger must be grounded to reduce the risk of electric shock. This battery charger is equipped with an electric cord having an equipment-grounding conductor. A grounding type plug should be attached to the input cord. The plug must be plugged into an appropriate outlet that is properly installed and grounded.

⚠DANGER: IMPROPER CONNECTION OF THE EQUIPMENT-GROUNDING CONDUCTOR CAN RESULT IN A RISK OF ELECTRIC SHOCK. DO NOT REMOVE GROUNDING PRONG FROM PLUG.

GROUNDING METHODS



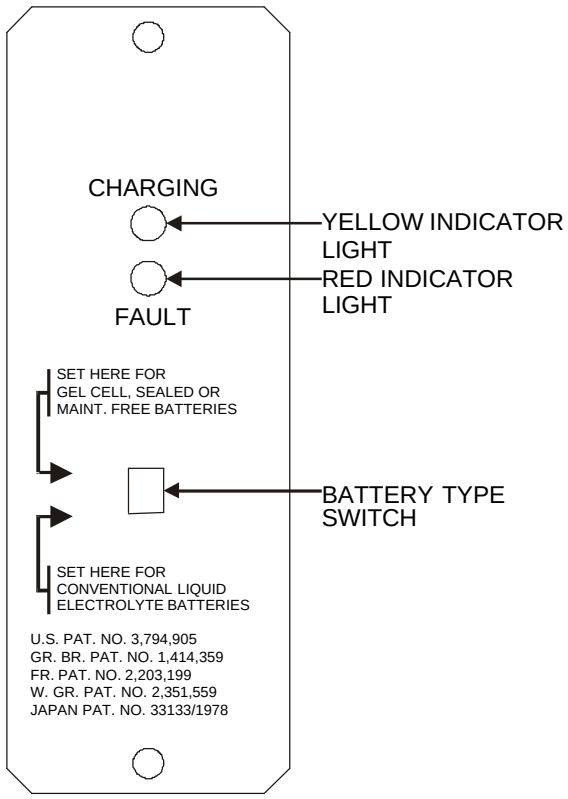
BATTERY TYPE

Battery manufacturers frequently use the same battery cases for different battery types. Conventional liquid electrolyte motive power batteries have removable cell caps. Water electrolyzed by discharging and charging the battery is replaced through these openings.

Gel cell and sealed maintenance free batteries are generally distinguished by non-removable cell caps. The physical appearance of the battery case is frequently the same as that of a conventional liquid electrolyte battery though the cell caps are generally not removable.

Refer to the battery manufacturer's information panel on the battery case to determine the type battery you have. If the information panel is missing or not legible, do not use the battery. Refer to your dealer if you do not understand what type battery you are using and have them set the BATTERY TYPE switch accordingly.

The battery type switch is a sub-miniature, two-position slide switch located directly beneath the YELLOW and RED lights on the front of the charger.



NORMAL OPERATION

Instructions printed on cover of charger are for daily reference.

1. Connect DC plug to battery receptacle.

⚠WARNING: LEAD-ACID BATTERIES GENERATE GASES WHICH CAN BE EXPLOSIVE. TO PREVENT ARCING OR BURNING NEAR BATTERIES, DO NOT DISCONNECT DC CORD FROM BATTERIES WHEN CHARGER IS OPERATING. IF CHARGE CYCLE MUST BE INTERRUPTED, MOVE THE POWER SWITCH TO OFF THEN DISCONNECT DC CORD FROM BATTERIES. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES.

⚠WARNING: ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES. DO NOT PUT WRENCHES OR OTHER METAL OBJECTS ACROSS BATTERY TERMINAL OR BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY CAN RESULT.

⚠CAUTION: MAKE SURE THE BATTERY PACK IS A 24-VOLT, 12-CELL, 88-105 AMP-HOUR (20 HR. RATE), SERIES CONNECTED, 2.35-2.50 VOLTS PER CELL MAXIMUM VOLTAGE,

RECHARGEABLE BATTERY SYSTEM. VISUALLY CHECK THAT THE BATTERY TYPE SWITCH IS SET CORRECTLY FOR THE TYPE BATTERY YOU ARE USING.

⚠DANGER: TO PREVENT ELECTRIC SHOCK, DO NOT TOUCH UNINSULATED PARTS OF CHARGER DC OUTPUT CONNECTOR, BATTERY CONNECTOR, OR BATTERY TERMINALS. MAKE SURE ALL ELECTRICAL CONNECTORS ARE IN GOOD WORKING CONDITION. USE OF A DAMAGED OR DEFECTIVE CONNECTOR MAY RESULT IN A RISK OF OVERHEATING OR ELECTRIC SHOCK.

2. Set voltage switch to proper input voltage range.
3. Connect AC supply cord to a properly grounded three-wire outlet of proper voltage.
4. Move power switch to AUTO position. Charger will start automatically as indicated by glowing YELLOW CHARGING light. Do not connect DC plug unless supply cord is disconnected and switch is OFF.
5. Monitor ammeter for correct charge rate. Initial charge rate should be between 7 to 9 amps. As the battery reaches approximately 70% of full charge, the charge rate decreases to a reading determined by the "BATTERY TYPE" switch setting and the condition of the battery.

   Conventional Liquid Electrolyte Setting

   With healthy batteries, the charging current will decrease to between 2 to 4 amps and remain there until the charger turns off. As conventional liquid electrolyte batteries lose capacity, the charge rate may no longer decrease to this reading. The charger will still determine when the batteries are as charged as they are capable of being and will turn off.

   Gel Cell and Sealed Maintenance Free Setting

   With healthy batteries, the charging current will decrease to near zero and remain there until the charger turns off. As gel and sealed maintenance free batteries lose capacity, the charge rate may no longer decrease to this low a reading. The charger will still determine when the batteries are as charged as they are capable of being and will turn off. Charger is equipped with a temperature sensor which automatically turns charger off if it overheats. Should charger turn off before the batteries are fully charged, check to be sure all ventilation openings are free from obstructions. After charger cools down to a safe temperature, it will automatically restart. If charger repeatedly overheats, refer to a qualified service agent.
6. Charger turns off automatically when batteries are fully charged. Charge time varies with battery size and depth of discharge. Allow 8 hours for normal charging. Larger batteries (greater than 55 ampere-hours) or severely discharged batteries may require up to 14 hours to be properly charged and equalized. If the charger operates for 14 hours and is unable to fully charge the batteries, an internal timer turns the charger off, extinguishes the YELLOW charge light, and turns the RED fault light on.

PROPER CARE OF MOTIVE POWER BATTERIES

Motive power batteries are subject to severe deep cycle duty on a daily basis. Although these batteries are designed to withstand such duty, the following precautions must be observed to obtain good range and cycle life.

⚠CAUTION: ALWAYS WEAR PROTECTIVE EYE SHIELDS AND CLOTHING WHEN WORKING WITH BATTERIES. BATTERIES CONTAIN ACID WHICH CAN CAUSE BODILY HARM.

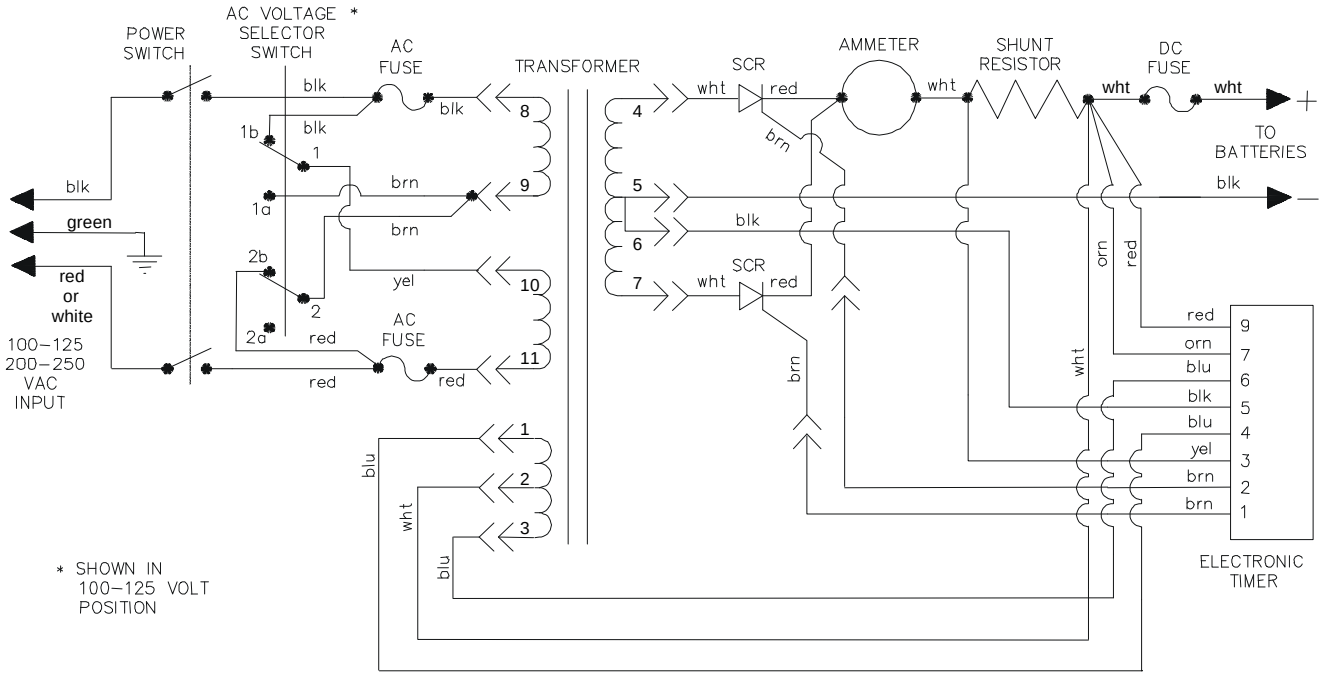
⚠WARNING: RISK OF EXPLOSIVE GASES. WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

1. New batteries should be given a full charge before their first use because it is difficult to know how long batteries have been stored.
2. Limit use of new batteries for first 5 cycles. New batteries are not capable of their rated output until they have been discharged a number of times.
3. Do not excessively discharge batteries. Excessive discharge can cause polarity reversal of individual cells resulting in complete failure shortly thereafter. Limited use of new batteries will minimize the chance of cell reversal.
4. Maintain proper electrolyte level of conventional liquid electrolyte lead-acid batteries by adding water when necessary. Electrolyte levels lower during discharge and rise during charge. Therefore, it is mandatory that water be added to cells ONLY when they are fully charged; do not overfill. Old batteries require more frequent additions of water compared to new batteries.
5. Keep tops of batteries clean and dry to prevent excessive self-discharge. Keep battery terminals reasonably tight.

PERSONAL PRECAUTIONS

1. Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
2. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
4. 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.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. 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.
7. 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.
8. NEVER charge a frozen battery.

WIRING DIAGRAM



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PARTS LIST FOR MODEL 16470
TYPE 24EL8 100-125/200-250 VAC / 50-60 HZ

PART NO.	QTY.	DESCRIPTION
20871S	1	CASE ASSEMBLY
13775S	1	TRANSFORMER ASSEMBLY
16490S	1	ELECTRONIC TIMER ASSEMBLY
13811S	1	AMMETER, 10 AMP
14308S	1	CONTROL CABLE ASSEMBLY
15739S	1	POWER SWITCH, SLIDE, DPST
16222S	1	VOLTAGE SELECTOR SWITCH, SIDE, DPST
14341S	1	THYRISTOR ASSEMBLY
04275S	2	BUSHING, INSULATOR, 6N3-4, FOR CORDSETS
17219S	1	CORDSET, DC, 16/2, 108", W/ SB50 GRAY PLUG
20838S	1	CORDSET, DC, 16/2, 108", W/ SB50 RED PLUG
14419S	1	CORDSET, DC, 16/2, 108", W/ NO PLUG
22131S	1	CORDSET, AC, 18/3, 102", MDPL