



# Lester Electrical

---

## LESTRONIC II BATTERY CHARGER

### MODEL 13110 TYPE 24LC25-8ET

---

### 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.**

#### INTRODUCTION

The Lestronic II battery charger is designed to recharge deep-cycle, lead-acid batteries. A ferroresonant transformer is used to provide a highly reliable, line compensating unit with a minimum of moving parts, designed for long, trouble-free service. A patented electronic controller turns the charger on and off automatically. This controller determines full charge of the batteries by measuring the rate at which the battery voltage increases during charge. When the voltage stops rising, the battery is fully charged and the charger turns off.

#### INITIAL INSTALLATION

The AC line to which the charger is to be connected must be capable of supplying 10 amperes of AC power.

**⚠ CAUTION: TO REDUCE THE RISK OF FIRE, USE THIS CHARGER ONLY ON CIRCUITS PROVIDED WITH BRANCH CIRCUIT PROTECTION (CIRCUIT BREAKER OR FUSE) OF A MAXIMUM OF 20 AMPERES, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ANSI/NFPA 70, AND ALL LOCAL CODES AND ORDINANCES.**

The use of an extension cord with the 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, use a three-conductor,

No. 12 AWG cord with ground, properly wired, in good electrical condition and keep it 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 this charger with a damaged cord or plug. Do not operate this charger if it has received a sharp blow, was dropped or otherwise damaged in any manner; refer to a qualified service agent. Provide adequate ventilation for the 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") (5cm) away from walls and other objects. Do not allow clothing, blankets, or other material to cover the 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 POWER CORDS OR WIRES IMMEDIATELY.**

## GROUNDING INSTRUCTIONS

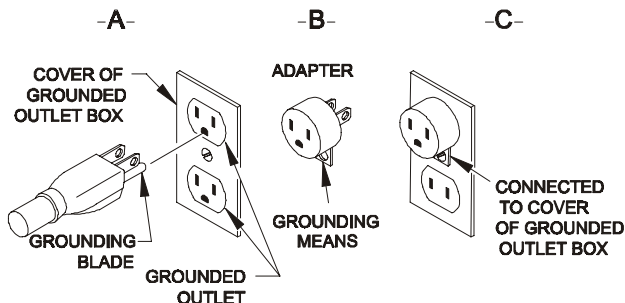
This battery charger must be grounded to reduce the risk of electric shock. This charger is equipped with an electric cord having an equipment-grounding conductor and a grounding type plug. This plug must be connected to an appropriate receptacle that is properly installed and grounded in accordance with the National Electrical Code and all local codes and ordinances.

**⚠ DANGER: IMPROPER CONNECTION OF THE EQUIPMENT-GROUNDING CONDUCTOR CAN RESULT IN RISK OF ELECTRIC SHOCK.**

The conductor with insulation having an outer surface that is green, with or without yellow stripe(s), is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding connector to a live terminal.

Battery chargers equipped with a grounding plug as illustrated in Figure A are for use on a nominal 115 volt circuit. A temporary adapter, as illustrated in Figures B and C, may be used to connect this plug to a two-pole receptacle as shown in Figure C if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrical. The green-colored rigid ear or lug extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

### GROUNDING METHODS



NOTE: The use of the adapter shown in Figures B and C is not permitted in Canada.

Battery chargers for use on a circuit having a nominal rating of more than 115 volts are equipped with a specific electric cord and plug to permit the connection to a suitable AC receptacle. Make sure that the charger is connected to a receptacle having the same configuration as the plug. No adapter should be used with these chargers.

## NORMAL OPERATION

REFER TO and FOLLOW ALL the instructions and safety precautions printed on the charger before every use!

**!!!DO NOT MAKE ANY CONNECTIONS UNTIL YOU CHECK THE CHARGER NAMEPLATE AND VERIFY THAT THE CHARGER IS FOR USE ON THE INTENDED INPUT POWER, BATTERY SYSTEM VOLTAGE, BATTERY TYPE, AND BATTERY AMP-HOUR CAPACITY SIZE!!!**

1. With the charger DC output cord disconnected from the batteries, connect the power supply cord to the needed AC voltage and frequency as specified on the charger nameplate.

**⚠ WARNING: TO REDUCE THE RISK OF AN ELECTRIC SHOCK, CONNECT THE AC POWER SUPPLY PLUG ONLY TO A PROPERLY GROUNDED, SINGLE PHASE (3-WIRE) OUTLET. REFER TO GROUNDING INSTRUCTIONS.**

**⚠ CAUTION: MAKE SURE THE BATTERY PACK IS THE CORRECT NUMBER OF SERIES CONNECTED LEAD-ACID CELLS SYSTEM VOLTAGE, AND AMP-HOUR CAPACITY AS SPECIFIED ON THE CHARGER. USE OTHERWISE MAY DAMAGE THE CHARGER AND/OR BATTERIES.**

**⚠ DANGER: TO PREVENT ELECTRIC SHOCK, DO NOT TOUCH UNINSULATED PARTS OF THE CHARGER OUTPUT CONNECTOR, BATTERY CONNECTOR, OR BATTERY TERMINALS. MAKE SURE THAT BOTH THE CHARGER AND BATTERY CONNECTORS ARE IN GOOD WORKING CONDITION.**

**⚠ DANGER: DO NOT USE THE CHARGER IF EITHER THE CHARGER OR BATTERY CONNECTORS ARE CORRODED, CRACKED, SHOW ANY SIGNS OF MELTING ARE DAMAGED IN ANY WAY OR DO NOT MAKE A TIGHT CLEAN ELECTRICAL CONTACT. USING ANY CHARGER WITH ANY OF THE ABOVE SYMPTOMS COULD RESULT IN A FIRE, PROPERTY DAMAGE, OR PERSONAL INJURY. REPLACE DEFECTIVE, CRACKED OR DAMAGED CORDS OR WIRES IMMEDIATELY. DO NOT DISASSEMBLE CHARGER; TAKE IT TO A QUALIFIED SERVICE AGENT WHEN SERVICE OR REPAIR IS REQUIRED. INCORRECT REASSEMBLY MAY RESULT IN RISK OF ELECTRIC SHOCK OR FIRE.**

2. Connect the charger to a battery system of the voltage, type, and amp-hour capacity as specified on the charger. Connect DC output connector to the battery connector by grasping the plug body or handle firmly pushing the plug straight into the receptacle until the connectors are fully engaged.

**⚠ WARNING: DO NOT DISCONNECT THE DC OUTPUT CONNECTOR FROM THE BATTERY RECEPTACLE WHEN THE CHARGER IS**

**OPERATING. THE RESULTING ARCING AND BURNING OF THE PLUG AND RECEPTACLE COULD CAUSE THE BATTERIES TO EXPLODE. IF THE CHARGER MUST BE STOPPED, FIRST DISCONNECT THE AC POWER SUPPLY CORD FROM ITS OUTLET, THEN DISCONNECT THE CHARGER DC OUTPUT PLUG FROM THE BATTERY RECEPTACLE.**

Three to five (3-5) seconds after the charger and battery connectors are engaged, the control relay inside the charger will click "closed", indicating a complete electrical circuit between the controller kit inside the charger and the equipment battery pack.

After the relay clicks "closed", the transformer will hum indicating that the transformer has been energized by AC power.

After the transformer hums, the ammeter needle will deflect indicating initial charge rate.

**3. MONITOR THE AMMETER FOR THE INITIAL CHARGE RATE**

The correct initial charge rate will vary due to numerous factors, it should be approximately 25 amperes.

Charger Current Rating	INITIAL CHARGE RATE		
	Minimum (-18%)	Rating	Maximum (+18%)
25	18	25	29.5

If the ammeter reads 30 amperes after 30 minutes, turn the charger off by first disconnecting the AC plug from its receptacle.

**⚠ CAUTION: TO PREVENT OVERHEATING AND TRANSFORMER DAMAGE TO THE CHARGER, DO NOT ALLOW THE CHARGER TO OPERATE FOR MORE THAN 30 MINUTES WITH AMMETER READING 30 AMPERES.**

This high charge rate is caused if the charger is connected to a battery pack with a system voltage lower than specified on the charger. If battery maintenance has recently been performed, check to see if an individual battery has been connected reverse polarity. Test by measuring the battery system voltage with an accurate voltmeter at the equipment battery connector.

If the batteries have been recently charged, the battery is cold (temperature below 65°F) or the AC input voltage is lower than nominal the initial charge rate may only reach the minimum initial charge rate at turn on for the specific current rating charger.

If the initial charge rate is less than half of the specified minimum initial charge rate at the moment of turn on, the charger may be

malfunctioning due to electrical overload damage. Turn the charger off by first disconnecting the AC plug from its receptacle.

**⚠ CAUTION: DO NOT USE THE CHARGER IF THE OUTPUT IS LOW. BATTERIES WILL NOT REACH FULL CHARGE, THEREBY INCREASING THE POSSIBILITY OF A HARMFUL DEEP DISCHARGE DURING THEIR NEXT USE.**

This too low a charge rate at the instant of turn-on can be due to a charger malfunction resulting from electrical overload damage, or the battery pack system voltage is higher than specified on the charger. Test for the correct battery pack system voltage with an accurate voltmeter at the equipment battery connector. Check the fuse assembly or individual fuses for an indication of charger electrical overload damage. A blown single fuse or single fuse link of the fuse assembly indicates an electrical overload damage caused short circuit failure of a rectifier diode.

**DO NOT DISASSEMBLE THE CHARGER.** Take the charger to a qualified service agent to have the heatsink assembly with diodes and correct replacement fuse or fuse assembly installed. Incorrect reassembly may result in a risk of electric shock or fire.

During charge, the battery voltage gradually increases which causes the charge rate to decrease. Batteries able to deliver their full rated capacity will still rise to 2.5 volts per cell, or higher, at 80°F, as they reach maximum charge. This will allow the charge current to decrease or taper to the chargers designed finish charge rate or lower at the end of charge. Refer to chart.

Charger Current Rating	Finish Current @2.5 Volts/Cell @80°F	Normal Finish Charge Current Range
25 amps	8 amps	10 amps or less

Since each battery cell accepts charge at a slightly different rate, charging with the ammeter reading in the normal finish charge range for the last few hours of charge is important to achieve equalization of all battery cells every time the batteries are charged.

As batteries wear out and lose capacity, the end of charge finish voltage continually decreases. As the end of charge finish voltage decreases to less than 2.5 volts per cell, this prevents the finish charge current from decreasing to the normal finish charge current range. The controller kit still determines when the batteries have reached their now reduced maximum charge capacity and will turn the charger off.

The major factors affecting the required charge time are charger output current rating, battery size or capacity in Amp-Hours, and how deeply the battery is discharged. A larger, more deeply discharged battery requires more time to recharge to maximum charge with the same current rating charger than a smaller, less deeply discharged battery.

Use this table as a basic guide for charging time.

Charger Current Rating	Battery Capacity 20 Hr. Rate	Normal Recharge Time	Additional Charge Time
25 amp	185	9 hours	3 hours
	305	14 hours	4 hours

**⚠ WARNING: DO NOT LEAVE THE CHARGER DC OUTPUT CONNECTOR CONNECTED TO THE BATTERY CONNECTOR WHILE UNATTENDED FOR TWO DAYS OR MORE IN A ROW. SEVERE OVERCHARGING AND POSSIBLE DAMAGE TO THE BATTERIES WILL RESULT IF THE CHARGER SHOULD FAIL TO TURN OFF.**

Newer or colder batteries require greater energy return, are slower to respond and consequently require extended charge time at a low finish charge current rate to return to maximum charge. As batteries wear out and lose capacity, their temperature rise both from use and on charge becomes significant as an indicator of the end of life and the battery cannot benefit from extended charge time. Even though they are properly charged, older batteries continually lose capacity, and should be replaced when they will no longer perform as desired.

4. After the charger has turned off, disconnect the charger DC output connector from the battery connector by grasping the plug body or handle and pulling the plug straight out of the receptacle.

**⚠ WARNING: TO AVOID DAMAGE TO THE CHARGER CORD, CONNECTOR PLUG, AND**

**BATTERY CONNECTOR RECEPTACLE, DO NOT PULL ON THE CHARGER CORD. DO NOT TWIST, ROCK, OR PULL THE CONNECTOR PLUG SIDEWAYS.**

### ON-DEMAND CHARGING

Battery cycle life is directly determined by severity of use. A battery that has 100% of its available energy discharged every time it is used will wear out twice as fast as a battery that has 70% of its available energy discharged every time it is used. In severe use situations, some additional battery life can be realized by instituting short charge periods during work breaks. This reduces the incidence of full 100% battery depletion before charging.

Follow "Normal Operation" procedures to begin a short charge period. At the end of any short charge period where the charger has not turned off, turn the charger off by first disconnecting the AC power supply cord or pressing the "Manual Stop" button if the charger is so equipped.

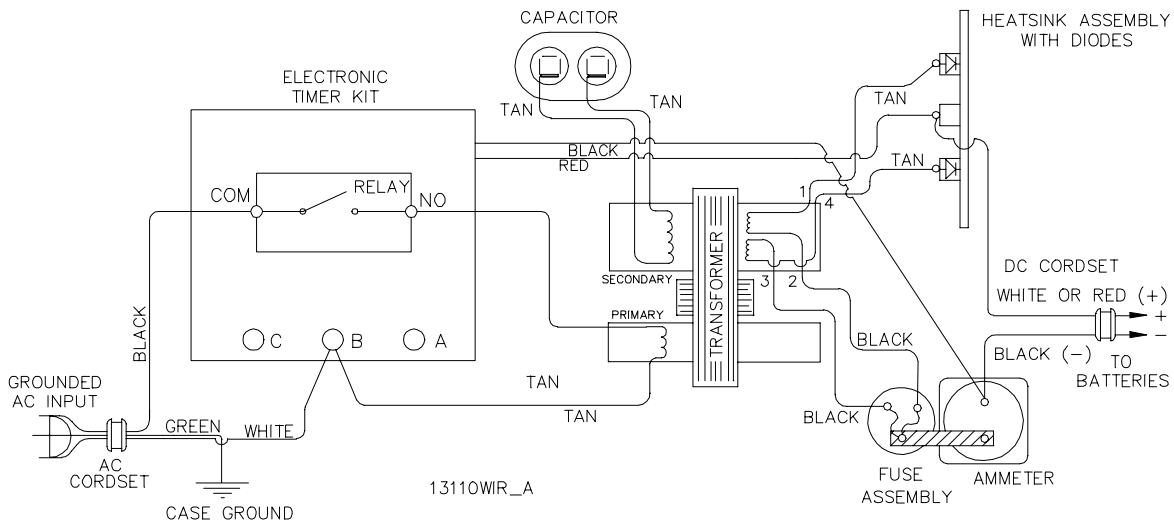
**⚠ WARNING: DO NOT DISCONNECT THE DC OUTPUT CONNECTOR FROM THE BATTERY RECEPTACLE WHEN THE CHARGER IS OPERATING. THE RESULTING ARCING AND BURNING OF THE PLUG AND RECEPTACLE COULD CAUSE THE BATTERIES TO EXPLODE.**

If the charger must be stopped, first disconnect the AC power supply cord from its outlet, or depress the "Manual Stop" button if the charger is so equipped. Only after the charger has turned off, then disconnect the charger DC output plug from the battery receptacle.

### BATTERY STORAGE MAINTENANCE

When the equipment is not in use, charge the batteries once each week. Remove the DC output connector at the end of charge.

## WIRING DIAGRAM



### PARTS LIST FOR LESTRONIC II CHARGER MODEL 13110 TYPE 24LC25-8ET 115 VAC / 60 HZ

PART NO.	QTY.	DESCRIPTION
15114S	1	CASE ASSEMBLY
13145S	1	TRANSFORMER ASSEMBLY
16354S	1	HEATSINK ASSEMBLY, W/ DIODES
04127S	1	AMMETER
24920S	1	ELECTRONIC TIMER ASSEMBLY
* 04483S	1	RELAY, FOR TIMER ASSEMBLY
** 23385S	1	RELAY, FOR TIMER ASSEMBLY
02390S	1	CAPACITOR, 6.0 MFD, 660 VAC
08776S	1	FUSE ASSEMBLY
02028S	1	BUSHING, 7W-2, INSULATOR FOR DC CORD
03894S	1	BUSHING, 7K-2, INSULATOR FOR AC CORD
11923S	1	CORDSET, AC, 14/3, 80", MOLDED PLUG
33014S	1	CORDSET, AC, 14/3, 248", MOLDED PLUG
08020S	1	CORDSET, DC, 12/2, W/ LESTER PLUG
12227S	1	CORDSET, DC, 12/2, W/ RED 50 AMP ANDERSON
08607S	1	CORDSET, DC, 12/2, W/ GRAY 50 AMP ANDERSON
12284S	1	CORDSET, DC, 12/2, W/ RED 175 AMP ANDERSON
08224S	1	CORDSET, DC, 12/2, W/ GRAY 175 AMP ANDERSON
18413S	1	CORDSET, DC, 10/2, W/ GRAY 50 AMP ANDERSON
08313S	1	PLUG ASSEMBLY, DC, GRAY 50 AMP ANDERSON PLUG
12302S	1	PLUG ASSEMBLY, DC, RED 50 AMP ANDERSON PLUG
02957S	1	PLUG ASSEMBLY, DC, 175 AMP ANDERSON PLUG

\* FOR USE WITH CHARGERS BUILT BEFORE 47/03

\*\* FOR USE WITH CHARGERS BUILT AFTER 47/03

## **LIMITED WARRANTY**

Lester Electrical warrants each new Lester Battery Charger for defects in material and workmanship for a period of two (2) years from the date of manufacture of the complete unit.

Repairs can be made at the Lester Electrical factory. To do so, **FIRST** obtain a "Return Material Authorization" number by calling the Service Department of Lester Electrical **(402 477-8988)** or by e-mailing **service@lesterelectrical.com** and send the defective unit with transportation charges prepaid to:

**Lester Electrical**  
**625 West A Street**  
**Lincoln, NE 68522-1794 USA**  
**Attention: Service Department**  
**RMA # \_\_\_\_\_**

For repairs made at other than the Lester Electrical factory, Lester will provide only the replacement parts. Defective parts should be sent with transportation charges prepaid to the Lester Electrical factory at the address noted above.

**If the unit or parts are found, in the reasonable judgment of Lester Electrical, to be defective in material or workmanship, repair, or replacement will be made by Lester Electrical without charge for parts or labor. Repair or replacement will be at the discretion of Lester Electrical, with replacements being made using current models or parts performing the equivalent function. Labor charges other than those incurred at the Lester Electrical factory are not covered under this warranty. All expenses associated with delivering defective items to the Lester Electrical factory and the expense of returning repaired or replaced items from the Lester Electrical factory to the owner will be paid for by the owner. All warranty work accomplished at the Lester Electrical factory will be completed within a reasonable time after receipt of defective items.**

This warranty does not cover any semiconductor parts, such as diodes, which are vulnerable to electrical overloads beyond the control of Lester Electrical. Warranty on parts not manufactured by Lester Electrical, which include, but are not limited to, timers and ammeters is limited to the period specified in the original manufacturer's warranty.

This warranty does not cover any charger that has been subject to misuse, neglect, negligence, or accident, or operated in any way contrary to instructions specified on the charger case and in the owner's manual. No claim of breach of warranty shall be cause for cancellation of the contract of sale of any Lester Electrical charger. Lester Electrical assumes no responsibility for loss of time, inconvenience, or other damage, consequential or otherwise, resulting from a defective charger. All implied warranties (including merchantability) are limited in duration to two (2) years from date of manufacture warranty period.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Lester Electrical's obligation under this warranty is strictly and exclusively limited to the repair or replacement of defective items. Lester Electrical issues this warranty in good faith and with full confidence in the workmanship and quality of Lester Electrical products.