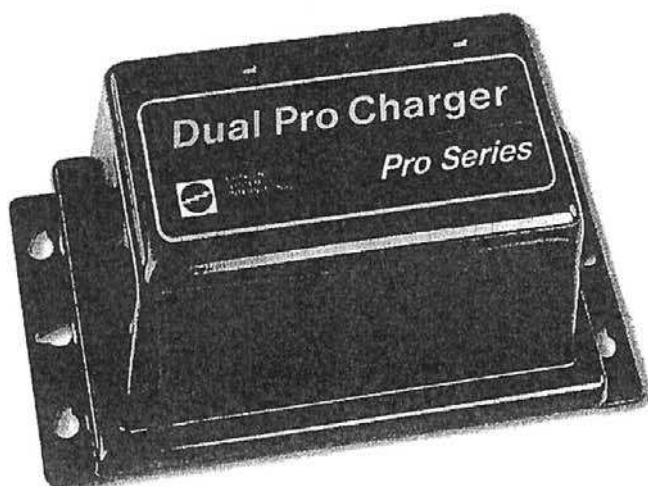


# Dual Pro Charger®

CHARGING SYSTEMS INTERNATIONAL



## INSTALLATION AND OPERATING INSTRUCTIONS FOR THE FOLLOWING CHARGERS:



Model Name	Total Output	Amps Per Bank	Battery System
Pro XL	6 amps	6	12V
Dual Pro XL	12 amps	6, 6	12V, 24V
Pro SE	10 amps	10	12V
Dual Pro SE	20 amps	10, 10	12V, 24V
Three Bank Pro SE	30 amps	10, 10, 10	12V, 24V, 36V
Four Bank Pro SE	40 amps	10, 10, 10, 10	12V, 24V, 36V, 48V
Pro Charger	15 amps	15	12V
Dual Pro Charger	30 amps	15, 15	12V, 24V
Three Bank Pro Charger	45 amps	15, 15, 15	12V, 24V, 36V

# CHARGING SYSTEMS INTERNATIONAL

## INSTALLATION AND OPERATING INSTRUCTIONS FOR THE FOLLOWING BATTERY CHARGING SYSTEMS:

MODELS	MAX AMPS/BANK	NO. OF BANKS	BATTERY SYSTEM
PRO XL	6	1	12
DUAL PRO XL	6	2	12/24
PRO SE	10	1	12
DUAL PRO SE	10	2	12/24
THREE BANK PRO SE	10	3	12/24/36
FOUR BANK PRO SE	10	4	12/24/36/48
PRO CHARGER	15	1	12
DUAL PRO CHARGER	15	2	12/24
THREE BANK PRO CHARGER	15	3	12/24/36

### IMPORTANT NOTICE

Please save and read all safety, operating and installation instructions before installing or applying AC power to your Charging Systems International on-board battery charging system. Please contact Charging Systems International with any product, installation, or service questions at 1-800-742-2740.

### Introduction

Charging Systems International has been manufacturing waterproof, on-board battery charging systems since 1989. Our charging systems are designed and built tough to withstand intense vibration, extreme temperature variations and submersion without damaging the unit. Our systems use temperature compensation in order to fully charge a battery in hot or cold environments and are controlled by microprocessors in order to assure precise control over each totally independent charging bank. All of our chargers have true reverse polarity protection and shut off completely after each charge cycle.

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### IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS-This manual contains important safety and operating instructions for battery charger models: Pro XL, Dual Pro XL, Pro SE, Dual Pro SE, Three Bank Pro SE, Four Bank Pro SE, Pro Charger, Dual Pro Charger, Three Bank Pro Charger.

Use of attachments not recommended or sold by Charging Systems International may result in a risk of fire, electrical shock, or injury to persons.

To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.

When using an extension cord, make sure:

1. That pins on plug of extension cord are the same number, size and shape as those of the charger plug;
2. That extension cord is properly wired and in good electrical condition;
3. That wire size is large enough for ac ampere rating of charger.

Do not operate charger with damaged cord or plug - replace the cord or plug immediately.

Do not operate charger if it has received a sharp blow, been dropped or otherwise damaged in any way; contact Charging Systems International.

Do not disassemble charger; contact the factory when service or repair is required. Incorrect reassembly may result in risk of electrical shock or fire.

To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

#### **WARNING-RISK OF EXPLOSIVE GASES.**

1. **WORKING IN THE 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.
2. To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary markings on these products and on engine.

#### **PERSONAL PRECAUTIONS**

Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.

Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.

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.

**NEVER** smoke or allow a spark or flame in vicinity of battery or engine.

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.

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.

Use charger for charging a LEAD-ACID (lead acid, sealed lead acid, gel cell and AGM) 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.

NEVER charge a frozen battery.

### **PREPARING TO CHARGE**

If it is necessary to remove the battery to charge, always remove grounded terminal from battery first. Make sure all accessories are off, so as not to cause an arc.

Be sure area around battery is well ventilated while batteries are being charged. Gas fumes can be forcefully blown away by using a piece of cardboard or other nonmetallic material, as a fan.

Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.

Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.

Study all battery manufacturers' specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.

Extension cords should be industrial grade/heavy duty U.L. approved and grounded. Check extension cord before use for damage, bent prongs and cuts. Replace if damaged.

Always make your extension cord connection on the charger side first. After connecting the extension cord to the charger then proceed to plug the extension cord to a nearby 120VAC GFCI protected (Ground Fault Circuit Interrupt) outlet.

Always remove the extension cord from the 120VAC outlet first when charging is completed followed by unplugging the charger.

### **PRODUCT SUMMARY**

General Operation:

Use the following guidelines in this manual to install your fully automatic Charging Systems International battery charging system.

Assure that your charger and batteries are properly vented. Connect your extension cord with no AC Power present to the battery charger and proceed to plug your extension cord in at a nearby 120 VAC outlet.

Once you plug in your Charging Systems International battery charging system, your batteries will be simultaneously and independently charged to 100%. Unlike systems that utilize one large charger to attempt to charge multiple batteries, your system utilizes a totally independent battery charger for each battery. Each charging bank will turn itself completely off once the battery is charged and then monitor and maintain the battery indefinitely.

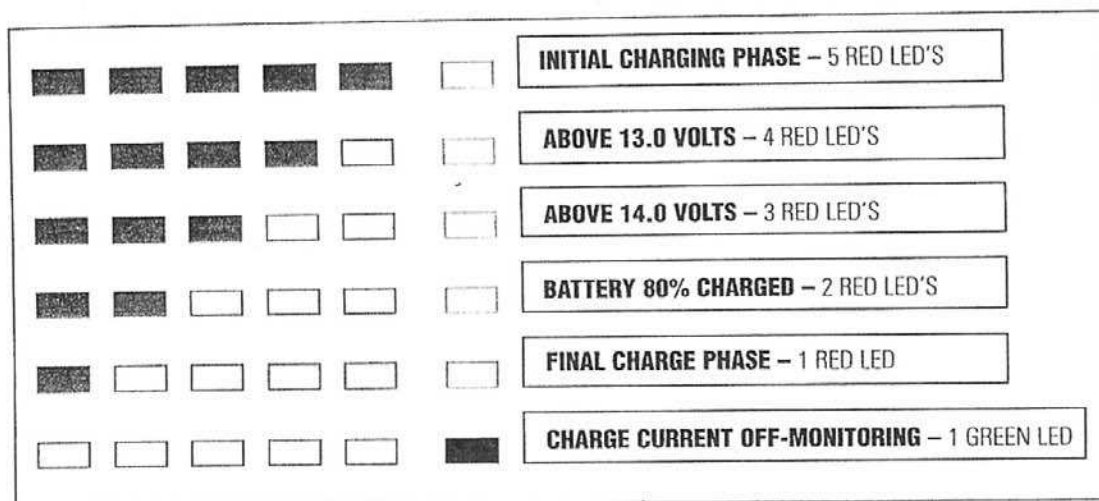
We recommend that you leave your system plugged in to reduce sulfate build-up and to allow your Charging Systems International charging system to keep your batteries fully maintained and ready to perform at their best.

### **Independent Charging Bank Indications**

When your battery charging system is activated, each bank provides charging information utilizing five red LED indicators and one green LED indicator.

The five red LEDs enable you to track the progress of the charge cycle on each battery as the voltage rises.

(see chart on next page)



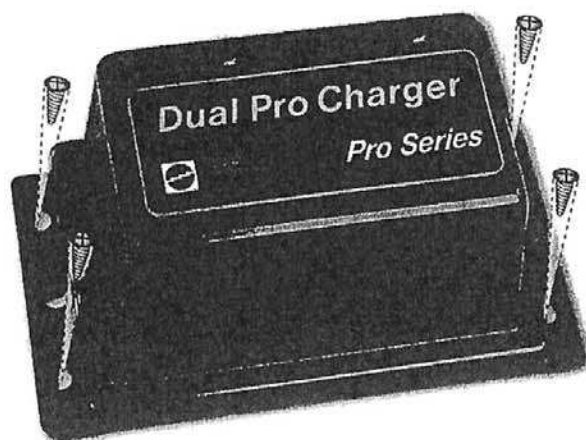
## INSTALLATION INSTRUCTIONS

All Charging Systems International battery charging systems are designed to be permanently mounted and have no mounting restrictions.

Do not make any electrical connections to the power supply (AC) or to a battery (DC) until the mounting process has been completed.

Check for fit and appropriate thickness of mounting area. It is recommended that you choose a flat surface. If mounting the charger in a boat please choose a surface as high above the water level as possible. If a compartment wall is chosen, make certain its strength is adequate.

Use the mounting flanges of the charger to mark locations for starter holes. Drill a 1/16" inch hole at each marked location. Then, utilize all stainless steel screws which have been provided and install the charger securely being cautious not to over tighten the screws. Silicon sealer should be used to secure and waterproof the screw holes.



### IMPORTANT NOTICE

The mounting bracket of the system contains keyholes that are designed so that some screws can be started before putting the charger into place. The keyhole locations for mounting your charger vary depending on which model you own. On the XL and SE models the mounting flanges run horizontal instead of vertical.

Before making any connections, prepare batteries as follows:

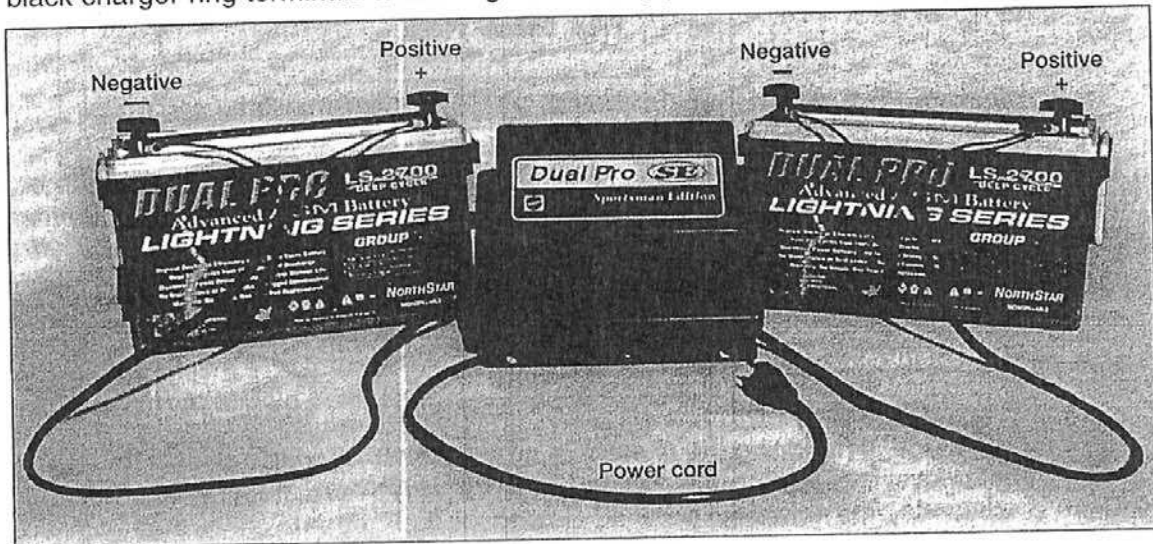
- With caps securely in place, thoroughly clean the case and posts with a solution of baking soda and water. Be careful not to allow any soda to get inside the case.
- All posts, terminals and connectors should be cleaned to a shiny bright finish, using a wire brush or sand paper. This should be done periodically to assure maximum conductivity.



Each charge cable assembly is equipped with a temperature sensor located at the junction of each set of ring terminals. Attempts to lengthen or shorten the cables could partially disable the charger. Therefore, we recommend that you do not make any adjustments without first consulting the factory.

Route your cables from the charger to your batteries, being cautious to avoid sharp objects and use the supplied wire ties to hold them neatly in place.

Securely connect the red charger ring terminals to the positive battery posts and the black charger ring terminals to the negative battery posts as shown below.



In addition, your charging system is supplied with an AC plug receptacle designed to hold the power cord plug when it is not being used. Locate a convenient site for the receptacle and attach it using the four smaller stainless steel screws.

Connect a heavy duty U.L. approved extension cord to the power cord of your charger and then plug the extension cord in to a nearby 120VAC GFI protected (Ground Fault Circuit Interrupt) outlet.

You should now observe red LED indications on each bank of the charger representing each individual battery being charged. The voltage of each battery will reflect the number of LED indicators illuminated. (See Product Summary)

When charging is complete, remove the extension cord from the 120VAC outlet first and then unplug the charger.

## **TROUBLE SHOOTING**

**PROBLEM: No LED indicators illuminate in any of the charger banks.**

Solution Sequence:

Check the AC power supply from its source through all connecting points up to the charger by using a meter or test light to confirm that current is being delivered to the charger.

**PROBLEM: One red LED flashing.**

Solution Sequence:

With the AC power supply cord unplugged, check the ring terminals for correct polarity (Red to positive or +) and (Black to negative or -). Also check for corrosion free secure connections to the batteries. Call the factory for further assistance.

**PROBLEM:** The LED indications change rapidly back and forth from red to green or the green LED will not illuminate after excessive charging time (16 hours or more).

Solution Sequence:

Disconnect AC power to the charging system. On multi bank chargers, take the charge cable assembly from the affected bank off of the battery it is attached to and attach it to another battery in the boat. Take the original charge cable assembly from this battery and attach it to the battery from which you removed the first cable. Plug the charger in and observe the LED indications. If the rapid LED sequence (red to green repeatedly) occurs on a different bank of the charger, this confirms that there is a battery problem.

On single bank systems, simply try the charger on another battery. If the charger now operates normally (steady red LEDs or changes to green and holds), this signifies that there is a possible problem with the original battery.

If the same bank continues to malfunction, please call the factory.

**PROBLEM:** A green LED was illuminated before disconnecting the power from the charger, but upon reconnection, red LEDs appear and remain on.

Solution Sequence:

This is normal operating procedure for the system and simply indicates that a re-analysis of the battery status has been initiated and after a series of steps, the green LED will illuminate.

### **LIMITED WARRANTY**

Charging Systems International makes this Limited Warranty only to the original retail purchaser.

Charging Systems International warrants this battery charger for three years from the date of retail purchase against defective materials and/or workmanship. If such should occur, this unit will either be repaired or replaced at the discretion of the manufacturer. It is the responsibility of the original purchaser to return the charger along with proof of purchase, transportation and/or any mailing or handling charges prepaid to the manufacturer or its authorized representative.

This limited warranty is void if the product is misused, improperly maintained, handled carelessly or incorrectly operated. This warranty is also void if the charger is disassembled or repair is attempted by anyone other than an authorized representative.

Charging Systems International makes no other warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for any incidental or consequential damages.

This is the only expressed limited three year warranty authorized by Charging Systems International and does not assume nor authorize anyone to assume or make any other obligation towards the product other than this three year Limited Warranty. Some states do not allow limitation of incidental or consequential damages, 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.

**WE NOW OFFER THE INDUSTRY LEADING BATTERIES!**

# DUAL PRO

## Advanced AGM Batteries

# LIGHTNING SERIES

PRO QUALITY, PRO PERFORMANCE

**Fastest Charge - Longest Life**



**LS 2200 - CRANKING**



**LS 2400 - XTREME CRANKING**



**LS 2700 - DEEP CYCLE**



**LS 3100 - DEEP CYCLE**

- Highest recharge efficiency of any Deep Cycle Batteries
- Over 400 cycles from 100% depth of discharge
- Rugged Construction
- Maximized Power Delivery
- Up to 2 year storage life
- No Maintenance or Acid Leaks

**Dual Pro Charger** Charging Systems International is proud to introduce our **Lightning Series Batteries**. Working with battery engineers who collectively have over 100 years of experience in design, innovation and manufacturing, we have developed the most advanced AGM batteries ever offered in their class.

Manufactured in a new, ultra modern, state of the art facility, we use only the highest quality raw materials and advanced HPD (High Power Density) technology. This allows construction using multiple thin plates, high cell pack compression and extremely high chemical purity. This protects against self discharge, and increases overall product performance. These batteries are spill proof, leak proof and built to withstand severe vibration. They can be cycled over 400 times from complete discharge for maximum longevity.

If you want a series of batteries that are unmatched in quality, value, performance and efficiency, then look no further. With a reputation of delivering the absolute best products to market year after year, we know that our **Lightning Series Batteries** will exceed all of your expectations. All of our batteries are backed with 100% Dual Pro customer service.

Made In The USA

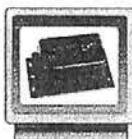


### BATTERY SPECIFICATIONS

Battery	MCA @30°F	CCA @0°F	Reserve Capacity	Size	Weight
LS 2200	800 amps	630 amps	91 minutes	6.93"H X 6.5"W X 7.87"L	34 Lbs.
LS 2400	1180 amps	930 amps	175 minutes	7.87"H X 6.81"W X 10.27"L	53 Lbs.
LS 2700	1180 amps	930 amps	175 minutes	6.93"H X 6.5"W X 13"L	53 Lbs.
LS 3100	1500 amps	1200 amps	200 minutes	8.27"H X 6.81"W X 13.43"L	69 Lbs.

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