

Professional Mariner

FLYBACK 10-3, 15-3, 20-3
PROMATIC 30-3, 50-3,
PROMATIC 21-3 (24V), 35-3 (24V)

ALLTECH SERIES
HIGH FREQUENCY AUTOMATIC FAST CHARGERS

OWNERS MANUAL & INSTALLATION GUIDE

READ SAFETY INSTRUCTIONS BEFORE INSTALLING ANY A.C. DEVICE.

The Professional Mariner Flyback/Promatic units are all fully automatic marine battery chargers that charge quickly, drop to float and maintain, condition, and desulfate at full charge. Units will operate from 90 to 270 VAC, 50/60 Hz single phase.

They are designed specifically for the marine environment with a water resistant aluminum case with drip shield for effective heat dissipation and corrosion resistance. These units should be permanently installed in your boat and hardwired directly to your batteries. They are designed with three isolated outputs that can sense and charge three heavy duty battery banks as needed.

INSTALLATION:

These units should be mounted vertically on a bulkhead for maximum heat dissipation. Units should be securely fastened with screws or thru bolts. The units are designed to operate in high ambient temperatures. 4 - 6 inches should be allowed on all sides of unit. This allows the unit to maintain its own circulation and cooling system for increased efficiency.

DC CONNECTIONS:

The units come standard with three isolated positive posts and one common negative. Boots are included to cover D.C. connections. Consult wire chart for correct D.C. wire size (ABYC 3% wire chart available for longer runs). If negatives are common on the batteries, only one negative is required from the charger to the batteries. Loose connections will damage your charger and / or your boat.

- 1) Connect positive #1 to battery bank #1 positive.
- 2) Connect positive #2 to battery bank #2 positive.
- 3) Connect positive #3 to battery bank #3 positive.
- 4) Connect common negative to battery.

* see diagram

Length of conductor is from charger to battery then back to charger.

Length of conductor in feet for 10-3, 14-3, 16-3

	10'	15'	20'	25'	30'
AWG	14	12	10	10	10
Metric	2	3	5	5	5

Length of conductor in feet for 20-3, 21-3

	10'	15'	20'	25'	30'
AWG	10	8	6	6	6
Metric	5	8	13	13	13

Length of conductor in feet for 30-3

	10'	15'	20'	25'	30'
AWG	10	8	6	6	4
Metric	5	8	13	13	19

Length of conductor in feet for 50-3

	10'	15'	20'	25'	30'
AWG	6	6	4	4	2
Metric	13	13	19	19	21

* 1 foot equals .3048 meters.

NOTE: If unit is used for single or dual battery bank applications, connect unused posts to a used post. If unused post is left unconnected it can reduce charger performance.

Any unit used to its maximum potential, and always the 50-3, should be installed in the upright position.

A.C. CONNECTIONS

Install a circuit breaker or fuse at boat's panel. A three (3) position terminal strip is provided for A.C. input. Connect hot (L) and neutral (N) to connections marked *N* and *L*. Connect A.C. ground (green) to connection marked:



Recommended A.C. fuse or breaker for boat panel:

	120 VAC	240 VAC
Flyback 10-3	5A	3
Flyback 20-3	10A	5
Promatic 30-3	15A	8
Promatic 50-3	20A	10

OPERATING INSTRUCTIONS:

These units are powerful 3 step battery chargers. They have the capability to deliver full voltage and current over a full range of A.C. input voltages, (90-270 VAC .) and hertz 45 to 440

These units incorporate 3 separate outputs for individual bank recharge and control. The built-in overvoltage protection shuts down the unit if the voltage goes too high. (16.5 VDC)

These units feature a built-in amperage indicator and a dual color power on LED. When the charger is activated, the LED will be RED, indicating charger is in fast charge mode. After the absorption cycle is complete (approx 3 hours after battery reaches .1 volt under high setting), the light will change to GREEN, indicating the charger is in float mode.

* The fan is temperature controlled and will only come on when needed.

NOTE: Open voltages at the charger on fast charge will be 14.6 to 14.8 on Lead/Acid batteries to compensate for voltage drop in wires. Read voltage at batteries, adjust for longer runs.

OVP - Runaway alternators, other equipment or loose connections could cause system to exceed the 16.5 VDC Overvoltage Protection setting. (Fast charge light will be on with no voltage rise at battery and no amperage on indicator.) If the charger shuts down, unplug charger and remove the D.C. negative wire. Leave disconnected for 3 minutes then reconnect the negative wire. This will reset the charger.

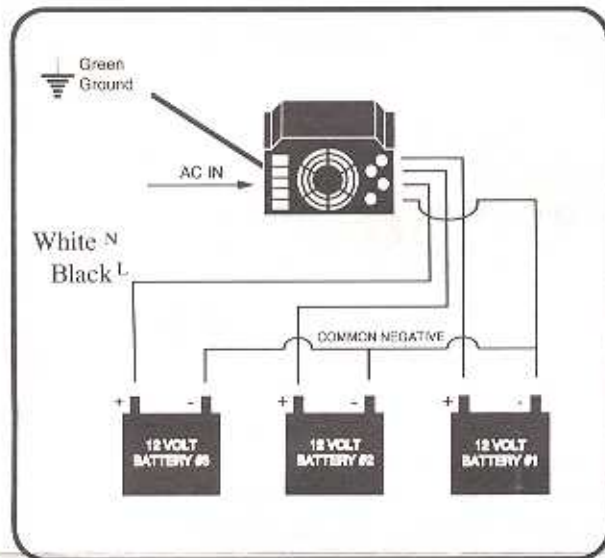
The charger also has an overtemperature shut down. Temperatures over 140°F will shut down unit. Unit will automatically reset when load or ambient temperature decreases.

A D.C. output fuse is on the D.C. negative. It is normally blown only when a battery is installed backwards. This fuse should not blow under normal operation. To check the fuse, turn off the A.C. to charger and disconnect the D.C. negative output from charger. Remove dripshield (4 screws) & upper six (6) screws on end plate (with A.C. terminal strip and output studs). Be careful not to pull out LED plug and meter leads on front of charger. The fuse is located on the circuit board near the D.C. output (fuse is ignition protected, automotive type).

Units are set up for Lead/Acid operation. To switch to Gel Cell see diagram at right of page.

Dip switch and two potentiometers are located on the circuit board at the dripshield end above the transformer. Remove 4 screws to remove drip shield.

NOTE: The 50-3 has two (2) separate boards. Pull AC fuses on opposite board to adjust voltage, or send to factory for no charge adjustment. Switch both dip switches for gel batteries.

Overvoltage protection*Overtemperature protection***Quick recharge - 3 step***Each output capable of carrying the full current load***Dripshield design***Reverse polarity protected***Operates at full voltage and current over a wide range of AC voltages 90-270***Electronic current limited***Finned anodized aluminum extrusion cage for corrosion resistance and efficient heat dissipation***High frequency topology***AC terminal strip****FEATURES***Dimensions: H x W x D - weight**Flyback 10-3: 6.75" x 8.5" x 4" (17.1x21.6x10.1cm) - 5 lbs.**Flyback 20-3, 21-3: 8" x 8.5" x 4" (20.3x21.6x10.1 cm) - 8 lbs.**Promatic 30-3, 14-3, 16-3: 8.75" x 8.5" x 4" (22.2x21.6x10.2 cm)-8 lbs.**Promatic 50-3: 15.5" x 8.5" x 4" (39.4x21.6x10.1 cm)-14 lbs.**Conditions while it charges***Electronic voltage limited***Short circuit "Block wall" protected***Auto ranging AC 90-270***D-Sulfate-R circuit included*

WARNING: HIGH VOLTAGE: DO NOT TOUCH ANYTHING INSIDE CHARGER WITH A.C. 'ON'.

**Remote panels available
Amps, Volts, Expanded Scale,
Digital Volts and Amps**

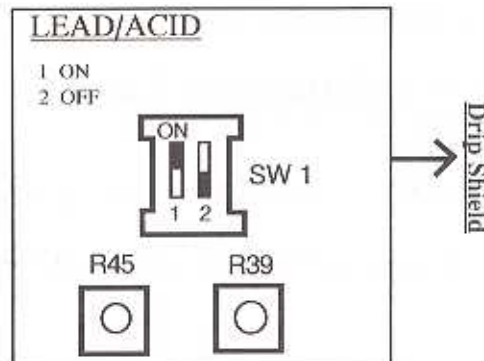
TO CHECK CHARGER:

- 1) Check battery voltage with charger off.
- 2) Activate charger.
- 3) If voltage goes up, charger works perfectly.
- 4) If voltage does not go up, check your battery and connections.
- 5) Check red light operation if light does not come on.
- 6) Check A.C. in voltage, if A.C. is okay and LED light is flashing.
- 7) Turn off A.C. and disconnect common negative for 3 minutes then reactivate.
- 8) No activation - contact factory.
- 9) If voltage exceeds 14.4 for over 12 hours, turn off charger, call service (805) 644-1886.
- 10) Any rapid boiling under 14.2 while charging means your battery is probably defective.

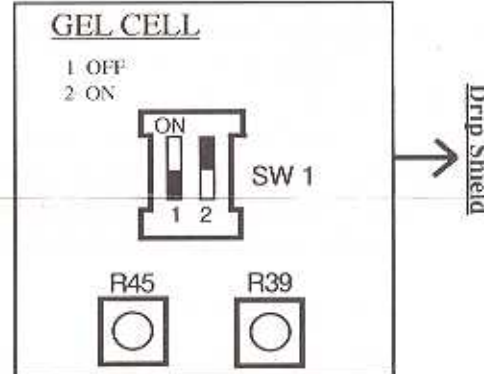
TROUBLESHOOTING GUIDE AVAILABLE.

Check battery water level every month or so. Fill with distilled water.

FOR SERVICE, UPGRADES, ELECTRICAL SYSTEM MONITORS, CONVERTERS AND POWER SUPPLIES CALL: (805) 644-1886



12 volt - 14.5 high - 13.3 float (volts at battery)



12volt 14.1 high - 13.8 float (volts at battery)

Switch is factory set for Lead/Acid batteries

12 volt - 14.5 high - 13.3 float (volts at battery)

24 volt - 29 high - 26.6 float (volts at battery)

32 volt - 38.67 high - 35.5 float (volts at battery)

36 volt - 43.5 high - 39.9 float (volts at battery)

Switch set for Gel Cell batteries

12 volt - 14.1 high - 13.8 float (volts at battery)

24 volt - 28.2 high - 27.6 float (volts at battery)

32 volt - 37.6 high - 36.8 float (volts at battery)

36 volt - 42.3 high - 41.1 float (volts at battery)

OVP Settings

12V System - 16.5 VDC

24V System - 33 VDC

32V System - 44.7 VDC

36V System - 49.5 VDC

**PROFESSIONAL MARINER ONE-YEAR LIMITED
WARRANTY & LIFETIME REPAIR POLICY**

Each product is guaranteed against defects in material and workmanship to the original consumer in normal use for one full year after purchase at no charge except shipping.

Each serial numbered product has an additional repair adjustment provision after the full year limited warranty that limits the maximum charge for a factory repair to the original consumer to 1/60th of the retail price times the number of months after purchase or up to a maximum of 50% of current retail price, after 30 months of service, plus shipping.

*Warranty and repair adjustment calculated from manufacture date if not registered within 2 weeks of sale.

*Warranty void if unauthorized repairs attempted.

*Customer responsible for return shipping damage and shipping costs must be prepaid both ways.

*Cosmetic repairs done at owner's request and expense.

Purchase or other acceptance of the product shall be on the condition and agreement that Professional Mariner SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. (some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.) This warranty is made in lieu of all other obligations or liabilities on the part of Professional Mariner. Professional Mariner neither assumes nor authorizes any person for it or any other obligation or liability in connection with the sale of this product.

To make a claim under warranty, write directly to Professional Mariner, LLC, P.O. Box 968, Rye, NH 03870, identifying the product and giving its location. Follow the company's return instructions which will then be provided by the company. Professional Mariner will make its best efforts to repair or replace the product, if found to be defective within the terms of this warranty within thirty (30) days after return of the product to the company. Professional Mariner will ship the repaired, or replaced product back to the purchaser at owner's expense.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty is in lieu of all other expressed or implied.

Professional Mariner, LLC - P.O. Box 968, Rye, NH 03870
Tel: (604) 433-4440 Fax: (604) 433-4442

Factory Service Center & Technical Offices
Professional Mariner, LLC - 2970 Seaborg Ave., Ventura, CA 93003
Tel: (805) 644-1886 Fax: (805) 644-1895

TROUBLESHOOTING ALL HIGH FREQUENCY CHARGERS

PROBLEM

A NO RED OR GREEN LIGHT. AMMETER READS 0

CHECK A.C. IN AT THE UNIT

A.C. OKAY

CHECK INTERNAL A.C. FUSE

FUSE OKAY

CONTACT PROFESSIONAL MARINER
PHONE: (805) 644-1886
FAX: (805) 644-1895

NO A.C.

CHECK A.C. WIRING TO THE CHARGER

PROBLEM

B LIGHT IS ON. BATTERIES ARE NOT CHARGING. AMMETER READS 0

READ D.C. VOLTAGE

BELOW 13V

TURN OFF A.C. INTO CHARGER. DISCONNECT D.C. NEG. WAIT 3 MINUTES, REACTIVATE THE A.C. AND TAKE A VOLTAGE READING FROM EACH POSITIVE POST TO THE NEGATIVE POST. SHOULD READ 14.6 - 14.8 LEAD/ACID (FLOODED BATTERIES. 14.1 - 14.2 GEL CELL BATTERIES)

IF NO OPEN VOLTAGE

CHECK D.C. FUSE

IF FUSE OKAY

CONTACT PROFESSIONAL MARINER
PHONE: (805) 644-1886
FAX: (805) 644-1895

ABOVE 13V

UNIT IS OKAY

IF UNIT HAS CORRECT VOLTAGE UNIT OKAY

CHECK ALL D.C. CONNECTIONS FROM UNIT TO BATTERY AND RECONNECT D.C.

PROBLEM

C LIGHT IS ON. AMMETER REGISTERS CURRENT. BATTERIES ARE NOT CHARGED

CHECK ALL D.C. VOLTAGE AT THE CHARGER AND AT THE BATTERY

IF MORE THAN 3% VOLTAGE DROP

IF LESS THAN 3% VOLTAGE DROP

CHECK FOR BAD D.C. CONNECTIONS FROM CHARGER TO BATTERY

IF CONNECTIONS ARE OKAY

WIRING IS TOO SMALL CONSULT 3% WIRE CHART

BATTERIES MAY NEED MORE TIME TO RECHARGE. SUBTRACT CONTINUOUS D.C. LOAD FROM CHARGER OUTPUT RATING. THIS IS THE AMPERAGE AVAILABLE FOR RECHARGING. DIVIDE THIS NUMBER INTO AMP HRS NEEDED TO RECHARGE THE BATTERY. THIS WILL GIVE APPROXIMATE RECHARGE TIME (ADD 20% FOR INEFFICIENCY OF BATTERY CHARGING)

IF RECHARGE TIMES ARE TOO LONG

CONTACT PROFESSIONAL MARINER FOR CHARGER UPGRADE
PHONE: (805) 644-1886
FAX: (805) 644-1895

PROBLEM

D LIGHT IS FLASHING. AMMETER IS BOUNCING

TURN OFF A.C. INTO CHARGER. DISCONNECT D.C. NEG. REACTIVATE THE A.C. AND TAKE A VOLTAGE READING FROM EACH POSITIVE POST TO THE NEGATIVE POST. SHOULD READ 14.6-14.8 LEAD/ACID (FLOODED BATTERIES. 14.1 GEL CELL BATTERIES)

CHARGER OKAY

CHECK D.C. VOLTAGE. IF UNDER 8V TURN OFF ALL D.C. LOAD ALLOW BATTERY TO RECHARGE

IF LOAD EXCEEDS CHARGER RATING

CONTACT PROFESSIONAL MARINER FOR CHARGER UPGRADE
PHONE: (805) 644-1886
FAX: (805) 644-1895

LIGHT IS FLASHING

CONTACT PROFESSIONAL MARINER
PHONE: (805) 644-1886
FAX: (805) 644-1895

PROBLEM

E A LIGHT IS ON. BATTERIES CHARGED. AMMETER NEVER SHOWED CHARGER RATE

IF AMMETER DOES NOT SHOW INCREASE WHEN LOAD IS APPLIED

TURN ON D.C. LOAD TO CONFIRM AMMETER IS NOT OPERATING

CONTACT PROFESSIONAL MARINER
PHONE: (805) 644-1886
FAX: (805) 644-1895
FOR A FIELD REPLACEABLE AMMETER

BATTERY CHARGER SAFETY INFORMATION

READ AND SAVE THESE IMPORTANT INSTRUCTIONS:

IMPORTANT SAFETY INSTRUCTIONS:

1. **"SAVE THESE INSTRUCTIONS"** - This manual contains important safety and operating instructions for Professional Mariner chargers.
2. Before using battery charger, read all instructions and cautionary markings on the battery charger and battery.
3. **CAUTION** - To reduce the risk of injury, charge only lead acid type rechargeable batteries (lead acid or sealed lead acid batteries - gel cell). Other types of batteries may burst, causing personal injury.
4. Do not expose charger to rain, spray or snow. Exception: immersible Pro Tournament models. **CAUTION:** Do not operate immersed.
5. Use of attachments not recommended or sold by Professional Mariner Inc. may result in a risk of fire, electrical shock or minimum injuries to persons.

PROFESSIONAL MARINER CHARGERS ARE INTENDED FOR HARDWIRE APPLICATIONS.

6. Do not operate charger if it has received a sharp blow, been dropped or otherwise damaged in any way.
7. Do not disassemble charger. Call the factory when service or repair is required. Incorrect assembly may result in risk of electrical shock or fire.
8. To reduce the risk of electrical shock, disconnect charger from A.C. power before attempting any maintenance or cleaning. Turning off all controls will not reduce risk.

I. WARNING: RISK OF EXPLOSIVE GASES

- A. **WORKING IN THE VICINITY OF A LEAD ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASSES DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING CHARGER YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**
- B. To reduce the risk of battery explosion, follow these instructions and those published by battery manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary marking on these products and on engine.

II: PERSONAL PRECAUTIONS:

- A. Someone should be within the range of voice or close enough to come to your aid when you work near a lead acid battery.
- B. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- C. Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- D. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters the eye(s) immediately flood eye(s) with running cold water for at least 10 minutes and get medical attention immediately.
- E. **NEVER** smoke or allow a spark or flame in the vicinity of battery or engine.
- F. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit battery or other electrical parts that may cause explosion.
- G. Remove personal metal items such as rings, bracelets, necklaces and watches when working near a lead acid battery. A lead acid battery can produce a short circuit high enough to weld a ring or the like to metal, causing a serious burn.
- H. Use charger for charging a **LEAD ACID** battery only. It is not intended to supply power to low voltage electrical systems other than in a marine application. Do not use the battery charger to charge dry cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.

- I. NEVER charge a frozen battery.

PREPARING TO CHARGE:

- J. If necessary to remove battery from craft to charge, always remove grounded terminal from battery first. Make sure all accessories in the craft are off, so as not to cause an arc.
- K. Be sure the area around charger is well ventilated while battery is being charged. Gas can be forcefully blown away using a piece of cardboard or other non-metallic material as a fan.
- L. Clean battery terminals-be careful to keep corrosion from coming in contact with eyes.
- M. Add distilled water in each cell until battery acid reaches levels specified by battery manufacturer. This helps purge excessive gasses from cells. Do not overfill. For batteries without caps, carefully follow manufacturer's recharging instructions.
- N. Study all manufacturer's specific precautions., such as removing or not removing cell caps while charging and recommended rates of charge.

III. EXTERNAL CONNECTIONS TO CHARGER SHALL COMPLY WITH ABYC E-8 & A-20.

GROUNDING INSTRUCTIONS: FOR A PERMANENTLY CONNECTED BATTERY CHARGER

This battery charger should be connected to a grounded metal permanent wiring system or an equipment grounding conductor should run with circuit conductors and connected to equipment grounding terminal or lead on battery charger. Connections to battery charger should comply with all appropriate codes and ordinances.

Professional Mariner chargers are automatic units designed for marine applications in converting shore power to D.C. charging current for marine battery maintenance. Pay particular attention to the instructions regarding installation, operation and most important of all "IMPORTANT SAFETY PRECAUTIONS" enclosed with this manual.

For those chargers with A.C. cord and plug : (a) to reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger; (b) do not operate charger with damaged cord or plug - replace them immediately.

**WHEN IN DOUBT, CALL (805) 644-1886
(8:00 AM TO 5:00 PM CALIFORNIA TIME)**