

# Power Builder™ Battery Charger

part no.  
10002460 - 5 unit  
10002439 - 10 unit

## instructions, 5 & 10 unit

### **WARNING**

This manual, including Warnings and Cautions inside, must be read and followed carefully by all persons who will use or maintain the product, including those who have any responsibility involving its selection, application, service, or repair. This product will perform as designed only if used and maintained according to the instructions. Otherwise, it could fail to perform as designed, and persons who rely on this product could sustain serious personal injury or death.

The warranties made by MSA with respect to the product are voided if the product is not assembled, used, and serviced according to the instructions in this manual. Please protect yourself and your employees by following the instructions. Please read and observe the **WARNINGS** and **CAUTIONS** inside. We encourage our customers to write or call for a demonstration of this equipment prior to use, or for any additional information relative to use or repairs.

Call 1-800-MSA-2222 during regular working hours.



**MSA**

Be Sure.  
Choose MSA.

MINE SAFETY APPLIANCES COMPANY  
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

# Description/Installation

## CAUTIONS AND WARNINGS

### IMPORTANT

Pay close attention to Warnings and Cautions in this manual. A WARNING describes a condition that may cause severe personal injury or death if allowed to happen. A CAUTION describes a condition that may cause the cap lamp or other property to be damaged if allowed to happen.

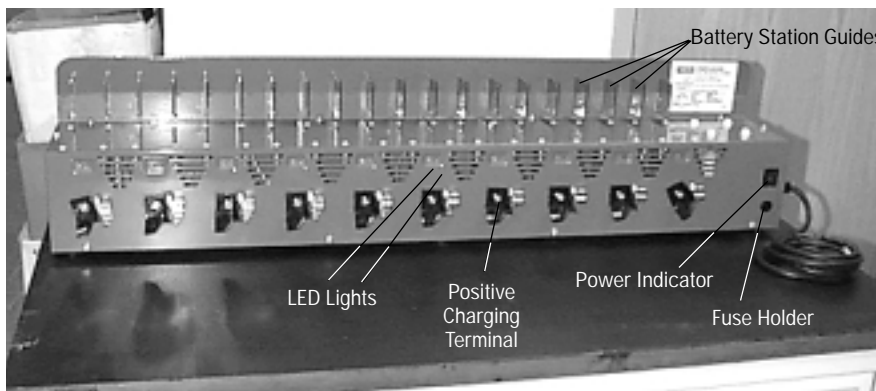
- 1 The cap lamp and charging systems will perform as designed only if used and maintained according to the manufacturer's instructions. Supervisors and users must read and understand these instructions before trying to use or service this product. We encourage our customers to write or call their MSA distributor or call MSA Customer Service for information on this product before using it. To reach the nearest MSA office, call 1-800-MSA-2222 during normal business hours, or 1-800-MSA-5555 after hours or in emergencies.
2. Do not alter, modify, or substitute any components without the approval of MSA.
3. Inspect and maintain the charger according to MSA's instructions. Repairs must be made by properly trained personnel only.
4. Even though the battery may be left "on charge" indefinitely, doing so may cause internal gases to vent, which may lead to accumulation of combustible gases in the lamp room. Install the charger in an adequately ventilated room.

## DESCRIPTION

MSA's 5 & 10 unit Power Builder™ chargers are designed to recharge MSA's Luminator™ and Luminator Plus™ batteries. The charger is equipped with a variable rate, factory-set program controlled by a micro-processor that maximizes recharge capacity in the shortest amount of time. The charge indicator is an easy-to-read LED display; Red and Green lights show charge status.

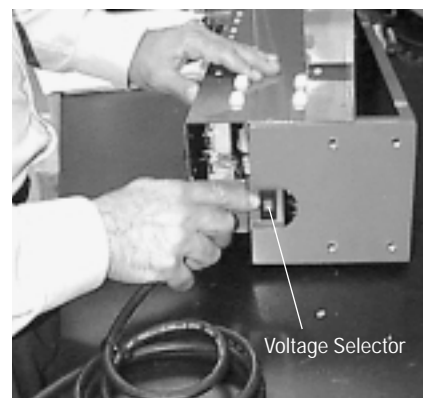
The MSA Power Builder Battery Charger is also a "float" charger, which means that the battery will not be overcharged if left in charge mode over long periods of time.

Technical Data	
Charging Method	Automatic constant current / constant potential
Initial Charging Current	2.5 A max.
Charging Voltage	5.3VDC switching to 5.0VDC (float mode 4.6VDC)
Charging time	Approximately 8 hrs. (after 8 hour discharge w/Ultralight lamp)
Supply Voltage	115/230 VAC +/-10%, single phase, 50/60 Hz, fused for 10A/5A
Power Consumption	5 unit - 350 WATTS, 10 unit - 700 WATTS
Dimensions	
Length:	1180mm (46.5 in.)
Width:	190mm (6.5 in.)
Height:	260mm (10.25 in.)
Weight (10 Unit):	15 kg (33 lbs.)



## INSTALLATION

1. The charger assembly may be installed in the following ways:
  - table or bench top,
  - configured with multiple assemblies into a free standing rack using the mounting kit p/n 10002465,
  - mounted to a wall using the 3 holes in the rear of the assembly using 3/8 inch diameter minimum bolts securely anchored into the wall (anchoring system must be able to support the charger plus 10 cap lamps weighing approximately 5 lb. each).
2. Each charger has a standard 6 foot, 3 conductor cable for connection to the main power supply. The cord is supplied less plug and the user is responsible for supplying the proper connection. For clarification of plug type and AC circuit requirements please consult with qualified electrical power personnel or standards.
3. Both chargers are set for 230 VAC operation. For operation from 115 VAC the following steps must be taken before charging:
  - the voltage selector switch, located inside the charger panel on the right side, must be set for 115 VAC.



## CAUTION

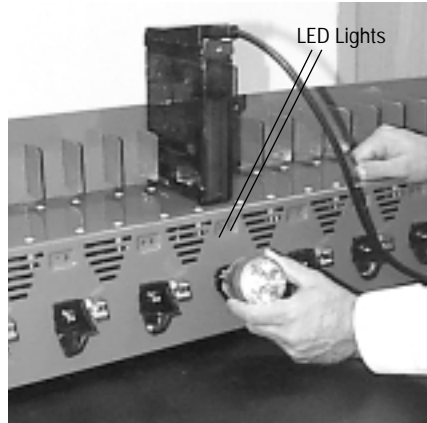
**Operating the charger from 230 VAC while switched for 115 VAC will permanently damage the charger transformer and the transformer will need to be replaced.**

- The 5A fuse located adjacent to the voltage selector switch must be changed to the 10A fuse supplied for operation at 115 VAC. See replacing fuse section.
- the plug must be changed (or adapted for International usage) to match the mating outlet. For clarification of plug type and AC circuit requirements please consult with qualified electrical power personnel or standards.

# Operation/Maintenance

## OPERATION

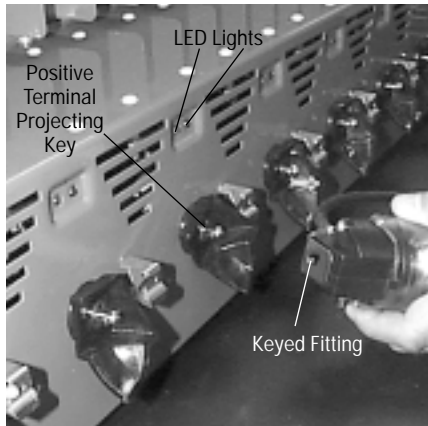
1. Any battery must be recharged (regardless of how long it's been used,) before the next use in order to maintain the battery's rated capacity and cycle life. Typically, the approximate recharge time is 8 hours after a 8 hour discharge using the Ultralight lamp with either the Luminator or Luminator Plus Batteries. Longer recharge times can be expected if the ML-2 lamp, the remote power accessory, or longer discharge times are used.
2. When power is supplied to the charger, the power indication light located on the front panel should be on. Refer to the troubleshooting guide if light does not turn on.
3. To charge the cap lamp, the headpiece should be fitted over the projecting key on the front of the charger and rotated clockwise until it is in the full stop position. Place the battery between the guides located directly above the station being used. To remove the cap lamp from charger - reverse the procedure.



After connection of the cap lamp, the red LED will illuminate after a short time, the circuitry will wait 5 seconds then start the constant current charge (stage 1) while monitoring the charger voltage. When the charging voltage reaches 5.3 VDC the charger switches to a constant potential of 5.0 volts (stages 2 &3) for a set period of time (full charge is reached when the green LED is on only), the charger then switches to a "float" mode voltage of 4.6 volts (stage 4) until the battery is removed. The battery state of charge is indicated by the Charge Indicator Guide

### Note

The charging requirements for individual batteries are unaffected by the state of charge of other batteries on charge. If the battery is removed or input power is interrupted, the charger will reset to stage 1 when reconnected. The charger will quickly read the level of charge in the battery then go on to the appropriate stage where it left off before the interruption. It is not advisable to leave the battery partially charged for any extended length of time. Doing so will reduce the cycle life and capacity of the battery.



## MAINTENANCE

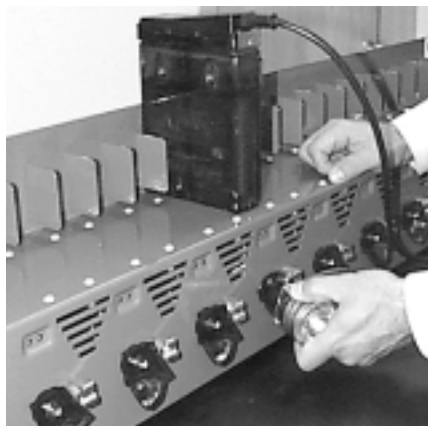
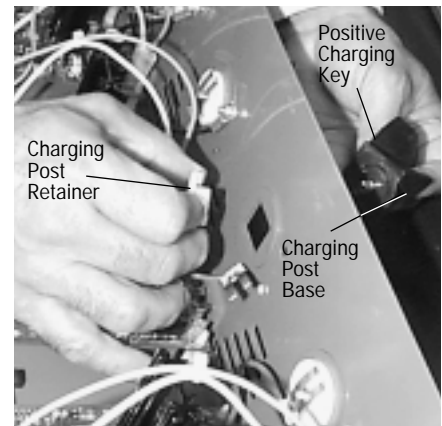
1. Each charger is supplied with an extra fuse for 230 VAC operation. Replace any broken fuses with the following types which are readily available through most electrical supply sources:
  - 115 VAC - fuse type -10A, T 10A
  - 230 VAC - fuse type -5A, TDC11 5A

The fuse holder is located on the front, bottom right side of the frame. To replace a blown fuse, unscrew the fuse holder cover counterclockwise. Remove the blown fuse, place the new fuse in the end of the cover and place back into the holder.

2. Refer to troubleshooting guide if the charger is not working properly, or to the cap lamp user instructions for battery operation.
3. Charging Contact Replacement

Remove top. Disconnect wires to charging contacts.

Pull apart - disconnecting positive charging key from retainer disk



Charge Indicator Guide		
Stage	LED Display	Charge Status
1. Constant Current Mode	RED light on only	charging
2. Constant Potential Mode	RED and GREEN lights on	75% charged
3. Fully Charged	GREEN light on only	charged, ready for use
4. Float Mode	GREEN light on, RED light flashing	float charge, ready for use

# Power Indicator/Charging/Replacing/Accessories/Tools

---

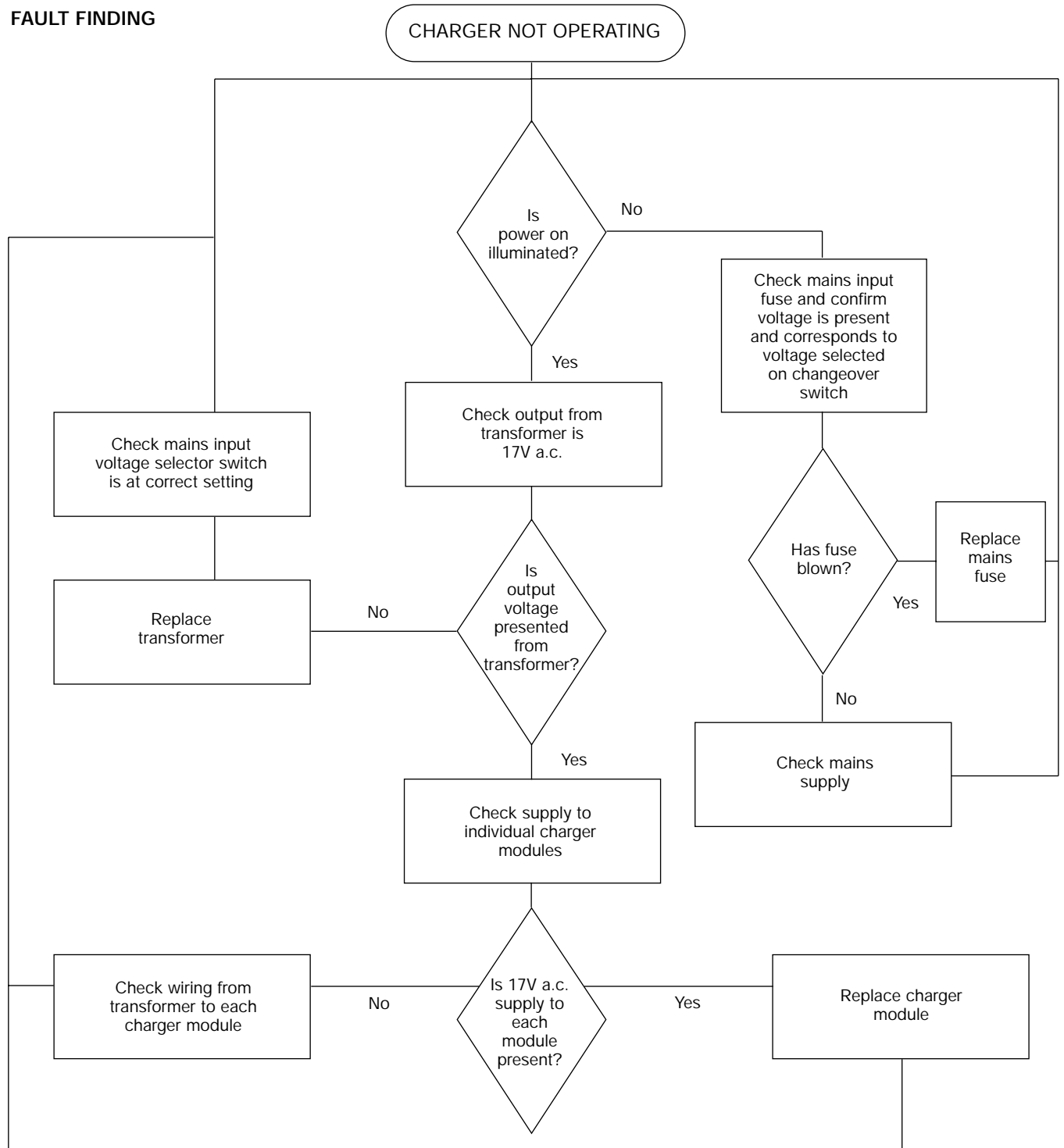
- replace either negative contact, charging post retainer, positive charging key, or charging post base
- make sure retainer disk is oriented properly

## **ACCESSORIES AND REPLACEMENT PARTS**

1. Transformer - 10002464
2. Charging module - 10002462
3. Power light module - 10002463
4. Negative Contact - 96529
5. Positive Charging Key - 453977
6. Retainer Washer - 453974
7. Charging Post Base - 96527
8. Charging Post Retainer - 453976
9. Free standing mounting kit - 10002465 (Accessory)

# Troubleshooting Guide

## FAULT FINDING





Be Sure.  
Choose MSA.

MINE SAFETY APPLIANCES COMPANY  
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230