MOTOMASTER

ELIMINATOR

PRECISION SERIES BATTERY CHARGER

Model no. 011-1967-8

IMPORTANT SAFETY INSTRUCTIONS.
SAVE THESE INSTRUCTIONS.
This manual contains important safety and operating instructions.

INSTRUCTION MANUAL

IF ANY PARTS ARE MISSING OR DAMAGED, OR IF YOU HAVE ANY QUESTIONS, PLEASE CALL OUR TOLL-FREE HELPLINE AT 1-888-942-6686.

Read and understand this instruction manual thoroughly before using the product. It contains important information for your safety as well as operating and maintenance advice.
Keep this instruction manual for future use. Should this product be passed on to a third party, this instruction manual must be included.

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This MotoMaster Eliminator product carries a five (5) year warranty against defects in workmanship and materials. At its discretion, MotoMaster Canada agrees to have any defective parts(s) repaired or replaced free of charge, within the stated warranty period, when returned by the original purchaser with proof of purchase. This product is not guaranteed against wear or breakage due to misuse and/or abuse.

TABLE OF CONTENTS

INTRODUCTION

The MotoMaster Eliminator® Precision Series Battery Charger features advanced technology that makes battery charging **faster, easier, and safer** while helping to **maximize the performance and life of your batteries.**

This battery charger is designed for use on **all types of 6- and 12-volt lead-acid batteries** including Wet (flooded), Maintenance-free (MF), Calcium (Ca), Enhanced Flooded (EFB), Absorbed Glass Mat (AGM), and Gel. It is suitable for **charging batteries rated from 5 to 40 Amp-hours and maintaining batteries from 5 to 200 Amp-hours.**

This manual will explain how to use the charger safely and effectively. Please read and follow these instructions and precautions carefully.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS.

- Read all instructions, warnings, and cautions printed on the battery charger, battery and vehicle or equipment using battery.
- **DO NOT** expose charger to rain or snow.
- Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- An extension cord should not be used unless absolutely necesssary.
  Use of an improper extension cord could result in a risk of fire and electric shock. If an extention cord must be used, make sure:
  - The pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
  - The extension cord is properly wired and in good electrical condition.
  - The wire size is larger enough for the AC ampere rating of the charger, as specified in the chart on the following page.
- **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; take it to a qualified serviceman.
- **DO NOT** disassemble the charger. Take it to a qualified service professional if service or repair is required. Incorrect assembly may result in fire or electric shock.
- To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

WARNING—RISK OF EXPLOSIVE GASES.

- 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 YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.
- 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 the vicinity of the battery. Review cautionary markings on these products and on engine.

PERSONAL SAFETY INSTRUCTIONS

- Consider having someone close by 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 immmediately.
- **NEVER** smoke or allow a spark or flame in vicinity of battery or engine.
- Take extra precautions to avoid dropping a metal tool onto the battery. It may spark or create a short circuit that can cause an 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 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.

AC ELECTRICAL CONNECTIONS PLUGGING CHARGER IN

Your charger requires a 120 V AC electrical wall outlet receptacle installed according to local codes and ordinances.

USING AN EXTENSION CORD

An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:

- The pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
- The extension cord is properly wired and in good electrical condition.
- The wire size is large enough for AC ampere rating of charger as specified in the chart below:

MINIMUM RECOMMENDED EXTENSION CORD

Length of Cord, Metres (Feet)	AWG* Size of Cord
7.6 (25)	18
15.2 (50)	18
30.5 (100)	18
45.6 (150)	16

*AWG = American Wire Gauge

PREPARING TO CHARGE

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

- Be sure area around battery is well ventilated while battery is being charged.
- 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. Do not overfill. For a battery without removable cell caps, such as valve-regulated lead-acid batteries, carefully follow manufacturer's reacharging instructions.
- Study all battery manufacturer's specific precautions while charging and follow recommended rates of charge.
- Determine voltage of battery by referring to car owner's manual and make sure that output voltage selector switch is set at the correct voltage. If charger has an adjustable charge rate, charge battery initially at lowest rate.

CHARGE LOCATION

- Locate charger as far away from battery as DC cables pemit.
- Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.
- Do not operate charger in a closed-in area or restrict ventiation in any way.
- Do not set a battery on top of charger.

DC CONNECTION PRECAUTIONS

- Connect and disconnect DC output clips only after removing AC cord from electric outlet.
- Attach clips to battery and chassis as indicated in the Connecting Your Battery section.

CONNECTING YOUR BATTERY

FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE

WARNING: A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

- Position AC and DC cords to reduce risk of damage by hood, door or moving engine part.
- Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- Determine which post of battery is grounded (connected) to the chassis.
  If negative post is grounded to chassis (as in most vehicles), see step "For negative-grounded vehicle". If positive post is grounded to the chassis, see step "For positive-grounded vehicle".
- For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis or engine block away from battery. DO NOT connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy-gauge metal part of the frame or engine block.
- For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy-gauge metal part of the frame or engine block.
- When disconnecting charger, turn switches to off, disconnect AC cord, remove clip from vehicle chassis, and then remove clip from battery terminal.

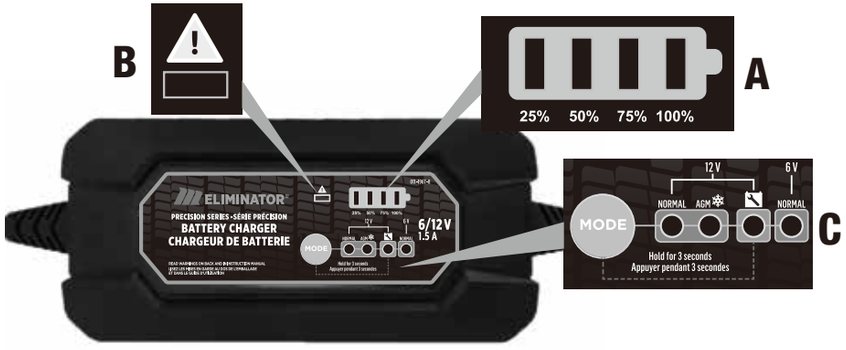
FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE

WARNING: A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

- Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
- Attach at least a 24" (61 cm) 6-gauge (AWG) insulated battery cable to NEGATIVE (NEG, N, -) battery post.
- Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.
- Position yourself and free end of cable as far away from battery as possible, then connect NEGATIVE (BLACK) charger clip to free end of cable.
- Do not face battery when making final connection.
- When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
- A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

WARNING!
A SPARK NEAR A BATTERY MAY CAUSE A BATTERY EXPLOSION!
Battery chargers may get hot during operation. DO NOT set charger on flammable materials like carpeting, upholstery, paper, cardboard, etc. Charger may damage leather and plastic.

CONTROLS AND INDICATORS



A. Charge Status Indicator

This battery charger has an easy-to-follow 4-LED charge status indicator: 25%, 50%,75%,100%. This indicator provides an estimate of the battery's state of charge as charging progresses. During charging, the corresponding state of charge LED will be flashing. When the 100% LED lights solid (i.e., stops flashing), the battery is fully charged and the charger has entered the Maintain stage (see Understanding the Multi-stage Charging Process).

B. Fault/Error Indicator

The charger will continuously monitor charge progress and collect feedback from the battery during charging. In the event an abnormal condition is detected, charging will stop and the ⚠ will illuminate to indicate one of three possible error conditions:

Amber (solid)	Power ON but no battery detected: Check to ensure that clamp connections to the battery posts are clean and solid. If connections are good, the battery is severely discharged (<1.5 V) and may be unsafe to charge. The battery should be tested or replaced.
Red (flashing)	Fault /error: Charging aborted due to some abnormality detected such as a defective battery or short circuit (see Troubleshooting).
Red (solid)	Reverse polarity: Reverse clamp connections.

C. Charging Modes

There are 4 charging modes to choose from. Pressing the MODE button repeatedly to cycle through each of the three regular modes. To select the special mode (RECONDITIONING), hold the MODE button for 3 seconds. Charging will automatically begin about 5 seconds after the charge mode has been selected. NOTE: The battery charger will retain the last selected mode in memory. In the event AC power is disrupted (e.g., power failure), the charger will re-start in the last selected mode once power is restored.

MODE	EXPLANATION	Battery Capacity Range	
		Charging	Maintenance
12 V NORMAL (14.4 V)	For charging small to medium 12 V wet cell lead-acid batteries.	5 to 40 Amp-hour	5 to 200 Amp-hour
12 V COLD / AGM (14.8 V)	For charging small to medium 12 V wet cell lead-acid batteries in cold temperatures (below 5℃) and for many AGM batteries.	5 to 40 Amp-hour	5 to 200 Amp-hour
12 V RECONDITIONING (15.8 V)	For reconditioning 12 V lead-acid batteries suffering from capacity loss due to sulphation or stratification. USE WITH CAUTION—see instructions and precautions under Using Reconditioning Mode.	5 to 40 Amp-hour	Not applicable
6 V NORM (7.2 V)	For charging small to medium 6 V wet cell lead-acid batteries.	5 to 40 Amp-hour	5 to 200 Amp-hour
For best results, check the charging recommendations on your battery or consult with the battery manufacturer.			

Examples of Battery Sizes in Common Applications	
Small (10–25 Ah)	Motorcycle, scooter, ATV, personal watercraft, snowmobile
Medium (30–50 Ah)	Compact car, mid-size sedan, compact SUV, riding mower, UTV
Large (60–100 Ah)	Full-size car, large SUV, truck, boat, RV, farm tractor
Extra large (100 Ah+)	Large marine, tractor trailer, bus, multiple batteries connected in a bank
For reference only. Please check the specifications listed on your battery or consult with the battery manufacturer.	

CHARGING YOUR BATTERY

1. Connect the charger clamps to the battery (following the steps outlined in “Connecting Your Battery”).
2. Plug the charger AC plug into an electrical outlet.
NOTE: If a fault or error is detected, the ⚠ will illuminate (see Charge Status Indicators).
3. Press the MODE button to select a regular charging program.
NOTE: If no selection is made within 5 seconds, the charger will default to the last selection in memory and automatically begin charging.
4. Once the battery reaches full charge, the charger will automatically move into Maintain mode to safely keep your battery topped up without risk of overcharging.
5. Stop charging at any time by disconnecting the charger AC plug from the electrical outlet.

Using Reconditioning Mode

If a lead-acid battery is left sitting in a low state of charge, or is deeply discharged, or is never given the opportunity to fully charge, it can suffer capacity loss due to sulphation and/or stratification. Such a battery can appear to have a normal open circuit voltage and yet it will have a noticeable drop in performance. Using Reconditioning mode may help to reverse the effects of sulphation and stratification, restoring lost battery capacity.

To maximize battery life and performance, recondition your battery once per year or after deep discharges. For best results, take the battery through a normal full charge cycle before using this mode. A Reconditioning charge can take up to 4 hours to complete.

CAUTION: USE THIS MODE WITH CARE. RECONDITIONING USES A HIGH CHARGING VOLTAGE AND MAY CAUSE WATER LOSS IN THE BATTERY. IT IS BEST SUITED FOR WET (FLOODED) BATTERIES WITH REMOVABLE VENT CAPS WHICH ALLOW FOR WATER LEVELS TO BE TOPPED UP. RECONDITIONING IS NOT RECOMMENDED FOR AGM OR GEL BATTERIES. TO MINIMIZE RISK OF HIGH VOLTAGE TO SENSITIVE ELECTRONICS, DISCONNECT THE BATTERY FROM THE VEHICLE (OR ANY OTHER EQUIPMENT) WHEN USING THIS MODE.

UNDERSTANDING FACTORS THAT AFFECT CHARGING TIME

The time it takes to fully recharge a battery depends on several factors including:

1. Battery Depth of Discharge
The greater the depth of discharge, the longer it will take to fully charge a battery. For example, a battery discharged to a level of 50% will take about twice as long to fully charge than a battery discharged only 25%.

2. Battery Size
If charged at the same current, a larger (higher capacity) battery will require more time to fully charge than a smaller (lower capacity) battery. This difference can be overcome by charging larger batteries at a higher current.

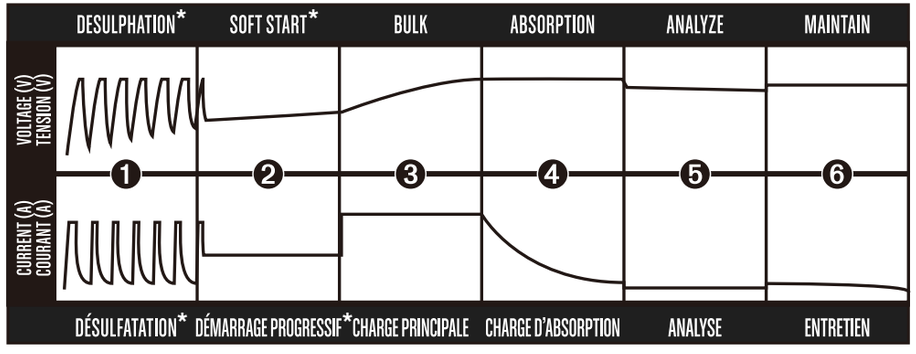
3. Battery Age and Condition
As a battery ages, its internal resistance willl increase, impacting its ability to accept current. This effect is particularly noticeable in batteries that have not been well-maintained over their life.

4. Battery Type
Some battery chemistries, such as AGM and gel, have lower internal resistance which means they can accept charge better without generating damaging heat. Such batteries can charge up to 2 times faster than traditional wet battery types.

5. Charge Rate
The charge rate is measured in amperes (A). A battery charged at a lower rate will take longer to fully charge than a battery charged at a higher rate. This does not mean that one should always charge a battery at the highest ampere available as this can cause overheating and premature battery failure. A battery should be charged at a rate appropriate for its size—a good, safe rule of thumb is about 1/10th its Amp-hour capacity (e.g., 100 Ah battery x 1/10=10 A).

6. Cold Temperature
Cold temperatures slow down the chemical reaction that takes place inside a battery when it is charging. Charging a battery at a cold temperature can greatly increase the amount of time required to charge the battery. Ideal charging temperature is between 10 to 25ºC (50 to 77ºF).

UNDERSTANDING THE MULTI-STAGE CHARGING PROCESS



STAGE 1 DESULPHATION*
Pulses of voltage and current help recover sulphated or deeply discharged batteries.

STAGE 2 SOFT START*
Gently introduces current to condition deeply discharged batteries and prevent overheating that could damage the battery.

STAGE 3 BULK
Charging with maximum current to bring the battery to about 80% capacity.

STAGE 4 ABSORPTION
Charging with constant voltage while reducing current to safely bring the battery to 100% capacity. This stage is key to maximizing battery performance and battery life.

STAGE 5 ANALYZE
Tests if battery is holding charge.

STAGE 6 MAINTENANCE
Monitors battery voltage and provides top-up charging when necessary to keep battery fully charged.

* If necessary

MAINTENANCE AND CARE

- Wipe clean cords and clamps after each use.
- Store the power and output cables neatly to prevent damage.
- The charger housing may be cleaned using a damp cloth and mild cleaning agent.
- Always unplug the charger when not in use.
- Keep the charger stored in a cool, dry place.

TROUBLESHOOTING

Condition	Cause	Solution
No LEDs illuminate when plugged into AC outlet.	Loose connection at AC power.	Check connection.
	No AC power at outlet.	Ensure power is present at AC outlet by plugging in a different appliance.
Amber (solid) fault LED is illuminated.	Poor clamp connection to battery posts.	Check clamp connection. Ensure battery posts are clean, and rock clamps back and forth to ensure a good connection.
	Battery voltage is too low (<1.5 V) to activate the charger.	Check battery voltage with a volt meter. If less than 1.5 V, test or replace battery. (A battery discharged below 1.5 V is likely beyond salvage due to sulphation or some other internal failure.)
Red (solid) fault LED is illuminated.	Clamps are inversely connected to battery.	Reverse clamp connections.
Red (flashing) fault LED is illuminated.	Battery voltage is still less than 10 V after some time charging.	The battery is defective. Test or replace the battery.
		Remove any loads on the battery while charging and try charging again.
	Battery has not reached full charge after 24 hours of charging.	The battery is defective. Test or replace the battery.
		Charger current may be too low for the size (capacity) of the battery. Try charging the battery with a higher current charger.
		Remove any loads on battery while charging and try charging again.
	Battery voltage is too high.	Ensure the battery is 12 V, not 24 V.
	Overheat shutdown.	Ensure ventilation to charger is not obstructed. Move charger to a cooler location. Charging will resume once charger cools down.

TECHNICAL SPECIFICATIONS

Input Voltage AC	120 V AC, 60 Hz
Working Voltage AC	104–127 V AC, 60 Hz
Input Amps	0.6 A (max)
Charging Voltage	12 V NORM: 14.4 V 12 V COLD/AGM: 14.8 V 12 V RECONDITIONING: 15.8 V 6 V NORM: 7.2 V
Charging Current	1.5 A
Minimum Battery Voltage	1.5 V
Ambient Operating Temperature	-20 to 40ºC (-4 to 104ºF)
Charger Type	6-step, fully automatic
Compatible Battery Voltage	6 and 12 V (nominal)
Compatible Battery Types	All lead-acid (Wet, MF, Ca, AGM and Gel)
Compatible Battery Capacity	Charging: 5 to 40 Amp-hour Maintenance: 5 to 200 Amp-hour
Cooling	Natural convection
Housing Protection	IP65
Dimensions (L x W x H)	2 15/16 x 3 7/8 x 9 1/16" (7.5 x 9.8 x 23 cm)
Weight	1 lb 3 oz (0.55 kg)