



OWNER'S MANUAL

Model: XM1-5

Automatic Battery Charger/Maintainer



Voltage: 6, 12

Amperage: 1.5

WARNING

READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL.

SAVE THESE INSTRUCTIONS – This manual will show you how to use your charger/maintainer safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

The signal word indicates the level of the hazard in a situation.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.

IMPORTANT

Indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.

WARNING



Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands before handling.

1. IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS.

This manual contains important safety and operating instructions.

WARNING



WARNING



RISK OF ELECTRIC SHOCK OR FIRE.

1.1 Keep out of reach of children.

1.2 Do not expose the charger to rain or snow.

- 1.3 Use only recommended attachments. Use of an attachment not recommended or sold by Schumacher® Electric Corporation may result in a risk of fire, electric shock or injury to persons or damage to property.
- 1.4 To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
- 1.5 An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
 - That the pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger.
 - That the extension cord is properly wired and in good electrical condition.
 - That the wire size is large enough for the AC ampere rating of the charger as specified in section 8.
- 1.6 To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.
- 1.7 Do not operate the charger with a damaged cord or plug; have the cord or plug replaced immediately by a qualified service person.
- 1.8 Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- 1.9 Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock.



RISK OF EXPLOSIVE GASES.

1.10 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.

- 1.11 To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review the cautionary markings on these products and on the engine.
- 1.12 This charger employs parts, such as circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches (45.72 cm) or more above floor level.

2. PERSONAL PRECAUTIONS



RISK OF EXPLOSIVE GASES.

- 2.1 NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.
- 2.2 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.
- 2.3 Be extra cautious, to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.4 Use this charger for charging LEAD-ACID batteries only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use this 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.
- 2.5 NEVER charge a frozen battery.
- 2.6 Consider having someone nearby to come to your aid when you work near a lead-acid battery.
- 2.7 Have plenty of fresh water and soap nearby, in case battery acid contacts your skin, clothing or eyes.
- 2.8 Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching your eyes while working near the battery.
- 2.9 If battery acid contacts your skin or clothing, immediately wash the area with soap and water. If acid enters your eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.

- 2.10** If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.

3. PREPARING TO CHARGE



RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.

- 3.1** If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make sure all of the accessories in the vehicle are off, to prevent arcing.
- 3.2** Be sure the area around the battery is well ventilated while the battery is being charged.
- 3.3** Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with your eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch your eyes, nose or mouth.
- 3.4** Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.
- 3.5** Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Study all of the battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.6** Determine the voltage of the battery by referring to the vehicle owner's manual.
- 3.7** Make sure that the charger's cable clips make tight connections.

4. CHARGER LOCATION



RISK OF EXPLOSION AND CONTACT WITH BATTERY ACID.

4.1 Locate the charger as far away from the battery as the DC cables permit.

- 4.2 Never place the charger directly above the battery being charged; gases from the battery will corrode and damage the charger.
- 4.3 Do not set the battery on top of the charger.
- 4.4 Never allow battery acid to drip onto the charger when reading the electrolyte specific gravity or filling the battery.
- 4.5 Do not operate the charger in a closed-in area or restrict the ventilation in any way.

5. DC CONNECTION PRECAUTIONS

- 5.1 Connect and disconnect the DC output clips only after removing the AC plug from the electrical outlet.
- 5.2 Attach the clips to the battery and chassis, as indicated in sections 6 and 7.

6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE.



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

- 6.1 Position the AC and DC cables to reduce the risk of damage by the hood, door and moving or hot engine parts. NOTE: If it is necessary to close the hood during the charging process, ensure that the hood does not touch the metal part of the battery clips or cut the insulation of the cables.
- 6.2 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 6.3 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.

- 6.4 Determine which post of the battery is grounded (connected) to the chassis. If the negative post is grounded to the chassis (as in most vehicles), see step 6.5. If the positive post is grounded to the chassis, see step 6.6.
- 6.5 For a negative-grounded vehicle, connect the POSITIVE (RED) clip from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) clip to the vehicle chassis or engine block away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.6 For a positive-grounded vehicle, connect the NEGATIVE (BLACK) clip from the battery charger to the NEGATIVE (NEG, N, -) ungrounded post of the battery. Connect the POSITIVE (RED) clip to the vehicle chassis or engine block away from the battery. Do not connect the clip to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.7 Connect charger AC supply cord to electrical outlet.
- 6.8 When disconnecting the charger, disconnect the AC cord, remove the clip from the vehicle chassis and then remove the clip from the battery terminal.

7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE.



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

- 7.1 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 7.2 Attach at least a 24-inch (61 cm) long 6-gauge (AWG) [13 mm²] insulated battery cable to the NEGATIVE (NEG, N, -) battery post.
- 7.3 Connect the POSITIVE (RED) charger clip to the POSITIVE (POS, P, +) post of the battery.

- 7.4 Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible – then connect the NEGATIVE (BLACK) charger clip to the free end of the cable.
- 7.5 Do not face the battery when making the final connection.
- 7.6 Connect charger AC supply cord to electrical outlet.
- 7.7 When disconnecting the charger, always do so in the reverse order of the connecting procedure and break the first connection while as far away from the battery as practical.
- 7.8 A marine (boat) battery must be removed and charged on shore. To charge it onboard requires equipment specially designed for marine use.

8. GROUNDING AND AC POWER CORD CONNECTIONS



RISK OF ELECTRIC SHOCK OR FIRE.





8.1 This battery charger is for use on a nominal 120-volt circuit. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all

local codes and ordinances. The plug pins must fit the receptacle (outlet). Do not use with an ungrounded system.

- 8.2 **⚠ DANGER** Never alter the AC cord or plug provided – if it does not fit the outlet, have a proper grounded outlet installed by a qualified electrician. An improper connection can result in a risk of an electric shock or electrocution. **NOTE:** Pursuant to Canadian Regulations, use of an adapter plug is not allowed in Canada. Use of an adapter plug in the United States is not recommended and should not be used.
- 8.3 Recommended minimum AWG size for extension cord:
- 100 feet (30.5 meters) long or less – use an 18 gauge (AWG) [0.82 mm²] extension cord.
 - Over 100 feet (30.5 meters) long – use a 16 gauge (AWG) [1.31 mm²] extension cord.

9. FEATURES




1. AC POWER  (red) LED
2. CONNECTED  (red) LED
3. CHARGING  (yellow) LED
4. CHARGED  (green) LED
5. Battery Cable Assembly
6. Output Cord Assembly with Ring Terminal


10. ASSEMBLY INSTRUCTIONS

Remove all cord wraps and uncoil the cables prior to using the battery charger.

11. CONTROL PANEL

LED Indicators

AC POWER  (red) LED lit: Indicates that there is AC power supplied to the battery charger.

CONNECTED  (red) LED lit: Indicates that the charger is properly connected to the battery.


CHARGING  (yellow) LED lit: Indicates the charger has detected a battery and is charging it.

CHARGING  (yellow) LED flashing: Indicates the charger is in Abort Mode.

CHARGED  (green) LED lit: Indicates the battery is fully charged and the charger is in maintain mode.




NOTE: See the Operating Instructions section for a complete description of the charger modes.


12. OPERATING INSTRUCTIONS

 WARNING This battery charger must be properly assembled in accordance with the assembly instructions before it is used.

Charging

1. Make sure to place the charger on a dry, non-flammable surface, like metal or concrete.

2. Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
3. Connect the battery following the connection instructions described in Using the Quick-Connect Cable Connectors section.
4. Connect the AC power, following the precautions listed in Section 8.
5. If you've connected everything correctly, the AC POWER  LED will be lit, indicating the charger has power, the CONNECTED  LED will be lit, indicating the battery is properly connected and the CHARGING  LED will be lit, indicating that the charger is charging. If any of these LEDs are not lit, check the connections at the battery and AC source or have the battery checked/replaced.

NOTE: This charger is equipped with an auto-start feature. It will not supply current to the battery clips until a battery is properly connected and the CONNECTED  LED is lit. Unlike traditional chargers, the clips will not spark if touched together.

Using The Quick-Connect Cable Connectors

Connect either of the two output cable assemblies to the charger. Make sure to place the charger on a dry, non-flammable surface like metal or concrete.

NOTE: Never connect the clamp and ring terminal connectors together for use in other applications, such as external battery or other power source charging, or to extend the output cable length, as reverse polarity and/or overcharge conditions will occur.

Battery Clips


Connect the battery cable assembly to the charger. Follow the safety instructions in sections 6 or 7 to connect the output clips to the battery.

Ring Terminals


The ring connectors permanently attach the battery providing easy access to quickly charge your battery. To permanently attach it to a battery, loosen and remove each nut from the bolts at the battery terminals. Connect the red positive ring connector ring to the positive (POS, P, +) battery terminal. Connect the black negative ring connector ring to the negative (NEG, N, -) battery terminal.

Replace and tighten the nuts to secure it. Take care to keep both wires and plug away from hot surfaces and sharp edges. Connect the ring connector cable assembly to the charger. Periodically check the ring connectors to ensure they are properly connected.


Aborted Charge

If charging can not be completed normally, charging will abort. When charging aborts, the charger's output is shut off, and the CHARGING  LED will flash. To reset after an aborted charge, either disconnect the battery or unplug the charger.

Completion of Charge

Charge completion is indicated by the CHARGED  LED. When lit, the charger has stopped charging and switched to the Maintain Mode of operation.

Maintain Mode (Float-Mode Monitoring)

When the CHARGED  LED is lit, the charger has started Maintain Mode. In this mode, the charger keeps the battery fully charged by delivering a small current when necessary. If the charger has to provide its maximum maintain current for a continuous 12 hour period, it will go into Abort Mode (see Aborted Charge section). This is usually caused by a drain on the battery, or the battery could be bad. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced.

Maintaining a Battery

The Schumacher XM1-5 is a battery maintainer, and maintains both 6 and 12 volt batteries, keeping them at full charge. It can charge small batteries and maintain both small and large batteries. If you are maintaining a fully charged large battery, you are properly utilizing the XM1-5. However, if you use the battery charger to charge a large battery, such as a marine deep-cycle battery that was not fully charged, you may lose some of the battery's capacity. This would cause the large battery to be unable to hold a charge and become useless. **Therefore, we do not recommend charging a large battery with this unit.**

NOTE: The maintain mode technology utilized in Schumacher's maintainers allows you to safely charge and maintain a healthy battery for extended periods of time. However, problems with your battery, electrical problems in your vehicle, improper connections or other unanticipated conditions could cause excessive current draws, as such, occasionally monitoring your battery and the charging process is recommended.






13. MAINTENANCE INSTRUCTIONS

- 13.1** After use and before performing maintenance, unplug and disconnect the battery charger (see sections 6, 7 and 8).
- 13.2** Use a dry cloth to wipe all battery corrosion and other dirt or oil from the battery clips, cords, and the charger case.
- 13.3** Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
- 13.4** Servicing does not require opening the unit, as there are no user-serviceable parts.
- 13.5** All other servicing should be performed by qualified service personnel.

14. MOVING AND STORAGE INSTRUCTIONS

- 14.1** Store the charger unplugged, in an upright position. The cord will still conduct electricity until it is unplugged from the outlet.
- 14.2** Store inside, in a cool, dry place (unless you're using an on-board Marine Charger).
- 14.3** Do not store the clips clipped together, on or around metal, or clipped to cables.
- 14.4** If the charger is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, clips and charger. Failure to do so could result in personal injury or property damage.

15. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
<p>Charger will not turn on when properly connected.</p>	<p>AC outlet is dead. AC POWER  LED is not lit.</p> <p>Poor electrical connection. AC POWER  LED is not lit.</p> <p>Severely discharged, but otherwise good, battery.</p> <p>Clips are not making a good connection to the battery. CONNECTED  LED is not lit.</p> <p>Battery is defective.</p> <p>Reverse connections at battery. CONNECTED  LED is not lit.</p>	<p>Check for an open fuse or circuit breaker supplying the AC outlet.</p> <p>Check the power cord and extension cord for a loose fitting plug.</p> <p>The battery may not want to accept a charge due to a run-down state. Allow the charging to continue until the battery has had a chance to recover sufficiently enough to take a charge. If more than 20 minutes, stop charging and have the battery checked.</p> <p>Check for poor connection to battery and frame. Make sure connection points are clean. Rock clips back and forth for a better connection.</p> <p>Have the battery checked.</p> <p>Unplug the charger and correct the lead connections.</p>
<p>CHARGING  LED is flashing.</p>	<p>The charger is in Abort Mode.</p>	<p>See “Aborted Charge” in the OPERATING INSTRUCTIONS Section.</p>

PROBLEM	POSSIBLE CAUSE	REASON/SOLUTION
Battery clips do not spark when touched together.	The charger is equipped with an auto-start feature. It will not supply current to the battery clips until a battery is properly connected. Unlike traditional chargers, the clips will not spark if touched together.	No problem; this is a normal condition.

SPECIFICATIONS

Input Voltage	120 VAC
Output Current Rating	12V – 1.5A 6V – 1.5A
Maximum Charge Voltage.....	12V – 14.8V 6V – 7.4V
Maintain Voltage.....	12V – 13.3V 6V – 6.6V
Size (H x W x D).....	3 $\frac{1}{8}$ " x 7" x 4" (79.3 x 177.8 x 101.6 mm)
Weight.....	2 $\frac{1}{2}$ lbs (1.08 kg)

REPLACEMENT PARTS

Battery Cable Assembly	3899001235
Output Cord Assembly with Ring Terminal.....	2299001950