Operating instructions

BATTERY CHARGERS Battery type lead acid with free electroly



Operating voltage	Switch setting (if available)	Rated battery capacity minimum maximum	
		40 Ah	160 Ah
	12 V low	15 Ah	60 Ah
	230 V / 50-60 Hz	230 V / 50-60 Hz 12 V high	230 V / 50-60 Hz 12 V high 40 Ah

Read these Operating Instructions carefully before use. Keep these Instructions for later reference. Always operate the charger according to these Instructions.

Important!

Explosive gases are produced when a battery is charged: do not smoke, and avoid open flames or sparks. Provide good ventilation when charging. Ensure good air flow around the charger. Protect the charger from moisture and humidity, and use it only indoors. Never block the charger's ventilation slots.

Do not place burning objects (such as candles) on the charger. Do not place liquid-filled objects (such as water buckets) on the charger. Use the charger only on undamaged batteries with free-flowing liquid electrolyte. Never remove the charging connectors (terminal clamps) during charging. Never short-circuit the terminal clamps. The power cord and charging cables must be in good condition. Do not shorten or lengthen the charging cable. Disconnect the charger from 230 V line power before removing the terminal clamps. Wear protective gloves and safety glasses when working on the battery. Battery acid is corrosive: immediately rinse acid splashes with plenty of water and consult a physician if necessary. Keep the bottery and charger away from children. If the charger is defective, it must be serviced only by a qualified electronics technician. CAUTION: If you smell an unpleasant gas odor, there is a risk of explosion. Do not switch off the charger. Do not remove charging clamps. IMMEDIATELY provide good ventilation of the area. Disconnect power only after thorough ventilation. Have the battery checked by a qualified automotive electrical technician.

Never place the battery above your head. Never turn the battery upside down.

Do not charge non-rechargeable batteries.

Charger characteristics:

This unit contains a temperature-sensitive switch that automatically shuts the charger off in the event of overload or excessively high temperature. The unit will automatically switch back on after a cooling period. Not suitable for continuous charging. Do not use for trickle charging. Incorrect polarity or a short-circuit will cause the ammeter needle to swing back and forth: immediately disconnect the charger from 230 V power and remove terminal clamps. Use this unit with caution on completely maintenance-free batteries; the charging operation must be monitored.

Operation:

- 1. Consult the vehicle manufacturer owner's manual to determine whether and how the battery must be disconnected from the vehicle electrical system. For standard batteries, remove cell plugs and check electrolyte level. (The electrolyte must cover the plates in the individual cells. If it does not, top up with distilled water.) Maintenance-free batteries should not be opened; this can be done only at an authorized repair facility using special tools and special plugs. For maintenance-free batteries, discontinue charging once outgassing voltage (14.4 V) has been reached.
- 1.a. Make sure the charger is not plugged into a power socket.
- 2. First, connect the red clamp to the positive terminal (+) of the battery, then the black clamp to the negative terminal (-). When charging a battery that has not been removed from the vehicle, first attach the charging cable to the battery terminal that is not electrically connected to the vehicle chassis. Make the other connection to the chassis, at a location away from the battery and the fuel line.
- Set the switch on the charger (if present on your charger model) to the desired position: High or Low. The High setting results in fast charging; the Low setting places less stress on the battery.
- 4. Plug the charger into a line power socket; the charger will begin charging the battery. Charging current is displayed on the ammeter.

Note: There may be no indication on the ammeter if the charger is connected to a fully charged battery.

- While the battery is being charged, the charging current displayed on the ammeter slowly decreases until it has reached a constant value. This means that the battery is charged. The ammeter will never drop to zero during the charging operation.
- 6. Once charging is complete, remove the power plug from the line power socket. CAUTION: Always pull on the plug itself, never on the cord! Only then can the charging cables (terminal clamps) be removed from the battery. If the battery has not been removed from the vehicle, first disconnect the clamp from the body, then from the battery, in that order. Retighten the battery cell plugs. When charging a battery that has not been removed from the vehicle, once charging is complete, unplug the line power cord and only then remove the terminal clamp from the grounded (conductive) battery terminal.

Note: There may be no indication on the ammeter if the charger is connected to a fully charged battery.

- 5. While the battery is being charged, the charging current displayed on the ammeter slowly decreases until it has reached a constant value. This means that the battery is charged. The ammeter will never drop to zero during the charging operation.
- 6. Once charging is complete, remove the power plug from the line power socket. CAUTION: Always pull on the plug itself, never on the cord! Only then can the charging cables (terminal clamps) be removed from the battery. If the battery has not been removed from the vehicle, first disconnect the clamp from the body, then from the battery, in that order. Retighten the battery cell plugs. When charging a battery that has not been removed from the vehicle, once charging is complete, unplug the line power cord and only then remove the terminal clamp from the grounded (conductive) battery terminal.