

MASTERVOLT

THE POWER TO BE INDEPENDENT

EASY CHARGE

Waterproof portable Battery Charger

1.1 AND 4.3A MODELS



USER MANUAL

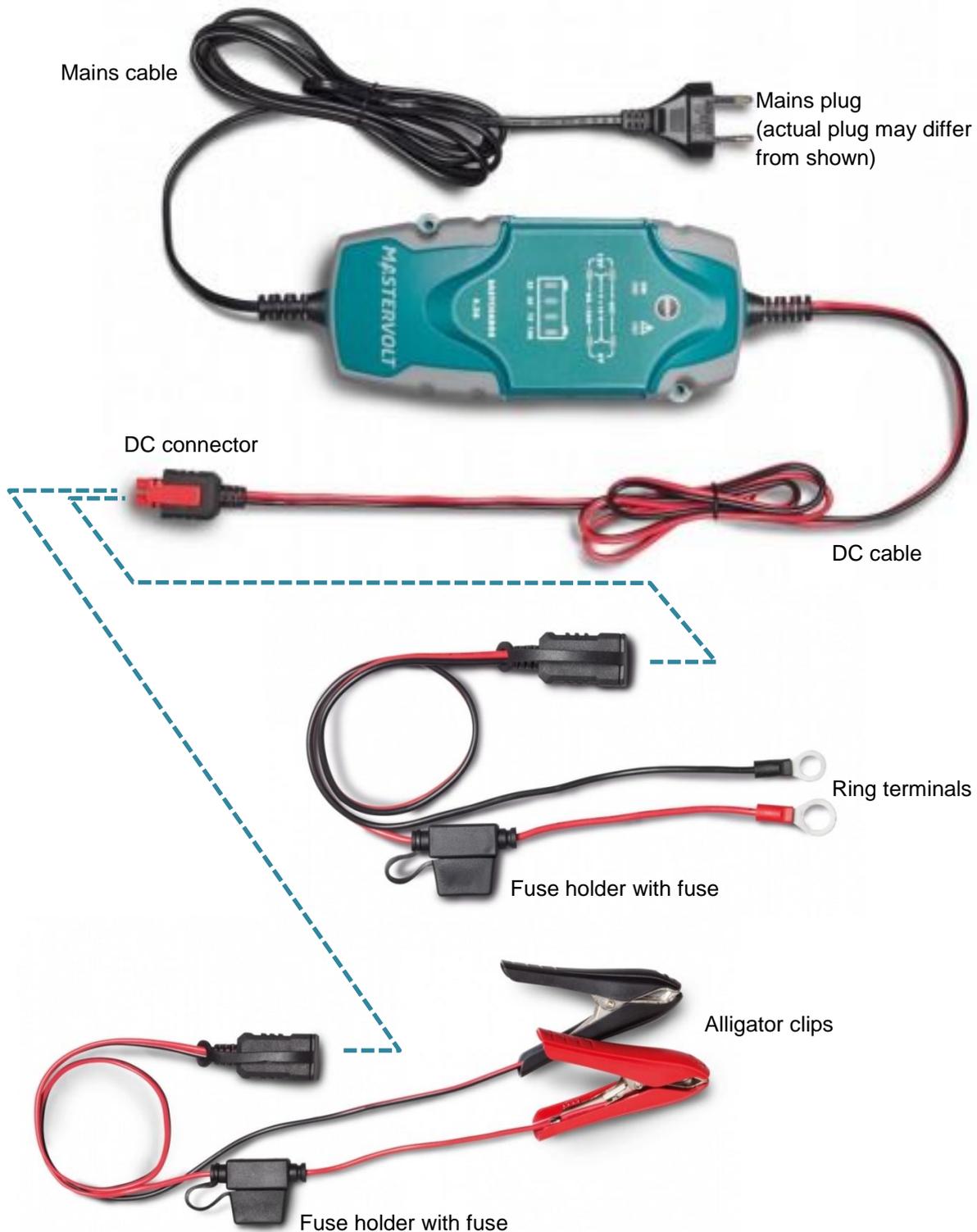
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CONTENTS OF THE DELIVERY

Congratulations for choosing the Mastervolt EASY CHARGE battery charger. Before using, please read the entire manual, in particular the section IMPORTANT SAFETY INSTRUCTIONS.

Check the contents for possible damage. Do not use the product if it is damaged. If in doubt, contact your supplier.



IMPORTANT SAFETY INSTRUCTIONS

Read the entire manual before using the charger. Keep this manual in a secure place

GENERAL

- 1 Before using the charger, read and follow the instructions and specifications contained in this user manual and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of the battery. Review cautionary marking on these products.
- 2 The charger is suitable for charging Li-ion, flooded, gel and AGM lead-acid batteries only. Never charge non-rechargeable batteries.
- 3 Use of spare parts or accessories not supplied by Mastervolt may result in a risk of fire, electric shock, or injury to persons.
- 4 Make sure that all wiring and electrical connections are in good condition and undamaged. Make sure that the wiring is not pinched or in contact with warm surfaces or sharp edges.
- 5 The charger may get hot during operation. Do not cover.
- 6 Do not place the charger on top of the battery while charging.
- 7 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 engineer.
- 8 Do not open the charger. There are no serviceable parts inside. Repair shall be done by a Mastervolt authorized repair service agent only.
- 9 Before attempting any maintenance or cleaning, disconnect the charger from both AC and DC electrical systems.
- 10 This charger must not be used by children or by those who cannot read and understand the manual if they are not supervised by a responsible person who can guarantee that the charger is being used in a safe manner. Keep the charger away from children.
- 11 Connection to the mains supply and safety measures must be executed in accordance with the locally

applicable standards and regulations for electrical installations.

- 12 If it is necessary to remove a battery, disconnect the charger from the mains supply. Then remove the grounded terminal from the battery. Make sure all accessories are off, so as not to cause an arc.

WARNINGS REGARDING THE USE OF BATTERIES

- 1 A battery being charged will emit a mixture of explosive gasses. Always provide proper ventilation in the area around the battery while the battery is being charged. Do not smoke or create sparks in the vicinity of the battery.
- 2 Someone should be within range of your voice or close enough to come to your aid when you work near a battery.
- 3 While working on batteries wear protective eye-glassing and clothing. Observe accident protection rules.
- 4 Battery acid is corrosive. If battery acid contacts skin or clothing, wash immediately with plenty of soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- 5 Do not short circuit batteries, as this will result in explosion and fire hazard! Be extra cautious to reduce risk of dropping a metal tool onto a battery.
- 6 Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- 7 NEVER charge a frozen battery
- 8 NEVER charge a damaged battery

SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Model	EasyCharge Portable 1.1A	EasyCharge Portable 4.3A
Part number:	43510100–Europlug (CEE 7/16) 43510102–UK-plug (BS 1363 type G)	43510400–Europlug (CEE 7/16) 43510402–UK-plug (BS 1363 type G)
Input voltage:	120/230 V (90-265 V), 50/60Hz	120/230 V (90-265 V), 50/60Hz
Max. AC input current	0.3A	0.8A
Protection class:	Class II	Class II
Maximum charge current:	1.1A	4.3A
Fuse rating DC cable:	10A	10A
Nominal battery voltage:	6V / 12V (selectable)	6V / 12V (selectable)
Maximum charge voltage:	7.1V / 14.3V ($\pm 0.2V$)	7.1V / 14.3V ($\pm 0.2V$)
Charge characteristic*:	Regeneration, 3-step	Regeneration, 3-step
Recommended battery**		
- Full charge:	2.2 – 25Ah	14 – 90Ah
- Maintenance charge:	2.2 – 40Ah	14 – 120Ah
Battery types**:	Any 6V or 12V lead acid battery (Flooded / Gel / AGM / Spiral)	
Dimensions (L x W x D):	152 x 63.5 x 35.5mm (6.0 x 2.5 x 1.4inch)	161 x 72 x 43.7mm (6.3 x 2.8 x 1.7inch)
Weight:	0.5 kg (1.1 lb)	0.9 kg (2.0 lb)
Protection degree	IP65 / NEMA 4	IP65 / NEMA 4
Ambient temperature:	-20°C to 40°C (-4°F to 104°F)	-20°C to 40°C (-4°F to 104°F)
Protections:	Short circuit, Reversed polarity, over voltage, current limited, over temperature	
Conformity:	California Energy Commission (CEC) standards for Small Battery Charger Systems EU directives: 2006/95/EC (LVD), 2004/108/EC (EMC), 2011/65/EU (RoHS)	

* See section THEORY OF OPERATION

** Always follow the instructions published by the battery manufacturer

WARRANTY SPECIFICATIONS

Mastervolt assures the proper operation of this product for the duration of two (2) years, under the condition that the product is installed and used according to the instructions in this manual. Installation or use not according to these instructions may result in under performance, damage or failure of the product and may void this warranty. The warranty is limited to the cost of repair and/or replacement of the product. Costs for labor or shipping are not covered by this warranty.

CORRECT DISPOSAL OF THIS PRODUCT

This product is designed and manufactured with high quality materials and components, which can be recycled and reused. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2012/19/EU.

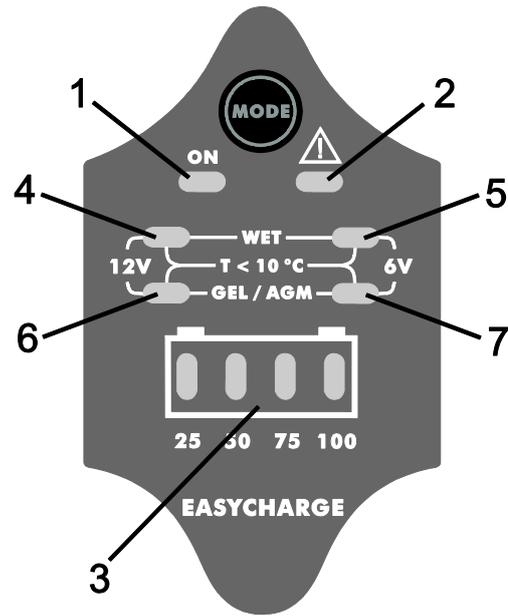


Please be informed about local separate collection system for electrical and electronic products. Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences to the environment and human health.

BEFORE YOU START

FIRST TIME SETUP

- 1 Determine the battery voltage and type (flooded, Li-ion, gel or AGM) from the information of the battery manufacturer.
- 2 Determine the average ambient temperature of the battery: is it below of above 10°C / 50°F?
- 3 Select the required charge mode based on your battery and the *Charge mode selection* table, and determine the corresponding LED display.
- 4 Make sure the charger is not connected to mains or battery.
- 5 Insert the mains plug into the wall socket. All LEDs will illuminate for 2 seconds.
- 6 Press the MODE button repeatedly to scroll through the charge modes until the desired mode is selected.
- 7 Wait – the selected charge mode will blink. After a period of 3 seconds, the charge mode will be stored into memory.

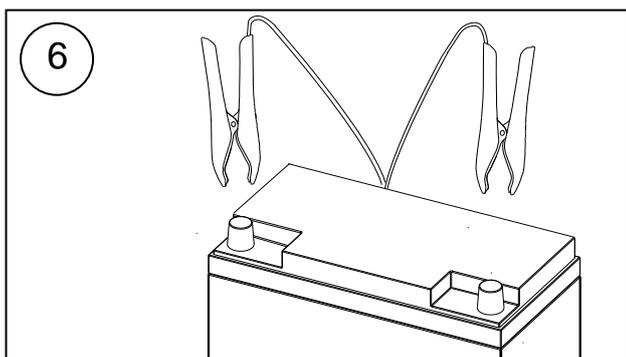
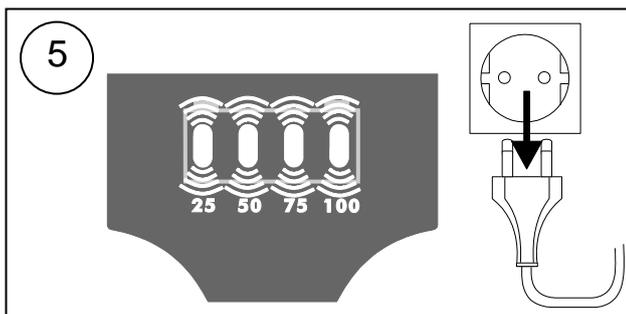
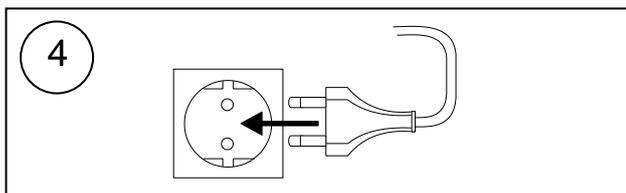
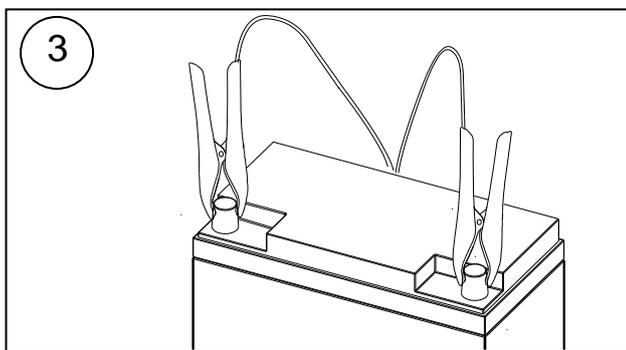
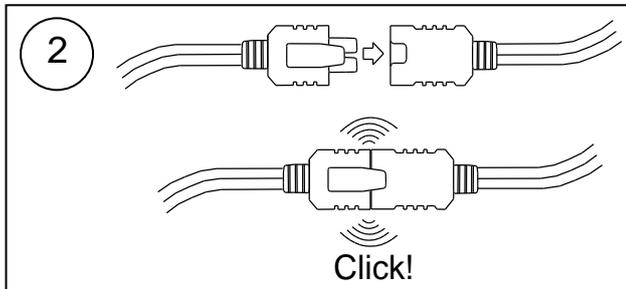
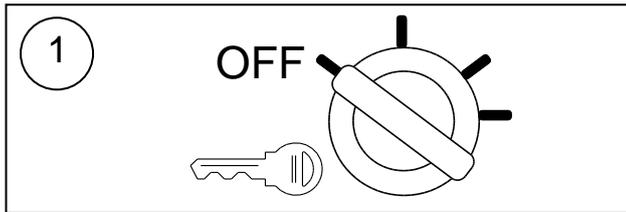


The charger will remember the last setting of the charge mode even after it has been disconnected from battery or mains.

LED	Meaning
1	AC power present
2	Problem, see trouble shooting section
3	Charge status (25%, 50%, 75%, 100%).
4-7	See table <i>Charge mode selection</i>

TABLE CHARGE MODE SELECTION

Battery voltage	Temperature	Battery type	Charge mode LED
12V	Over 10°C / 50°F	Flooded (WET)	LED 4
		Gel / AGM or Li-ion	LED 6
	Below 10°C / 50°F	Flooded, gel, AGM or Li-ion	LED 4+6
6V	Over 10°C / 50°F	Flooded (WET)	LED 5
		Gel / AGM	LED 7
	Below 10°C / 50°F	Flooded, gel or AGM	LED 5+7



BATTERY CHARGING

Charging can be stopped at any time by disconnecting the mains plug from the wall socket.

CHARGING OUTSIDE A VEHICLE

- 1 Disconnect all loads from the battery.
- 2 Connect the required cable assembly (either with ring terminals or alligator clips) to the DC-connector. Make sure the connection is secure.
- 3 Connect the POSITIVE (RED) lead to the POSITIVE terminal (+ pole) of the battery. Then connect the NEGATIVE (BLACK) lead to the NEGATIVE terminal (- pole) of the battery.
- 4 Insert the mains plug into the wall socket. After a five second delay the charger starts to charge. The charge status LEDs will indicate the battery charge level.
- 5 When the 100% LED is illuminated the charge is complete. The charger may remain connected to wall socket and the battery for trickle charging. If you want to stop charging, disconnect the mains plug from the wall socket first.
- 6 Remove the NEGATIVE (BLACK) lead from the battery pole, and then remove the POSITIVE (RED) lead.

CHARGING LI-ION AFTER CUT OFF

When using the charger for Mastervolt MLS batteries battery charge level LEDs may indicate that there is no charge. Mastervolt MLS batteries are equipped with an internal safety switch. When the safety switch is triggered, the charger will not see a battery voltage and does not start charging automatically. For more information see the manual of the MLS battery. To start charging, the **4.3A model** has a manual start function:

- A. Follow steps 1 to 4 as listed above.
- B. To start the charger, press the MODE button until LED 6 blinks fast.
- C. The charger will now start charging the MLS. LED 6 will blink for 2 minutes.
- D. After 2 minutes, LED 6 should stay on and the charge level LEDs will indicate the battery charge level. Continue with steps 5 and 6 listed above. If LED 6 does not stay on, press the MODE button again. If after the second attempt LED 6 still does not stay on, contact your installer.

CHARGING INSIDE A VEHICLE

- 1 Turn off the ignition and switch off all loads.
- 2 Connect the required cable assembly (either with ring terminals or alligator clips) to the DC-connector. Make sure the connection is secure.

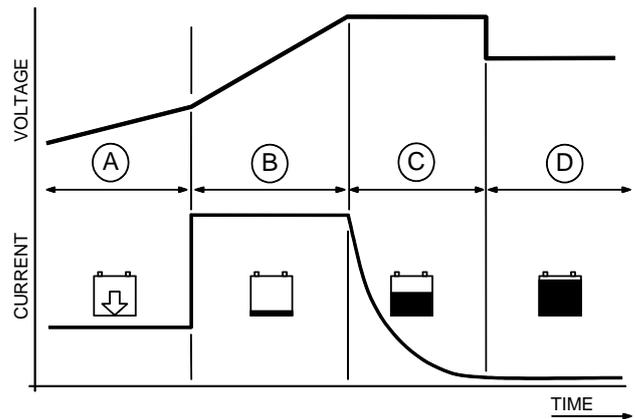
- 3 Determine which pole of the battery is grounded to the vehicle chassis. In most cases this will be the negative pole.
 - a. Negative-grounded: connect the POSITIVE (RED) lead to the POSITIVE (+) pole of the battery. Then connect the NEGATIVE (BLACK) lead to the vehicle chassis, away from the battery and fuel lines.
 - b. Positive-grounded: connect the NEGATIVE (BLACK) lead to the NEGATIVE (-) pole of the battery. Then connect the POSITIVE (RED) lead to the vehicle chassis, away from the battery and fuel lines.
- 4 Insert the mains plug into the wall socket. After a five second delay the charger starts to charge. The charge status LEDs will indicate the battery charge level.
- 5 When the 100% LED is illuminated the charge is complete. Disconnect the mains plug from the wall socket first.
- 6 Remove the connection from the vehicle chassis and then remove the connection from the battery pole.

MAINTENANCE

Examine your electrical installation on a regular base, at least once a year. Defects such as loose connections, burnt wiring etc. must be corrected immediately.

If necessary, use a soft clean cloth to clean enclosure of the battery charger. Do not use any liquids or corrosive substances, such as solvents, alcohol, petrol or abrasive components.

THEORY OF OPERATION



Battery charging is accomplished in the following automatic stages:

- A. REGENERATION (LED 25% flashing): If a deeply discharged battery is connected to the charger, the regeneration mode is started. Low charging currents are used to allow the battery to reach a normal battery voltage, without harming the battery. When the charger reaches a normal voltage (or after a maximum of 6 hours) the charger will continue with the next stages.
- B. BULK (LED 25% till 50% on): At this stage the charger delivers its maximum current for quick charging from 0 to 75%.
- C. ABSORPTION (LED 75% on): The battery has reached its maximum charge voltage and the charge current will slowly decrease until the battery is charged up to 100%.
- D. FLOAT (LED 100% on): At this stage the battery is fully charged.

TROUBLE SHOOTING

If you cannot solve a problem with the aid of this chapter, contact your local Mastervolt Service Centre. If you have to contact your local Mastervolt Service Center to solve a problem, please make sure you have the part number and batch number ready; see product ID-label at the bottom side of the product.

Problem	Possible cause	Action
No LEDs illuminated	No AC mains supply	Check AC mains supply
Charge mode cannot be changed	Charge mode can only be changed after disconnecting from all power sources.	Reset charger by disconnect AC plug, disconnect DC. Wait till all LEDs are off and then continue with section FIRST TIME SETUP
Error LED is on	No battery connected	This is a normal condition during selection of the Charge program (section FIRST TIME SETUP)
	Reversed polarity	Check if the charger's positive lead (red color) is connected to the positive battery pole
	Bad contacts	Check connection to the battery. Check if cable assembly (ring terminals or alligator clips) is correctly connected to the DC-connector.
	Fuse defect	Check fuse and replace if necessary (see section SPECIFICATIONS for correct rating)
LED 25% is flashing	Defective battery	Check battery and replace if necessary
	Charger is in regeneration mode.	This is normal for deeply discharged batteries (see section THEORY OF OPERATION) or after the setting of the charge mode was changed.
Charger does not charge after charging mode was changed	Charger is initializing	Wait for 5 seconds before charging will start.
	Li-ion battery safety switch is triggered	See section CHARGING LI-ION AFTER CUT OFF to start the charger.
Wrong charge status is shown	Correct state of charge could not be determined	Leave the charger connected for 30 minutes before the charger shows the correct battery status
Charge current too low	Batteries almost fully charged	This is a normal condition when the battery is almost fully charged.
	Wrong charging mode selected	See section FIRST TIME SETUP to select the correct charging mode
Battery not fully charged	Wrong charging mode selected	See section FIRST TIME SETUP to select the correct charging mode
Battery gets too hot	Wrong charging mode selected	See section FIRST TIME SETUP to select the correct charging mode