Clarke®

Start-n-charge



12V & 24V 125A INTELLIGENT BATTERY CHARGER

MODEL NO: IBC125

PART NO: 6267026

OPERATION & MAINTENANCE INSTRUCTIONS

ORIGINAL INSTRUCTIONS

DL0625

INTRODUCTION

Thank you for purchasing this CLARKE Battery Charger.

Before use, read this manual thoroughly and follow all instructions given. The IBC125 is designed for charging all types of 12V & 24V lead-acid batteries including WET (Flooded), MF (Maintenance-Free), EFB (Enhanced Flooded Battery), GEL and AGM (Absorbed Glass Mat). This charger has a built-in intelligent microprocessor makes charging faster, easier and safer. This charger has safety features, including protection for reverse polarity, short circuit, overheating and overcharge.

GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

ENVIRONMENTAL RECYCLING POLICY

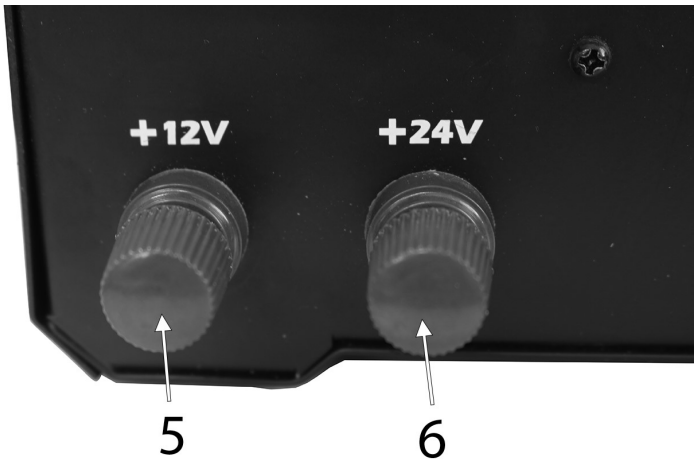


Through purchase of this product, the customer is taking on the obligation to deal with the WEEE in accordance with the WEEE regulations in relation to the treatment, recycling & recovery and environmentally sound disposal of the WEEE.

In effect, this means that this product must not be disposed of with general household waste. It must be disposed of according to the laws governing Waste Electrical and Electronic Equipment (WEEE) at a recognised disposal facility.

OVERVIEW





Rear of Charger

1	Handle	4	Positive (Red) Lead
2	Display & Control Panel	5	Screw Clamp for Positive Lead for Charging 12V Batteries
3	Negative (Black) Lead (Permanently Connected)	6	Screw Clamp for Positive Lead for Charging 24V Batteries

SPECIFICATIONS

Model Number	**IBC125**
Input Voltage	230V AC, 50Hz,
Maximum Input Power	800W Charging, 3kW on Start Function
Maximum Input Current	5.2A Measured
Start Voltage	1V
Battery Charging Voltages	12V DC & 24V DC
Battery Types	WET (Flooded) MF (Maintenance-Free) EFB (Enhanced Flooded Battery) STD (Standard Flooded) GEL (Gelified Electrolyte) AGM (Absorbed Glass Mat)
Output Currents	12V: 5/15/40A 24V: 5/15/30A Start: 125A
Boost Duty Cycle	125A: 5 Seconds ON, 240 Seconds OFF
Min./Max. Charging Battery Size	15Ah - 400Ah
Charging Steps	10 Steps
Operating Temperature Range	0°C to 40°C (32°F to 104°F)
IP Rating	IP20
Protection Class	Class I
Charging Lead Length (Red & Black)	1.80 m (inc. Clamps)
Mains Power Cable Length	1.60 m
Dimensions (D x W x H)	280mm x 255mm x 170mm
Weight	7.5 kg

SAFETY INSTRUCTIONS



WARNING: WEAR EYE PROTECTION, HAND AND CLOTHING PROTECTION. AVOID TOUCHING EYES WHILE WORKING WITH A BATTERY. SEE YOUR LOCAL CLARKE DEALER FOR ALL YOUR PPE REQUIREMENTS.

PRECAUTIONS FOR WORKING IN THE VICINITY OF A BATTERY

1. This charger **SHOULD NOT** be used to charge Lithium-Ion batteries.
2. Wear complete eye, hand and clothing protection. Avoid touching eyes while working near a battery.
3. Clean the battery terminals before they are connected to the charger. Be careful to keep corrosion from coming into contact with your eyes.
4. If battery electrolyte contacts skin or clothing, wash immediately with soap and water. If electrolyte enters your eye, immediately flood the eye with running clean cold water for at least 15 minutes and get medical attention immediately.
5. Batteries generate explosive gases during normal operation. Use in a well ventilated area.
6. Consider having someone close enough or within the range of your voice to come to your aid when you work near a battery.
7. **DO NOT** smoke, strike a match or cause a spark in vicinity of a battery or engine. Avoid explosive gas, flames and sparks.
8. Remove all rings, bracelets, necklaces and watches while working with a vehicle battery. These items may produce a short-circuit that could cause severe burns.
9. 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 hardware which may cause an explosion or fire.
10. Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
11. When it is necessary to remove a battery from a vehicle to charge it, always remove the grounded terminal from the battery first. Make sure all accessories in the vehicle are off in order to prevent an arc.
12. It is **NOT** intended to supply power to an extra-low-voltage electrical system or to charge dry-cell batteries. Charging dry-cell batteries may burst and cause injury to persons and property.
13. **NEVER** charge a frozen, damaged, leaking or non-rechargeable battery.

SAFETY PRECAUTIONS FOR USING THE CHARGER



WARNING: ALWAYS SWITCH OFF THE CHARGER WHEN CONNECTING OR DISCONNECTING LEADS.

1. **DO NOT** cover the charger while charging.
2. **DO NOT** expose to rain or wet conditions.
3. Use of an attachment not recommended or sold by the manufacturer may result in a risk of fire, electric shock or injury to persons.
4. **DO NOT** overcharge batteries by selecting the wrong charge mode.
5. To reduce the risk of damage to the electric plug and lead, pull by the plug rather than the lead when disconnecting the charger.
6. Operate with caution if the charger has received a impact/blow or been dropped. Have it checked and repaired if damaged.
7. Any repair must be carried out by the manufacturer or an authorized CLARKE repair agent in order to avoid danger.

CHARGER LOCATION

1. **NEVER** place the charger in the engine compartment or near moving parts or near the battery; place as far away from them as the clamp leads allow.
2. **DO NOT** position the charger above the battery during the charging procedure. Gases from the battery will corrode and damage the charger.
3. **DO NOT** let battery acid drip on the charger when reading a hydrometer for specific gravity or when you fill the battery.
4. **DO NOT** use the charger in an enclosed space with reduced airflow.

SAFETY SYMBOLS

	**Wear Eye Protection**		**Wear Protective Clothing**
	**Wear Protective Gloves**		**Adheres to the WEEE Directive**
	**Indoor Use Only**		**Warning: Risk of Electrical Shock**
	**Warning: Battery Charging**		**Always read the instruction manual**
	**Warning: Keep out of reach of children**		

ELECTRICAL CONNECTIONS

WARNING! READ THESE ELECTRICAL SAFETY INSTRUCTIONS THOROUGHLY BEFORE CONNECTING THE PRODUCT TO THE MAINS SUPPLY.

Before switching the product on, make sure that the voltage of your electricity supply is the same as that indicated on the rating plate. This product is designed to operate on 230VAC 50Hz. Connecting it to any other power source may cause damage.

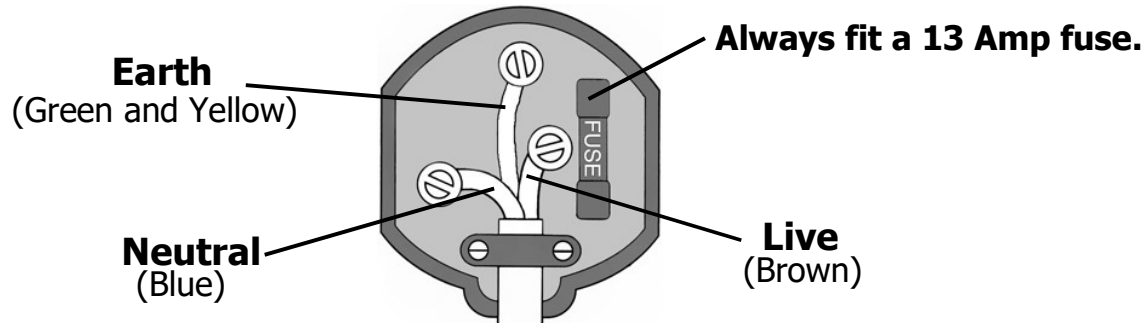
This product may be fitted with a non-rewireable plug. If it is necessary to change the fuse in the plug, the fuse cover must be refitted. If the fuse cover becomes lost or damaged, the plug must not be used until a suitable replacement is obtained.

If the plug has to be changed because it is not suitable for your socket, or due to damage, it should be cut off and a replacement fitted, following the wiring instructions shown below. The old plug must be disposed of safely, as insertion into a mains socket could cause an electrical hazard.

If the colours of the wires in the power cable of this product do not correspond with the markings on the terminals of your plug, proceed as follows.

- The Blue wire must be connected to the terminal marked N or coloured Black.
- The Brown wire must be connected to the terminal marked L or coloured Red.
- The Yellow and Green wire must be connected to the terminal marked E or ⏚ or coloured Green.

Plug must be BS1363/A approved.



Ensure that the outer sheath of the cable is firmly held by the clamp

We strongly recommend that this machine is connected to the mains supply via a Residual Current Device (RCD). If in any doubt, consult a qualified electrician. **DO NOT** attempt any repairs yourself.

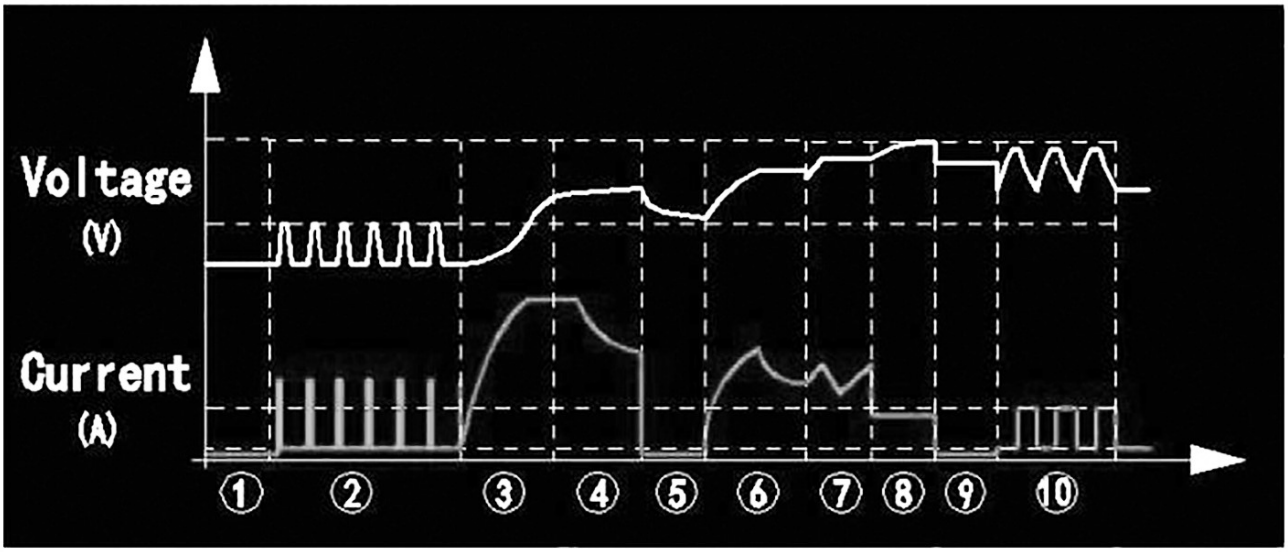
CONNECTING TO THE BATTERY



CAUTION: A MARINE (BOAT) BATTERY MUST BE REMOVED AND CHARGED ON SHORE. TO CHARGE IT ON BOARD REQUIRES EQUIPMENT SPECIALLY DESIGNED FOR MARINE USE.

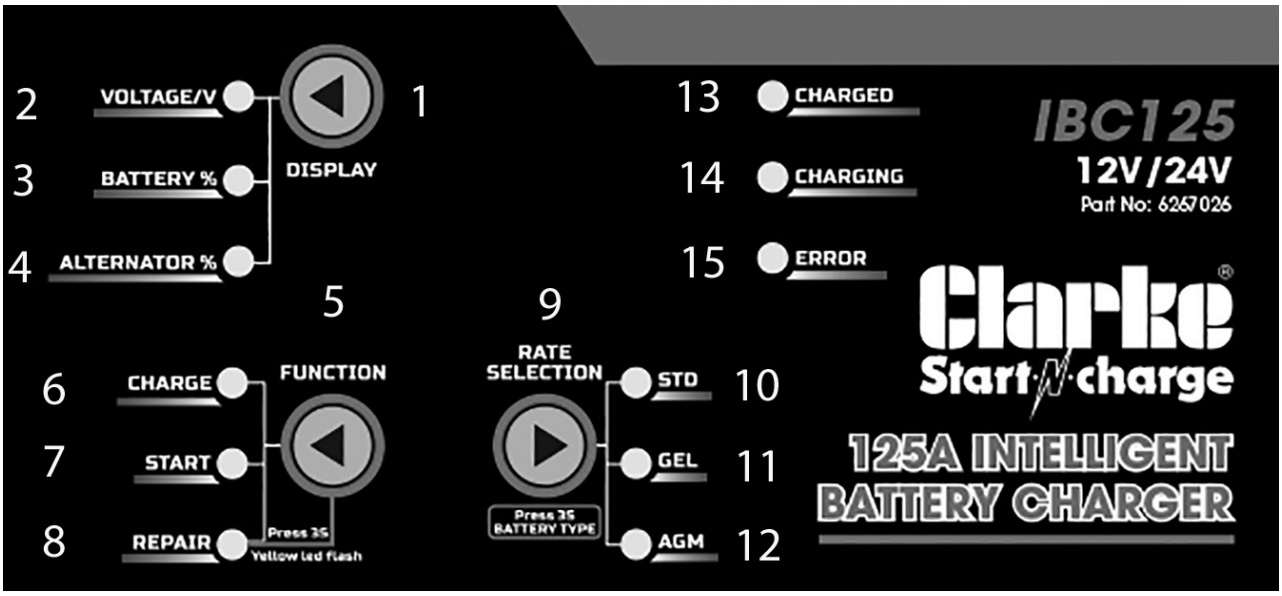
1. Identify the voltage of the battery to be charged, 12V or 24V. Connect the Positive (Red) lead to the appropriate screw clamp on the rear of the charger.
2. Identify the polarity of battery posts. The positive battery terminal is typically marked by these letters or symbol (POS,P,+). The negative battery terminal is typically marked by these letters or symbol (NEG,N,-).
3. **DO NOT** make any connections to the carburetor, fuel lines, or thin metal parts.
4. Identify if you have a negative or positive grounded vehicle. This can be done by identifying which battery post (NEG or POS) is connected to the chassis.
   - **FOR A NEGATIVE GROUNDED VEHICLE (MOST COMMON):** connect the RED POSITIVE clamp first to the positive battery terminal, then connect the BLACK NEGATIVE clamp to the negative battery terminal or vehicle chassis.
   - **FOR A POSITIVE GROUNDED VEHICLE (VERY UNCOMMON):** connect the BLACK NEGATIVE clamp first to the negative battery terminal, then connect the RED POSITIVE clamp to the positive battery terminal or vehicle chassis.
5. When disconnecting, disconnect in the reverse sequence, removing the negative first (or positive first for positive ground systems).

THE CHARGING PROCESS



Step	Digital Display	LED Indicator	Charging State
Analysis - 1	ANALYSING-1 BATT-12/24	CHARGING or CHARGED LED is out	Analysing whether the battery voltage type and current mode match
Desulphation	CHARGING BATT 12/24	CHARGING LED lit	Removing sulphate and reactivating battery
Bulk	CHARGING BATT 12/24	CHARGING LED lit	Providing high current to quick charge
Controlled Current Charge	CHARGING BATT 12/24	CHARGING LED lit	Adjusts the charging current intelligently
Analysing - 2	ANALYSING-2 BATT-12/24	CHARGING LED lit	Tests if the battery can absorb charge
Constant Output Charge	CHARGING BATT 12/24	CHARGING LED lit	Charges with constant voltage & compensates fake full charge caused by high current charging
Recovery Cycle Charge	CHARGING BATT 12/24	CHARGING LED lit	Absorbs more charge & compensates side effect of reduced charging current
Absorption	CHARGING BATT 12/24	CHARGING LED lit	Charges with constant trickle current for maximum battery voltage
Analysing - 3	ANALYSING-3 BATT-12/24	CHARGING LED lit	Tests if the battery can hold charge
Maintenance	MAINTAIN-ING BATT-12/24	CHARGED/ CHARGING LED lit	Continuously monitors the battery & charges with trickle current once voltage is lower than threshold

BUTTONS & INDICATORS



1.DISPLAY BUTTON

2.VOLTAGE LED INDICATOR

3.BATTERY % LED INDICATOR

4.ALTERNATOR % LED INDICATOR

5.FUNCTION BUTTON

6.CHARGE LED INDICATOR

7.START LED INDICATOR

8.REPAIR LED INDICATOR

9.RATE SELECTION BUTTON

10.STD BATTERY LED INDICATOR

11.GEL BATTERY LED INDICATOR

12.AGM BATTERY LED INDICATOR

13.CHARGED LED INDICATOR

14.CHARGING LED INDICATOR

15.ERROR LED INDICATOR

DISPLAY MESSAGES

START UP

After display screen and all LED's illuminate for 0.5 second, the battery voltage will show (meanwhile the battery VOLTAGE LED will illuminate).

DISPLAY BUTTON

Digital Display	LED Indicator	Description
Battery - Voltage	Voltage LED Lit	When the charger is NOT working in ENGINE START mode, the display will show the battery voltage.
Battery - %	Battery - % LED Lit	When the charger is NOT working in ENGINE START mode, the digital display shows the percentage of the battery connected to the chargers battery clamps
Alternator - %	Alternator - % LED Lit	The digital display shows an estimated output percentage of the vehicles charging system connected to the chargers battery clamps, compared to a properly functioning system. The alternator percent range is from 0% to 100%. Readings below 0% (13.4 Volts/ 26.8 Volts) will lead LO and readings above 100% (14.4 Volts/28.8 Volts) will read HI. If you get HI or LO readings, have the electrical system checked by a qualified technician.

BATTERY TYPE BUTTON/RATE SELECTION

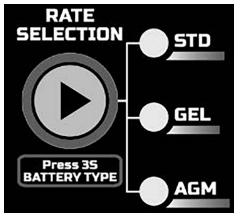
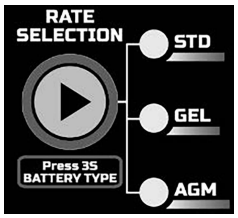
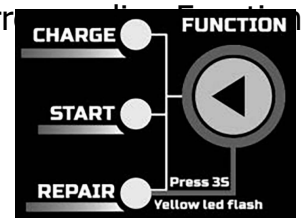
Press the RATE SELECTION button for 3 seconds to cycle through the different battery and voltage selections as follows:

Digital Display	LED Indicator	Description
12V	**STD** LED Lit (Press 3 sec.)	(STANDARD) - Charged Voltage is 14.4V. When charging, pressing this button does not work.
	GEL LED Lit (Press 3 sec.)	(GEL) - Charged Voltage is 14.5V. When charging, pressing this button does not work.
	AGM LED Lit (Press 3 sec.)	(AGM) - Charged Voltage is 14.8V. When charging, pressing this button does not work.
24V	**STD** LED Lit (Press 3 sec.)	(STANDARD) - Charged Voltage is 28.8V. When charging, pressing this button does not work.
	GEL LED Lit (Press 3 sec.)	(GEL) - Charged Voltage is 29V. When charging, pressing this button does not work.
	AGM LED Lit (Press 3 sec.)	(AGM) - Charged Voltage is 29.6V. When charging, pressing this button does not work.
- 5A -	Charging 12V Lead Acid and 24V Lead Acid Batteries	
- 15A -	Charging 12V Lead Acid and 24V Lead Acid Batteries	
- 40A/30A -	Charging 12V Lead Acid and 24V Lead Acid Batteries	

FUNCTION SELECTION BUTTON

Mode	Explanation
CHARGE	Charging mode selection
START	Engine Start mode selection
REPAIR	Repair mode selection (press for 3 seconds)

OPERATION

Step No.	Determine Whether or Not to Connect	Step Select Key
Step 1	Ensure Battery Connection	Digital Display: Connecting Battery Voltage
Step 2 Confirm Battery Type	Ensure Battery Type (Press for 3 sec.)	Corresponding Battery Type LED: 
Step 3 Confirm RATE SELECTION	Ensure RATE	Corresponding Digital Display:  - 5A - Digital Display - 15A - Digital Display - 40A (12V) - Digital Display - 30A (24V) - Digital Display
Step 4 Confirm FUNCTION	Ensure Charging Mode	Corr[illegible] LED:  **CHARGE** - Digital Display 'CHARGING' **ENGINE START** - Digital Display 'START-READY' **REPAIR** - Digital Display 'REPAIR'
NOTE: When the digital display is only displaying as 'OFF', the charger can choose the corresponding mode in FUNCTION selection.		

ENGINE START

Provides additional amps for cranking an engine with a weak or run-down battery.

WARNING: ALWAYS USE IN COMBINATION WITH A BATTERY, IF NOT IT MAY DAMAGE THE VEHICLES ELECTRICAL SYSTEM. DO NOT TOUCH OR DISCONNECT THE CLAMPS WHEN IN ENGINE START MODE AS THIS MAY CAUSE INJURIES TO PERSONS OR PROPERTY. THIS BATTERY CHARGER CAN BE USED TO JUMPSTART YOUR VEHICLE IF THE BATTERY IS LOW. FOLLOW ALL SAFETY INSTRUCTIONS AND PRECAUTIONS FOR CHARGING YOUR BATTERY. WEAR COMPLETE EYE PROTECTION AND PROTECTIVE CLOTHING.

1. Connect the charger to the battery following the instructions on page 9.
2. With the charger plugged in and connected to the battery and chassis, press the FUNCTION button until the START LED is lit.
3. Crank the engine until it starts or 3 seconds pass. If the engine does not start, wait 4 minutes before cranking again. This allows the charger and battery to cool down.
4. If the engine fails to start, use the CHARGE maximum rate (40A) to charge for some minutes before attempting to crank the engine again.
5. After the engine starts, unplug the AC power cable before disconnecting the battery clamps from the vehicle.

NOTE: If the engine does turn over but never starts, there is not a problem with the starting system; there is a problem somewhere else with the vehicle. STOP cranking the engine until the other problem has been diagnosed and corrected. During the starting sequence listed above, the charger is set to one of 3 states, as follows:

- **Waiting for Cranking:** While waiting for cranking, the digital display shows START-READY. The charger waits until the engine is actually being cranked before delivering the amps for engine start.
- **Cranking:** When cranking is detected, the charger will automatically deliver up to its maximum output as required by the starting system for up to 5 seconds.
- **Cool Down:** After cranking, the charger enters a mandatory 240 seconds cool down state (Pressing any button does not work). The digital display indicates the remaining cool down time in seconds. It starts at 240 and counts down to 0. After 4 minutes, the digital display will change from displaying the countdown to displaying START-READY.

REPAIR

To enter this mode press and hold the FUNCTION button for 3 seconds until the REPAIR LED is lit (digital display shows REPAIR-ON). It is an advanced battery recovery mode for repairing old, idle, stratified or sulfated batteries. NOT all batteries can be recovered. For optimal results, take the battery through a full charge cycle, bringing the battery to full charge, before using this mode. This mode uses a high charging voltage and may cause some water loss in WET cell batteries. Plus, some batteries and electronics may be sensitive to high charging voltages. To minimise risks, disconnect the battery from the vehicle before using this mode. To stop repairing, press the FUNCTION button again and the REPAIR LED will turn off (digital display will show REPAIR-OFF).

ALTERNATOR CHECK

Before the charger is connected with the battery which should be well seated in the vehicle, press the **DISPLAY** button until the **ALTERNATOR%** LED is lit, start the vehicle and turn the vehicles headlights on. The alternator percentage range is from 0% to 100%. Readings below 0% will read **LO** and readings above 100% will read **HI**. If you get a **HI** or **LO** reading, have the electrical system checked by a qualified technician.

CHARGING TIME DURATION

Different battery capacity, residual voltage and charging current will all affect charging time. The following table is for guidance only in the case of a fully discharged battery.

Battery Size - Ah	**Approx. Time to Charge**					
	12V			**24V**		
	5A	**15A**	**40A**	**5A**	**15A**	**30A**
15	3h	1h	23m	3h	1h	30m
30	6h	2h	45m	6h	2h	1h
60	12h	4h	1h 30m	12h	4h	2h
120	24h	8h	3h	24h	8h	4h
240	48h	16h	6h	48h	16h	8h
400	80h	26h 40m	10h	80h	26h 40m	13h 20m

ERROR MESSAGES

Digital Display	LED Indicator	Meaning	Solution
E01	ERROR LED Lit	The clamp connections are reversed	Change red and black clamps or ring terminals to correct the battery posts
E02	ERROR LED Lit	Output current reduces to 0 when the temperature in charger is too high	Remove the AC plug immediately. After cooling down, the battery charger will work again
E03	ERROR LED Lit	The battery cannot store electric charge (Dead Battery)	Replace the battery with a new one or try the REPAIR mode
E04	ERROR LED Lit	No battery connected/ battery voltage is lower that 1 volt (Dead Battery)/ red and black clamps are connected together	1) Connect the red and black clamps or ring terminals to the battery posts 2) Clean the battery posts 3) Replace the battery with a new one immediately 4) Disconnect red and black outlet terminals
BATT-MISMATCH	ERROR LED Lit	Charging in 12V mode for 24V battery or visa verser	Replace the battery or connect the positive out-put line to the correct connector on the rear of the charger

TROUBLESHOOTING

Problem	Cause	Solution
Battery does not charge	Lack of AC input power.	Make sure that the charger is plugged into AC outlet.
	Faulty connections to battery terminals.	Unplug the charger and check the battery connection. Ensure that there is a good connection at the battery terminal/post and/ or vehicle chassis.
	Wrong charge voltage selection.	Check that the correct charge voltage was selected for the battery being charged.
	Battery voltage too low.	Ensure enough charging time was allowed to charge battery.
	Charging a very cold battery.	If the battery being charged is extremely cold (below freezing), it will not accept a high rate of charge, so the initial charging rate will be slow. The rate of charging will increase as the battery warms. **NEVER** attempt to charge a frozen battery.
Display not showing	Lack of AC input power.	Make sure that the charger is plugged into AC outlet.
		Check AC plug fuse and replace if necessary (see page 8).

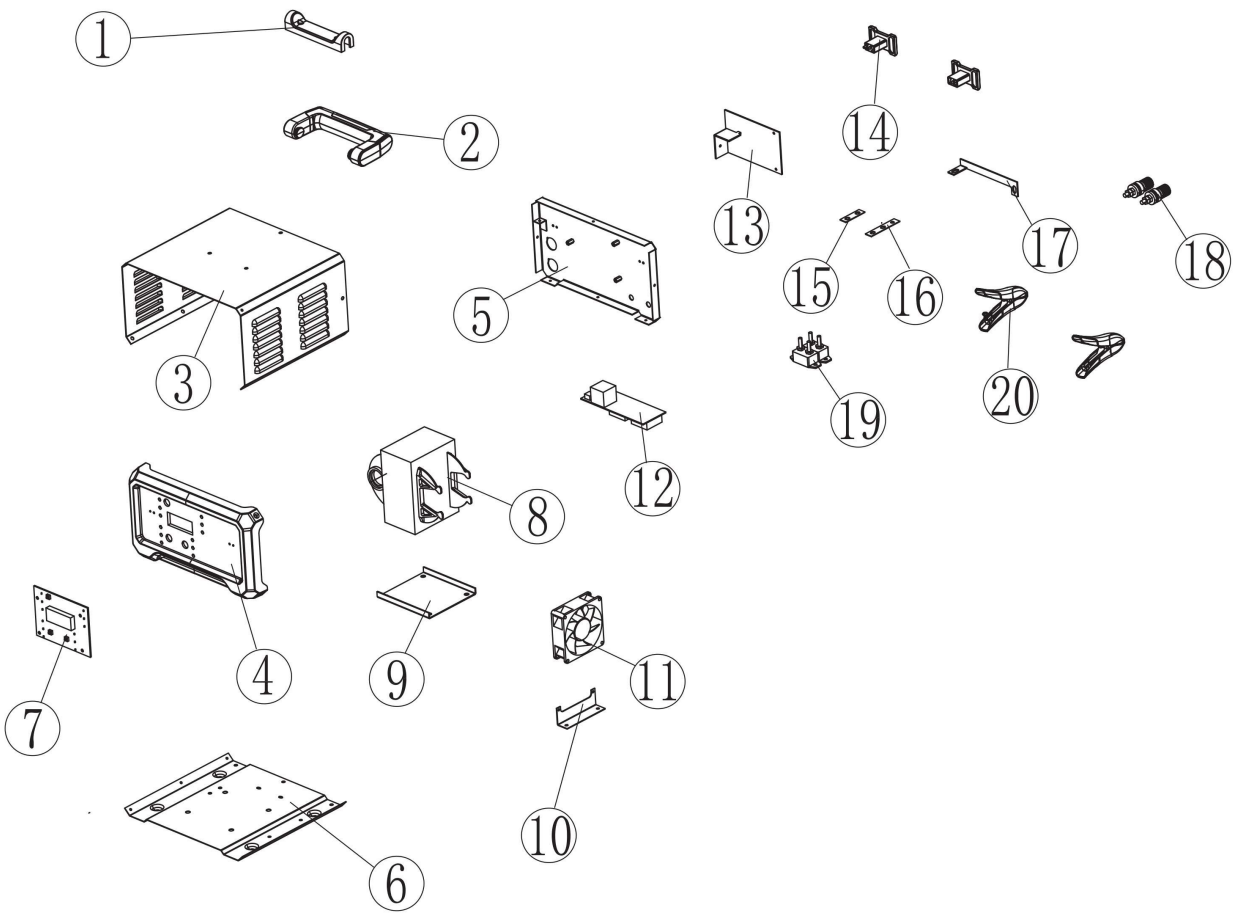
CARE & MAINTENANCE

This battery charger requires minimal maintenance. As with any appliance or tool, a few common sense rules will prolong its working life.

WARNING: ALWAYS BE SURE THE CHARGER IS UNPLUGGED BEFORE PERFORMING ANY MAINTENANCE OR CLEANING. ANY REPAIRS MUST BE DONE BY A QUALIFIED CLARKE SERVICE TECHNICIAN.

1. Wind up the leads when not in use. Examine the leads at regular intervals for damage and have them replaced if necessary.
2. Clean the case and leads if necessary with a moist cloth and clean any corrosion from the clamps with a solution of water and baking soda.

COMPONENT PARTS



PART NO	DESCRIPTION
1	Handle Holder
2	Handle
3	Main Body Casing
4	Front Cover
5	Rear Cover
6	Base Plate
7	Control PCB
8	Transformer
9	Transformer Base
10	Fan Holder

PART NO	DESCRIPTION
11	Fan
12	Relay Board
13	Main PCB Board
14	Aluminum Connector 1 x 2
15	Aluminum Connector 2
16	Aluminum Connector 3
17	Cable Joint
18	Clamp Binding Post x 2
19	Rectifier Bridge x 2
20	Clamp x 2

DECLARATION OF CONFORMITY

UK CA

Clarke® INTERNATIONAL

Hemnall Street, Epping, Essex, CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following legislation:

The Electromagnetic Compatibility Regulations 2016

The Electrical Equipment (Safety) Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

The following standards have been applied to the product(s):

EN IEC 60335-2-29:2021+A1:2021, EN IEC 55014-1:2021, IEC 62321-7-1:2015, IEC 62321-1:2013, EN IEC 61000-3-2:2019+A1:2021, EN IEC 55014-2:2021, IEC 62321-7-2:2017, IEC 62321-2:2013, IEC 62321-4:2013+AMD1:2017 CSV, IEC 62321-5:2013, IEC 62321-6:2015, IEC 62321-3-1:2013, EN 62233:2008+AC:2008, IEC 62321-8:2017, ISO 17075:2017, EN 60335-1:2012+AC:2014+A11: 2014+A13:2017+A1:2019+A14:2019+A2:2019+A15:2021, EN 61000-3-3:2013+A1:2019+A2:2021

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned legislation has been compiled and is available for inspection by the relevant enforcement authorities.

The UKCA mark was first applied in: 2024

Product Description: Battery Charger

Model Number(s): IBC125

Serial/Batch Number: Refer to product/packaging label

Date of Issue: 21/11/2024

Signed:

J.A Clarke

Director

CE

Clarke® INTERNATIONAL

Fitzwilliam Hall, Fitzwilliam Place, Dublin 2

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following legislation:

2014/30/EU	*Electromagnetic Compatibility Directive*
2014/35/EU	*Low Voltage Directive*
2011/65/EU	*Restriction of Hazardous Substances (RoHS) Directive*

The following standards have been applied to the product(s):

EN IEC 60335-2-29:2021+A1:2021, EN IEC 55014-1:2021, IEC 62321-7-1:2015, IEC 62321-1:2013, EN IEC 61000-3-2:2019+A1:2021, EN IEC 55014-2:2021, IEC 62321-7-2:2017, IEC 62321-2:2013, IEC 62321-4:2013+AMD1:2017 CSV, IEC 62321-5:2013, IEC 62321-6:2015, IEC 62321-3-1:2013, EN 62233:2008+AC:2008, IEC 62321-8:2017, ISO 17075:2017, EN 60335-1:2012+AC:2014+A11: 2014+A13:2017+A1:2019+A14:2019+A2:2019+A15:2021, EN 61000-3-3:2013+A1:2019+A2:2021

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned legislation has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2024

Product Description: Battery Charger

Model Number(s): IBC125

Serial/Batch Number: Refer to product/packaging label

Date of Issue: 21/11/2024

Signed:

J.A Clarke

Director

Parts & Service: 020 8988 7400 / E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com