

# CLARKE®



## BATTERY CHARGER-STARTER

MODEL NO: WBC240 & WBC400

PART NO: 6261505 & 6261515

## OPERATION & MAINTENANCE INSTRUCTIONS



ORIGINAL INSTRUCTIONS

GC0820 - ISS 3

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## INTRODUCTION

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Thank you for purchasing this CLARKE Battery Charger/Starter.

Please read this manual thoroughly, before attempting to operate, and carefully follow all instructions given.

It is vitally important that ALL precautions are taken, as specified, which will not only provide protection for yourself and that of others around you, but will also ensure that the Battery Charger will give you long and satisfactory service.

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## GUARANTEE

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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.

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## ENVIRONMENTAL RECYCLING POLICY

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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.

If disposing of this product or any damaged components, do not dispose of with general waste. This product contains valuable raw materials. Metal products should be taken to your local civic amenity site for recycling of metal products.

# SPECIFICATIONS

<b>Model Number</b>	<b>WBC240</b>	<b>WBC400</b>
Dimensions (D x W x H)	274 x 370 x 590	390 x 442 x 631
Weight	14.8 kg	24.65 kg
IP Rating	IP20	
Suitable Battery Type	Lead Acid, GEL, WET, AGM with 12/24 voltages	
Minimum Battery Size	5 AH	
Maximum Battery Size	700 AH	1000 AH
Operating Temperature Range	0 to 40°C	
Estimated Engine Capacity	up to 2.5 L	up to 3.5 L
Input Voltage @50Hz	230 V AC	
Duty Cycle (Starting)	3 sec On / 120 sec Off	
<b>Max Input current</b>		
Starting @ 12V/24V	12V/25A and 24V/39A	12V/40A and 24V/75A
Charging @ 12V/24V	12V/4.6A and 24V/7A	12V/6A and 24V/10A
<b>Open Circuit Voltage (Output)</b>		
Start @ 12V/24V	14.77/29.45V	15.98/31.91V
Charging 1@ 12V/24V	11.91/23.75V	9.98/19.80V
Charging 2 @ 12V/24V	10.48/20.92V	10.44 / 20.69V
Charging 3 @ 12V/24V	11.13/22.21V	10.91/21.69V
Timer Charge 4@12V/24V	N/A	11.22/22.34V
Timer Charge 5@12V/24V	N/A	11.79/23.55V
Timer Charge 6@12V/24V	N/A	12.46/24.87V
<b>Max Output Current</b>		
Starting @12V/24V	290/240A	420/350A
Charging @12V/24V	45/45 A	60/60A

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## SAFETY PRECAUTIONS

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**WARNING: HIGHLY INFLAMMABLE HYDROGEN GAS IS RELEASED IN THE PROCESS OF BATTERY CHARGING. ALWAYS REMEMBER TO SWITCH OFF THE CHARGER/STARTER FIRST TO AVOID SPARKING.**

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### PLEASE READ BEFORE USING THIS UNIT

1. Battery acid is very corrosive. If spilled, clean the area immediately and wash with water. If battery acid comes into contact with the eyes, get medical help immediately.
  2. Do not expose this charger/starter to rain.
  3. Never touch the negative and positive leads on this unit together while the unit is switched on.
  4. Never attempt any electrical or mechanical repair, other than replacement of fuses. If you have a problem with your machine contact your local stockist for service information.
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**WARNING: CERTAIN TYPES OF SEALED OR MAINTENANCE-FREE BATTERIES NEED EXTRA CARE WHEN CHARGING. PLEASE CONSULT THE BATTERY MANUFACTURERS INSTRUCTIONS BEFORE USING THIS CHARGER/STARTER**

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**WARNING: TOXIC FUMES MAY BE RELEASED DURING BATTERY CHARGING. ONLY USE THIS CHARGER/STARTER IN A WELL VENTILATED AREA.**

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5. Before charging, make sure that the battery terminals are clean, and that the cells are filled to the correct level by adding distilled water where necessary.
  6. This appliance is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the charger/starter by a person responsible for their safety. Keep children well away from the charger/starter.
  7. After charging, secure the vehicle battery leads to the correct terminals which should be clean, and lightly smeared with petroleum jelly to prevent corrosion. Finally, re-check the battery electrolyte level..
  8. Do not use this charger/starter unless you are aware of vehicle electrical systems, and battery charging techniques.
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9. Always consult the vehicle manufacturers instructions for disconnecting / charging the vehicle battery.



CAUTION: SOME ELECTRONIC EQUIPMENT CAN BE DAMAGED BY BOOST CHARGING OR USE OF START FACILITY. CHECK YOUR VEHICLE HANDBOOK BEFORE USING YOUR STARTER/CHARGER. IF IN DOUBT CONSULT THE VEHICLE MANUFACTURER.

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## ELECTRICAL CONNECTIONS

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**WARNING: READ THE ELECTRICAL SAFETY INSTRUCTIONS THOROUGHLY.**

**WARNING: A 13 AMP (BS1363) PLUG IS NOT SUITABLE.**

**WARNING: THIS APPLIANCE MUST BE EARTHED.**

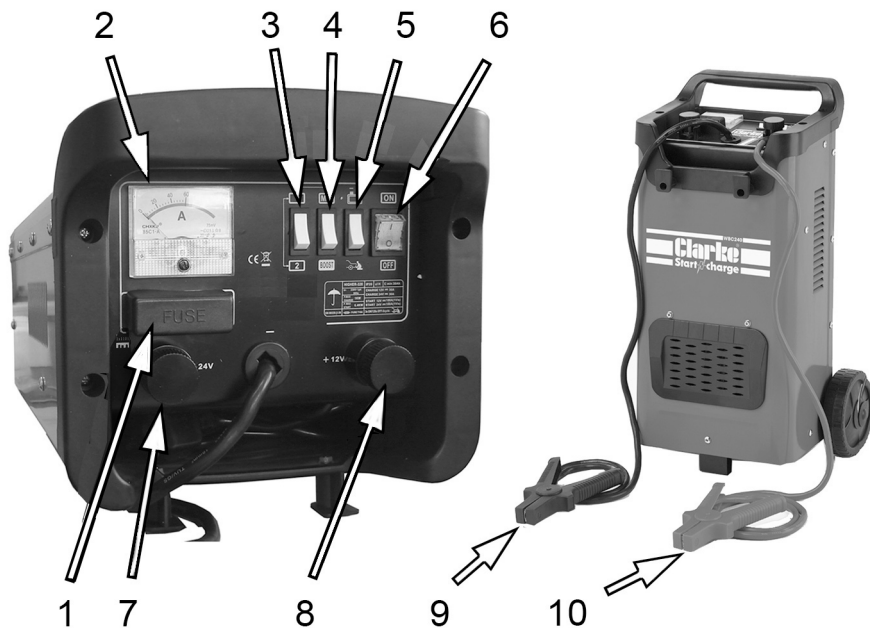
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Connect the three core mains cable to a suitable industrial supply isolator, or heavy duty plug meeting the requirements of BS EN 60309. This charger must be connected to a supply having a rated capacity of greater than 16 Amps.

**The maximum input current for the WBC240 (24V output) is 39 amps with a duty cycle of 3 secs on/120 secs off.**

**The maximum input current for the WBC400 (24V output) is 75 amps with a duty cycle of 3 secs on/120 secs off.**

## WBC240 OVERVIEW

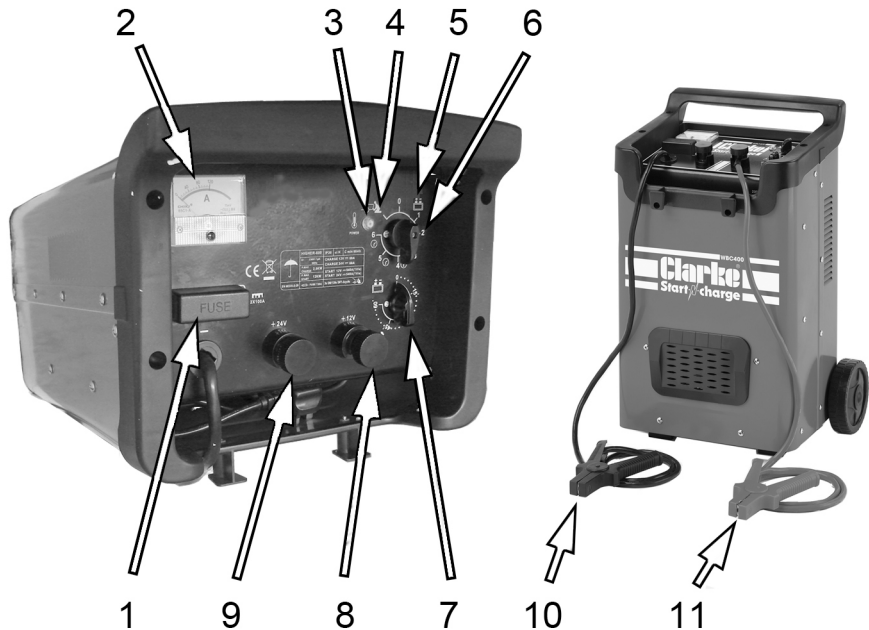


1	Fuse Holder	6	Power On/Off Switch
2	Charging condition meter (Amps)	7	Positive Terminal +24V
3	High/Low Charging Selector	8	Positive Terminal +12V
4	Min/Boost Charge Charging Selector	9	Negative (BLACK) lead
5	Battery Charge/Jump Start Mode Selector switch	10	Positive (RED) lead

The WBC240 is provided with a pair of leads complete with clamps for connection to a battery via the appropriate outlet connections - 12V and 24V, as shown.

Three selector switches provide for different functions as shown above. The main fuse is mounted on the front panel, as shown and the model incorporates a thermal overload cut-out.

## WBC400 OVERVIEW



1	Fuse Holder	7	Fast Charge Timer
2	Charging condition meter (ammeter)	8	Positive Terminal +12V
3	Charging 'ON' Indicator	9	Positive Terminal +24V
4	Start Mode	10	Negative (BLACK) lead
5	Charging Mode Indicator	11	Positive (RED) lead
6	Charging Level Selector		

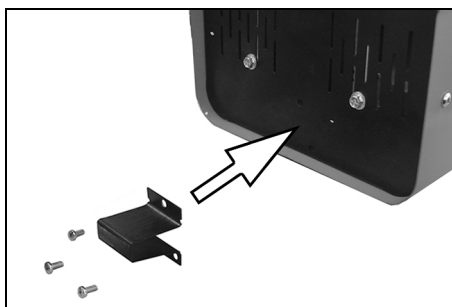
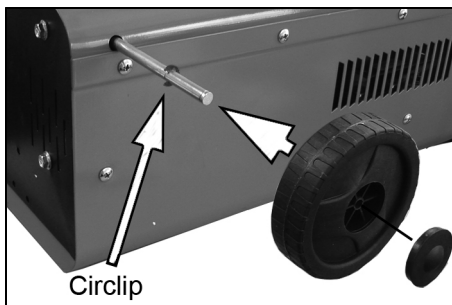
The WBC400 is provided with a pair of leads complete with clamps for connection to a battery via the appropriate outlet connections (12V and 24V), as shown.

Two selector switches provide for different functions as shown above. The main fuse is mounted on the front panel, as shown and the model incorporates a thermal overload cut-out.

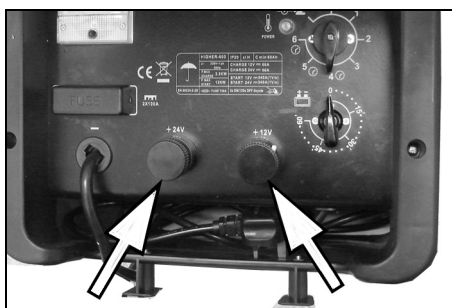
# ASSEMBLY

## ASSEMBLY

1. Pass the axle through the holes in the body of the machine and fit circlips to the axle at the position shown.
1. Slide the wheels onto each end of the axle and secure with further circlips outside each wheel.
2. Press-fit the caps to the wheels.
3. Install the foot to the base of the machine using the three screws as shown.



4. Fit the positive battery lead to the terminal of your choice (12/24V) to match the voltage of the battery.





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# GENERAL PREPARATION

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## CHARGER LOCATION

1. Place the charger as far away from the car battery as possible.
2. Do not position the charger above the battery during the charging procedure. Gases from the battery will cause corrosion and damage the charger.
3. Do not let battery acid drip on anything when reading specific gravity or when topping up the battery.
4. Do not operate the charger in an enclosed space, such as inside the vehicle. Never cover the battery charger.
5. Do not stand the battery on top of the charger.
6. Always stand the battery charger on a firm, level floor.
7. During charging, make sure that the area around the battery has good ventilation.

## CONNECTING THE BATTERY

1. Before charging, disconnect the battery from the vehicle.
2. Always remove the grounded (earth) terminal from the battery first. Make sure that all electrical accessories in the vehicle are switched off to prevent sparking.
3. Clean the battery terminals. Be careful to prevent battery electrolyte from coming in contact with your eyes.
4. Except for sealed units, add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer.
  - This helps drive unwanted gas from the cell. Do not overfill. For a battery without cell caps, consult the manufacturer's instructions.
5. Follow all the battery manufacturer's specified precautions: for example, removing or not removing cell caps while being charged, and recommended rates of charge.
6. Refer to the vehicle manual to find the voltage of the battery and make sure that the charging cable is connected to the correct terminal (either 12/24V).
7. This charger has an adjustable charge rate and the battery should be charged initially at the lowest rate.

## CONNECTING TO A BATTERY

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

- Turn off the charger before you connect/disconnect the DC output connectors.
  - Do not let the connectors touch each other.
  - Attach the connectors to battery terminals and make sure that you get a good connection.
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# BATTERY CHARGING

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## CHARGING A BATTERY INSTALLED IN THE VEHICLE

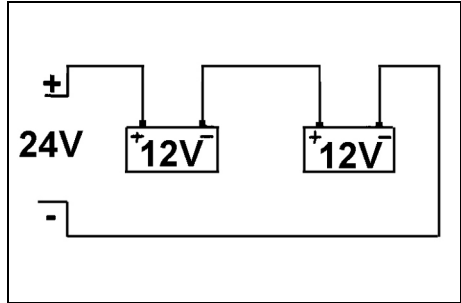
1. Arrange the leads carefully to reduce the risk of damage caused by sharp edges.
2. Check the polarity of the battery posts.
3. Consult the vehicle manual to confirm if the vehicle has a Negative or Positive earth.
  - For negative earth vehicles, connect the POSITIVE (RED) lead from the battery charger to the POSITIVE terminal on the battery. Connect the NEGATIVE (BLACK) lead to the vehicle frame or engine block away from the battery.
  - For positive earth vehicles, connect the NEGATIVE (BLACK) lead from the battery charger to the NEGATIVE terminal on the battery. Connect the POSITIVE (RED) lead to the vehicle frame or engine block away from the battery.
  - Do not connect the lead to ancilliary engine components.
4. Where appropriate we recommend that the non-earthed lead on the battery is disconnected prior to charging. It is possible that damage may occur to the vehicle's electronic equipment.
5. When charging is completed, switch off the charger/starter and unplug it. Remove the lead from the earth point and then remove the lead from battery.

## CHARGING A BATTERY REMOVED FROM THE VEHICLE

1. Make sure that you know the polarity of the battery posts.
2. Connect the POSITIVE (RED) lead to the POSITIVE post on the battery.
3. Connect the NEGATIVE (BLACK) lead at arms length to the NEGATIVE post on the battery.
4. When you disconnect the charger/starter from the battery, always do it in the opposite order to the sequence of connection and remove the first connection at arms length from the battery.

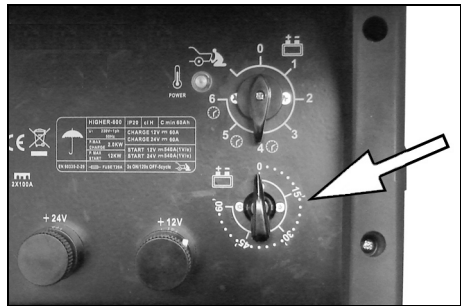
## CHARGING MORE THAN ONE BATTERY

1. Simultaneous multiple charging should be carried out in series since this enables monitoring of the current circulating in each battery.
2. If two batteries with rated voltages of 12V are connected in series, set up the charger using the positive cable connected to the 24V terminal.



## RAPID CHARGING USING THE TIMER

1. The WBC400 has a charge timing device of up to 60 minutes operation.
2. To initiate Rapid Charging, turn the fast-charge timer to the required charging time in minutes and turn the charging level rotary switch to one of the fast charging levels of either 4, 5 or 6.
3. When the pre-set time has elapsed the current is automatically switched off.
4. Turn the charging level rotary switch to the off position.



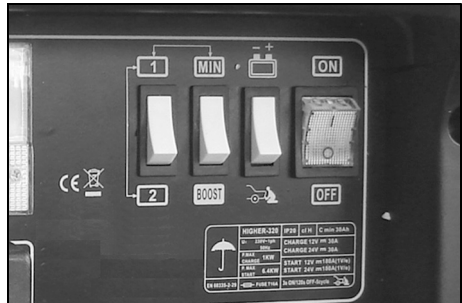
# OPERATION OF THE CHARGER

## TO CHARGE THE BATTERY

1. Connect the charger to the battery.
2. Connect the charger to the mains supply and switch on.

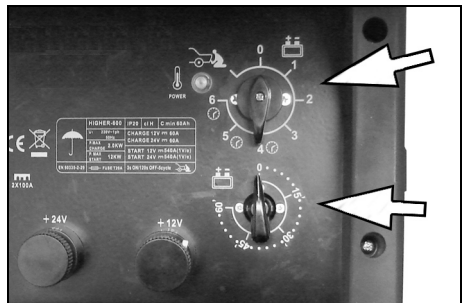
## WBC240 MODEL

1. Set the mode switch to the CHARGE function indicated by the battery symbol.
2. Set the other selector switches to:
  - Low charging rate:- MIN and 1.
  - Medium charging rate:- MIN and 2.
3. High charging rate:- BOOST. (this over-rides the 1/2 switch)



## WBC400 MODEL

1. Set the mode rotary switch to the CHARGE function indicated by the battery symbol. Set the switch to low (1-3) or High (4-6) as required.
2. If required, set the Fast Charge Timer rotary switch to the required time duration (15, 30, 45 or 60 minutes).
  - The timer is only to be used on the High charge settings (4, 5 & 6).



## BOTH MODELS

1. Check the current delivery by reading the ammeter on the front of the battery charger.
  - During charging, the ammeter on the charger will indicate the current delivered to the battery. During the charge, the readout will decrease slowly to the lowest value according to the capacity and condition of the battery. When the reading becomes very low, no further charging is necessary.

- Charge a sealed battery very slowly, monitoring the voltage across the battery terminals using a voltmeter.
- When the battery terminal voltage reaches 14.4V for 12V batteries, stop charging.

## **WHEN CHARGING IS COMPLETE**

1. When charging is complete the ammeter reading should be close to "0" and the electrolyte in the battery may begin to gas. Stop charging to protect the battery plates from damage.
2. Switch off the charger and disconnect the plug from the power socket.
  - Remove the leads from the battery as described in the previous sections.
  - Return the battery to the vehicle. Secure and re-connect, ensuring all tools are removed from the underbonnet area.

# PROCEDURE FOR ENGINE STARTING



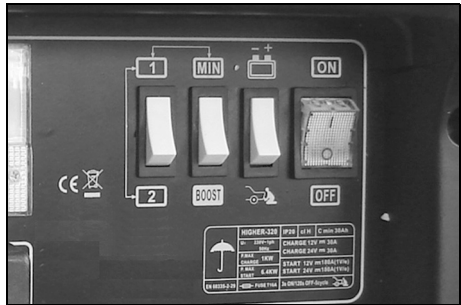
CAUTION: WE RECOMMEND THAT BEFORE ATTEMPTING TO BOOST START YOU CHARGE THE BATTERY FOR 10-15 MINUTES. THIS WILL IMPROVE THE CHANCE OF A FIRST TIME START, PARTICULARLY WITH LARGER ENGINES.

CAUTION: WHEN THE BATTERY IS COMPLETELY FLAT, YOU MUST CHARGE THE BATTERY BEFORE ATTEMPTING TO START THE ENGINE, OTHERWISE YOU MAY CAUSE DAMAGE TO THE VEHICLE ELECTRONIC SYSTEM.

1. Connect the charger to the battery.
2. Connect the charger to the mains supply.

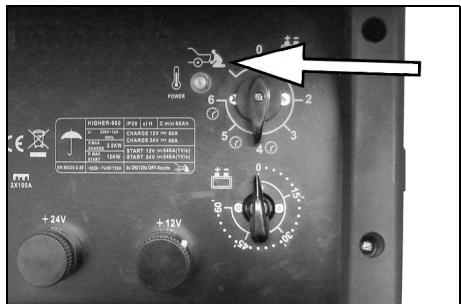
## WBC240 MODELS

1. Check that mains supply switch is OFF.
2. Set the CHARGE/START switch in the START position.
3. Set the MIN/BOOST switch in the MIN position.
4. Connect the cables to the vehicle battery as for charging.
5. Set the ON/OFF switch to ON.



## WBC400 MODELS

1. Set the rotary CHARGE/START switch in the START position.
2. Connect the cables to the vehicle battery as for charging.



## BOTH MODELS

1. Turn the key in the vehicles ignition to 'start', and crank the engine for a maximum of 3 seconds. If the vehicle does not start, wait 2 minutes before trying again for a maximum of 5 cycles.



**WARNING: IF THE ENGINE WILL NOT START, DO NOT CONTINUE AS THE VEHICLE BATTERY AND ELECTRICAL CIRCUITS MAY BE DAMAGED AND THE FUSE IN THE CHARGER WILL BLOW. DISCONNECT THE CHARGER AND INVESTIGATE FOR VEHICLE FAULTS.**

2. Immediately after the engine starts, switch the charger off, unplug from the mains power and disconnect the starter/charger from the battery.

## THERMAL CUTOUT

**NOTE:** If the battery charger is overloaded at any time, a thermal cut out will automatically come into operation, rendering it inoperative. Allow approximately 5-10 minutes before using the unit again.

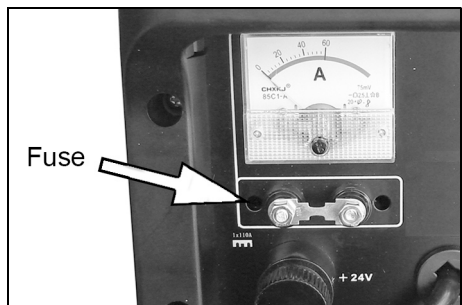
## FUSES

1. The starter/charger is equipped with 2 x safety fuses which will protect the unit under the following circumstances:
  - Overload - too high a current to the battery.
  - Short Circuit - clamps touch or cross connection to battery.
  - Prolonged starting attempts.

## REPLACING THE FUSE

The fuse fitted is rated at 2 x 60A (WBC240) and 2 x 100A (WBC400) and is fitted behind the clip-on cover for easy replacement.

1. Switch the unit off and disconnect from the mains.
2. Allow the unit to cool down and establish the reason for the failure and correct.
3. Pull off the fuse cover before unscrewing the nuts to remove the fuse. Replace only with an identical fuse and with the same rating, as supplied with your starter/charger.



Replacements are available from your Clarke dealer.



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## MAINTANENCE

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



**WARNING: ALWAYS BE SURE THE CHARGER IS UNPLUGGED FROM THE MAINS AND ANY BATTERY BEFORE PERFORMING ANY MAINTENANCE OR CLEANING.**

- 
1. Clean the case and leads with a moist cloth.
  2. Clean corrosion from the clamps with a solution of water and baking soda.
  3. Examine the leads at regular intervals for damage and have them replaced if necessary



**WARNING: ALL OTHER SERVICING/REPAIRS SHOULD BE DONE BY QUALIFIED SERVICE PERSONNEL ONLY.**

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## STORAGE

1. Wind up the connecting leads and power cable when not in use and store in the compartment when not being used.
2. Store in a clean, dry area.

## TROUBLESHOOTING

Problem	Cause	Solution
Bad Battery light comes on (WBC400 model)	The battery voltage is between 0.5V and 1.5V.	Have the battery tested by a qualified technician;
	The battery voltage is lower than 11V, after being charged for 4 minutes.	Replace the bad battery if necessary.
	The battery voltage drops below 12V two minutes after being fully charged.	
	Unable to reach fully charged status in 24 hours.	
Battery does not charge	Lack of AC input power.	Make sure that the charger is plugged into AC outlet and the POWER LED is lit.
	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 charger rate will be slow. The rate of charger will increase as the battery warms. Never attempt to charge a frozen battery.

# DECLARATION OF CONFORMITY



**Clarke**<sup>®</sup>  
**INTERNATIONAL**

Hemnal 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 directive(s):**

2014/30/EU *Electromagnetic Compatibility Directive.*

2014/35/EU *Low Voltage Equipment Directive.*

2011/65/EU *Restriction of Hazardous Substances, (amended by 2015/863).*

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

*EN 55014-1:2017, EN 55014-2:2015, EN 61000-3-2:2019, EN 61000-3-3:2013+A1:2019,*

*EN 60335-2-29:2004+A11:2018, EN 60335-1:2012+A2:2019, EN 62233:2008.*

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

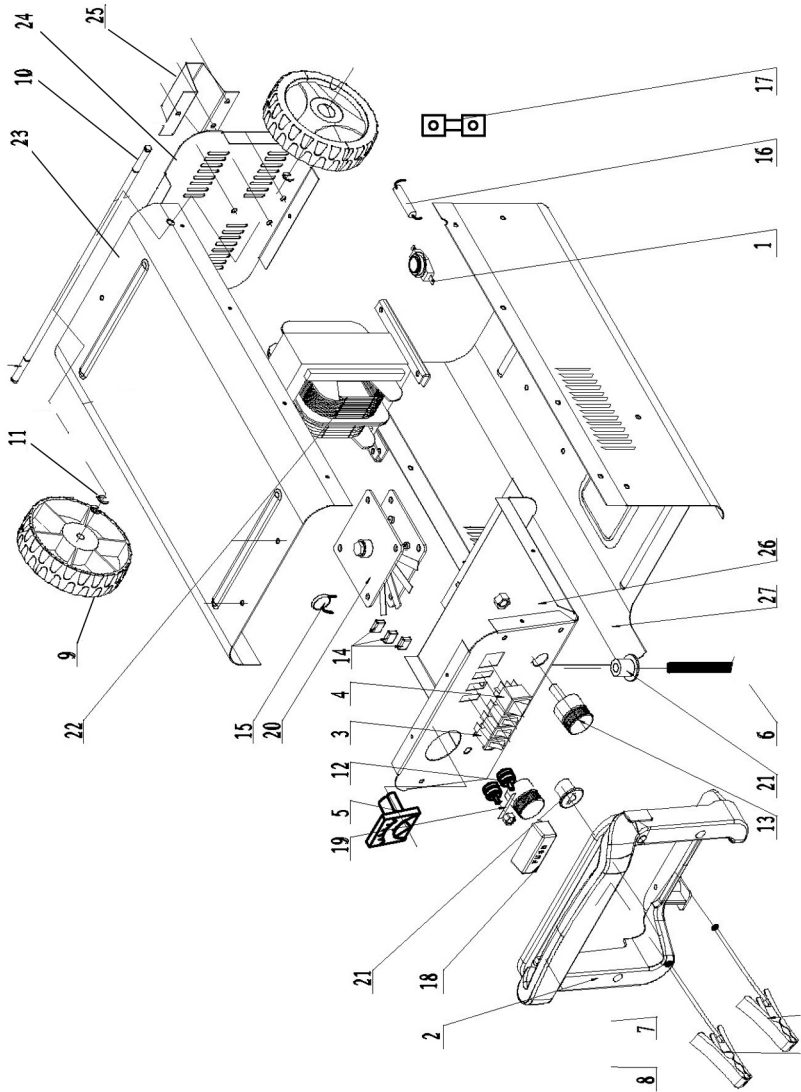
The CE mark was first applied in: 2011

**Product Description:** Battery Starter/Charger  
**Model number(s):** WBC180, WBC240, WBC400  
**Serial / batch Number:** N/A  
**Date of Issue:** 06/08/2020

**Signed:**

**J.A. Clarke**  
**Director**

# WBC240 PARTS DIAGRAM

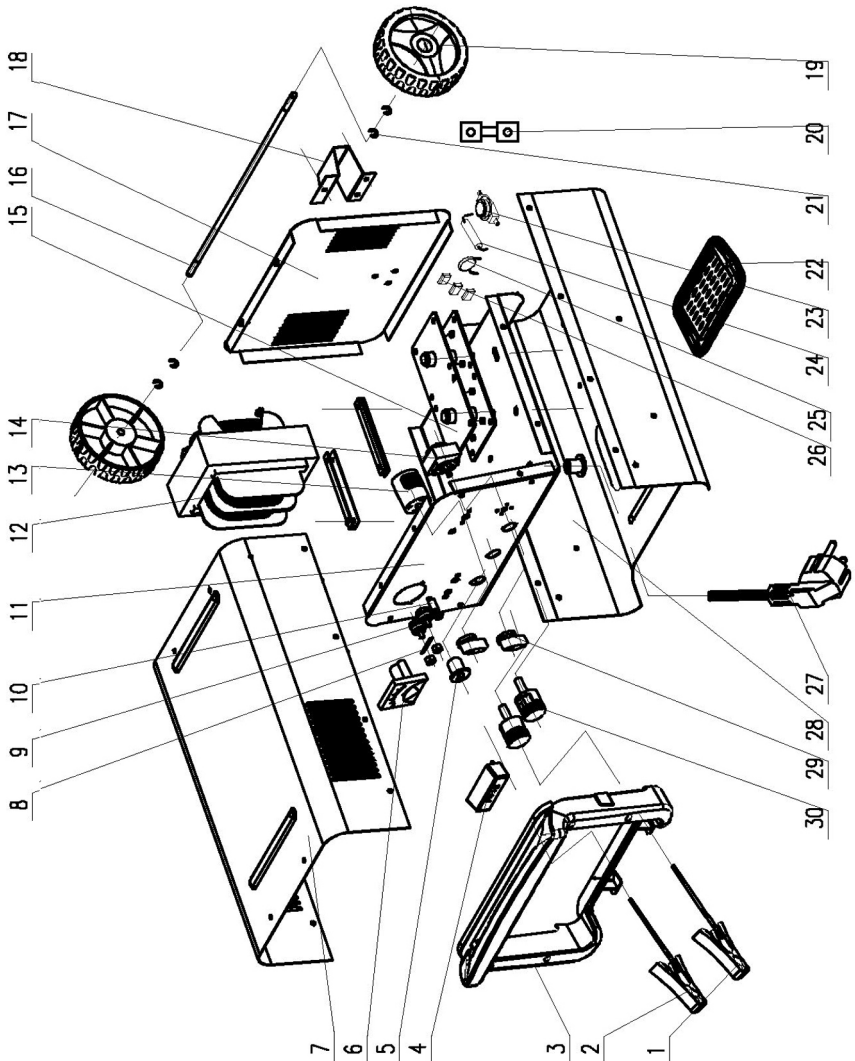


## WBC240 PARTS LIST

NO	DESCRIPTION
1	Thermostat
2	Front Handle
3	Selector Switch
4	On/Off Switch
5	Ammeter
6	Power Cable
7	Earth Clamp (black)
8	Live Clamp (Red)
9	Wheel
10	Axle
11	Circlip
12	Fuse Post
13	Connection Post
14	Capacitor

NO	DESCRIPTION
15	Varistor
16	Resistor
17	Diverter
18	Fuse Cover
19	Fuse
20	Rectifier Bridge
21	Cable Gland
22	Transformer
23	Back Panel
24	Bottom Panel
25	Foot
26	Top Panel
27	Front Panel

# WBC400 PARTS DIAGRAM



## WBC400 PARTS LIST

No	DESCRIPTION
1	Earth Clamp (Black)
2	Positive Clamp (Red)
3	Handle
4	Fuse Cover
5	Cable Insert
6	Ammeter
7	Back Panel
8	Fuse
9	Terminal
10	Indicator Light
11	Top Panel
12	Main Transformer
13	Switch
14	Timer
15	Rectifier Bridge

No	DESCRIPTION
16	Axle
17	Base Panel
18	Foot Bracket
19	Wheel
20	Diverter
21	Circlip
22	Plastic Ventilation Grill
23	Thermostat
24	Resistor
25	Varistor
26	Capacitor
27	Power Cable
28	Front Panel
29	Control Knob
30	Fixed Connector Post

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**Clarke** INTERNATIONAL Hemnall Street, Epping, Essex CM16 4LG  
[www.clarkeinternational.com](http://www.clarkeinternational.com)