

# CLAMPBOE®

## Start·N·charge



## STARTER/CHARGERS

MODEL NO: 120C, 130C, 210C & 410E

PART NO: 6261090, 6261095, 6261130 & 6240100

## OPERATION & MAINTENANCE INSTRUCTIONS



ORIGINAL INSTRUCTIONS

GC02/21 - rev 6

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## INTRODUCTION

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Thank you for purchasing this CLARKE Starter/Charger.

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 product 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.

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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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### BC120C, BC130C AND BC210C

These chargers are provided with a standard (BS1363) 13 amp plug, for use with a standard 230V 50Hz domestic supply.

The fuse in the plug for these appliances must be rated at 13 amps.

### BC410E

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 13 Amps.

Connect the three core mains lead to a suitable industrial supply isolator or heavy duty plug. This charger must be connected to a supply having a rated capacity of greater than 13 Amps. A normal 13 Amp (BS1363) plug must NOT be used.

**NOTE: The maximum input current for this unit is 25 amps.**

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

***IMPORTANT: The wires in this mains lead are coloured in accordance with the following code:***

GREEN AND YELLOW - EARTH E (⊕)

BLUE - NEUTRAL (N)

BROWN - LIVE (L)

As the colours of the flexible cord of this appliance may not correspond with the coloured markings identifying terminals in your plug, proceed as follows:

- Connect GREEN AND YELLOW coloured cable to plug terminal marked letter "E" or Earth Symbol (⊕) or coloured or Green and Yellow.
- Connect BROWN cable to the plug terminal marked letter 'L' or coloured Red.
- Connect BLUE cable to the plug terminal marked letter "N" or coloured Black.

# OVERVIEW

All models are similar and are provided with a pair of leads complete with clamps for connection to a battery. Those models capable of 24V charging are provided with appropriate outlet connections - 12V and 24V as shown below.

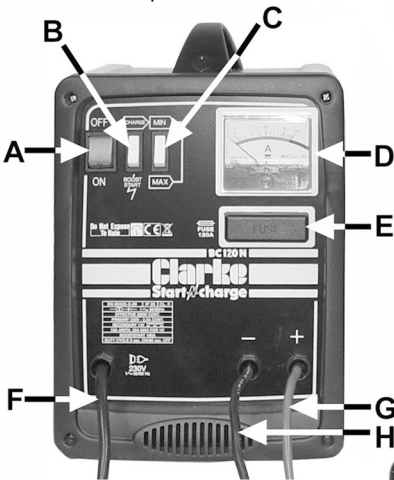
A single, Boost Start/ Charge switch allows for switching between functions.

A MAX/MIN switch allows for charging at two different rates. Larger models are also provided with a two position Power Setting switch, which allows for even greater control of charge rates, as displayed on the Ammeter.

The main fuse is mounted on the front panel, as shown, except for model BC130C which has the fuse mounted on the back panel.

Larger models have a Thermal Overload indicator fitted, see below. Please read Thermal Overload notes on page 8.

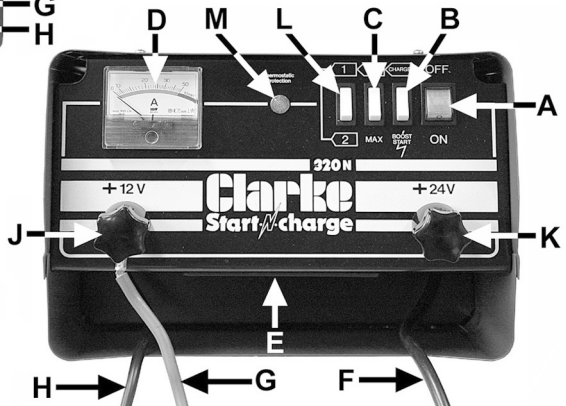
The illustration below identifies the various components and controls which are similar for all products.



**BC120**

- A) On/Off switch
- B) Boost start/charger switch
- C) Max/Min switch
- D) Ammeter
- E) Fuse cover
- F) Mains lead with plug
- G) RED, positive lead with clamp

- H-Black Negative lead with clamp
- J-12V Output
- K-24V Output
- L-Power setting switch
- M-Thermal overload indicator



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## PROCEDURE FOR NORMAL CHARGING

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**NOTE:** *Before charging or boosting, ensure that, where applicable, the cells are filled with electrolyte to the correct level by adding distilled water.*

1. When charging a car battery in situ, we recommend that the non earthed lead on the battery is disconnected prior to charging (On most vehicles, this would be the RED, Positive lead - but check the vehicle handbook if you are unsure).

This precaution is necessary as it is possible that damage could occur to any electronically controlled system fitted to the vehicle, such as engine management system, anti-theft alarm, alternator etc.

2. Check that the ON/OFF switch on the unit is in the OFF position.
3. Connect the RED, positive lead to either the 12V or 24V output on the charger, as appropriate.
4. Connect the appropriate clamp to the unearthed battery terminal. On most modern cars this is the RED, positive clamp connected to the RED, positive terminal of the battery, but check your handbook if unsure. Then connect the other clamp to the chassis (or a suitable engine bolt) away from the battery and fuel line.
5. Remove the battery filler caps, where applicable, during charging, in order to prevent the build up of dangerous gases within the battery.
6. Switch the CHARGE/BOOST START switch to the CHARGE position.

**NOTE:** *For those chargers provided with a Power setting switch (models BC410E), set the switch to position '1'.*

7. Set the MIN (minimum charge) MAX (maximum charge) switch to the MIN position. This is suitable for charging most normal car batteries (having an ampere hour rating of approximately 40 A.H.).
8. Switch the ON/OFF switch to ON, and charging will commence. Adjustments may be made to the charging rate by switching to MAX, and on larger models by also switching the Power Setting switch to the 1 or 2 position as appropriate. i.e. 4 charging rates are possible - MIN-1, MIN-2, MAX-1 and MAX-2.

9. Keep the battery on charge until the ammeter gauge reads zero (or 0-2 amps) or has stopped moving down. Then switch off at the machine.



**WARNING: IF THE FIXED POSITIVE LEAD AND THE FIXED NEGATIVE LEAD ARE CONNECTED TO THE WRONG TERMINALS, A FLASH WILL OCCUR WHEN THE 2ND. CLAMP IS ATTACHED. DAMAGE TO THE CHARGING UNIT AND THE BATTERY WILL BE AVOIDED AS YOUR STARTER/CHARGER IS FITTED WITH A POLARITY PROTECTION FEATURE. IT WILL HOWEVER BE NECESSARY TO REPLACE THE INTERNAL FUSE. REMOVE THE BLACK PLASTIC COVER ON THE FRONT PANEL (MARKED FUSE) AND REPLACE THE DAMAGED FUSE.**

## **NOTES ON CHARGING PROCEDURE**

- A complete charge is best done slowly in order to protect your battery so we recommend the MIN setting as described above.
- A complete charge may take up to 10 hours.
- If a low amperage reading (2 amps or less) is seen on the gauge at either the MIN or MAX setting. This may indicate that the battery is either (a) already fully charged or (b) at the end of its useful life and in need of replacement.
- Do not charge the battery for longer than is necessary.

**WARNING: NEVER ATTEMPT TO RE-CHARGE NON-RECHARGEABLE BATTERIES**

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## PROCEDURE FOR ENGINE STARTING

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**NOTE:** 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 bigger engines. When the battery is completely flat, you must charge the battery for 10-15 minutes before attempting to start, otherwise you may cause damage to the vehicle electronic systems.

1. Check that the ON/OFF switch is in the OFF position.
2. Connect the cables as for normal charging.
3. Check that the CHARGE/BOOST START switch is in the CHARGE position.
4. Switch the ON/OFF switch to the ON position.
5. Turn the key in the vehicle's ignition to 'START', and get an assistant to switch the CHARGE/BOOST START switch to BOOST START position.

***IMPORTANT: If the engine fails to start almost immediately, you MUST return the CHARGE/BOOST START switch to CHARGE position after a maximum period according to the BOOST START DUTY CYCLE - i.e. 10 secs ON followed by 30 secs before retrying.***

***IMPORTANT: Failure to do this could damage some vehicle electronic equipment, the battery, and possibly the Charger unit which may invalidate your guarantee.***

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## THERMAL OVERLOAD

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This starter/charger is provided with a Thermal Overload cut-out.

Should the Duty Cycle be exceeded or should the unit overheat for any reason, the thermal overload will intervene, shutting down the charger.

If this occurs, wait for 15 - 20 minutes, depending upon ambient temperature, before attempting to re-use.

The amber indicator lamp on the panel will illuminate when the overload has intervened. It will extinguish once it has reset and the unit is ready for use once again.



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## MAINTANENCE

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



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

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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 place.

## REPLACEMENT FUSES

MODEL	PART NO	AMPS	QTY REQUIRED
BC120C	EM22220044	80	1
BC130C	EM22220044	80	1
BC210C	EM22220047	100	1
BC410E	EM22220031	75	2

# DECLARATION OF CONFORMITY



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

Hemnoll 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*

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

EN 60335-2-29:2004+A2:2010, EN 60335-1:2012+A11:2014, EN 55014-1:2006+A1:2009+A2:2011,

EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013.

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: 2017

**Product Description:** Battery Chargers  
**Model number(s):** BC205N, BC410E, BC430N.  
**Serial / batch Number:** n/a  
**Date of Issue:** 19/10/2017

Signed:

J.A. Clarke  
Director

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**INTERNATIONAL**

Hemnall Street, Epping, Essex CM16 4LG

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2104/35/EU *Low Voltage Equipment Directive.*

2011/65/EU *Restriction of Hazardous substances*

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

*EN 60335-2-29:2004+A2:2010, EN 60335-1:2012+A11:2014, EN 55014-1, EN 55014-2,*

*EN 61000-3-2, EN 61000-3-3.*

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.

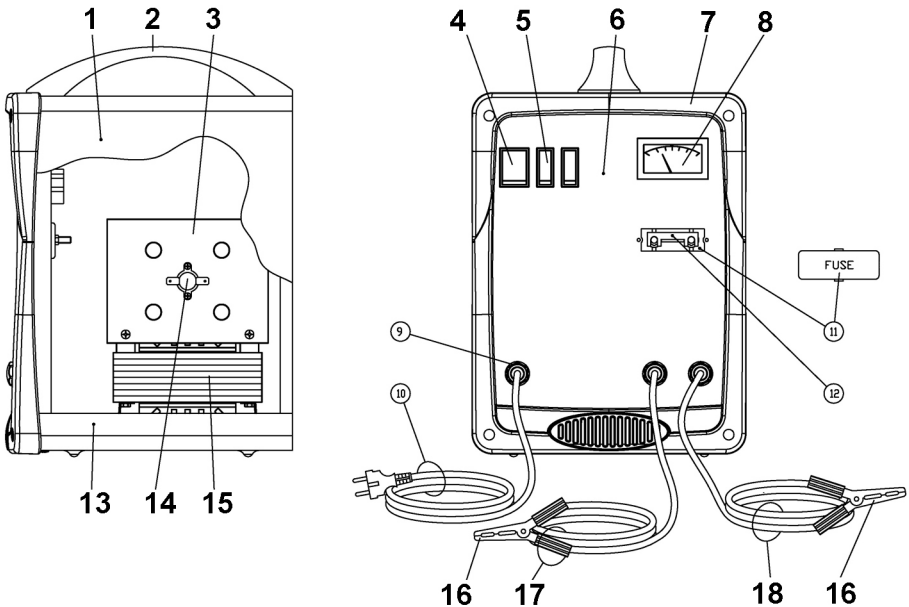
The CE mark was first applied in: 2013

<b>Product Description:</b>	Battery Chargers
<b>Model number(s):</b>	BC100C, 120C, 130C, 185N, 210C, 260N, 320C, 335, 520N
<b>Serial / batch Number:</b>	n/a
<b>Date of issue:</b>	07/03/2017

**Signed:**

**J.A. Clarke**  
Director

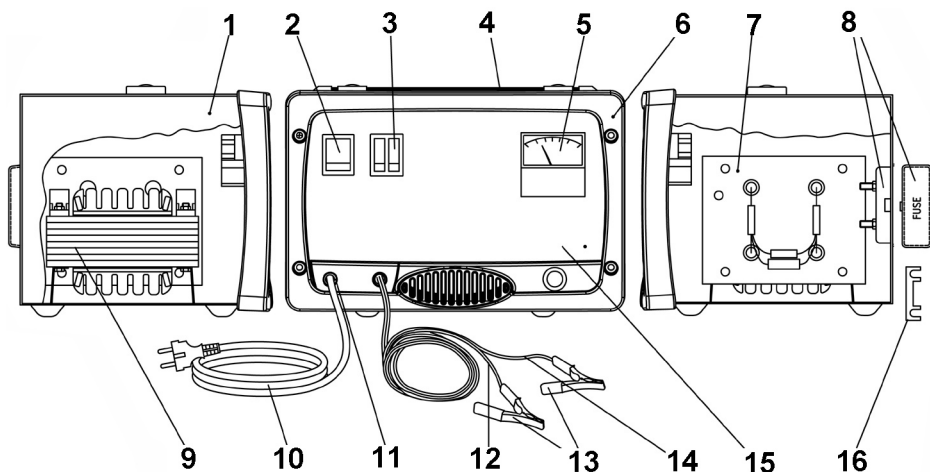
# PARTS LIST - BC120C



No	Description	Part No
1	Cover panel	EM33705460
2	Handle	EM21600045
3	Rectifier 4 Diodes	EM22400042
4	Green Pilot Light / Switch 16A-250V	EM22200039
5	Current Switch 16A 250V	EM22200038
6	Front Panel	EM33710634
7	Frame For Starter	EM21690441
8	Ammeter 20A	EM22600062
9	Cable Clamp	EM21605009
10	Input Cable & Plug	EM20220067

No	Description	Part No
11	Fuse Holder Box Kit	EM04600251
12	Fuse 80A	EM22220044
13	Lower panel	EM33700078
14	Thermostat 1001 10A	EM22210014
15	Transformer 230v	EM44105033
16	Clamps 60A	EM04600066
17	Black cable/clamp	EM43200082
18	Red Cable/clamp	EM43200030

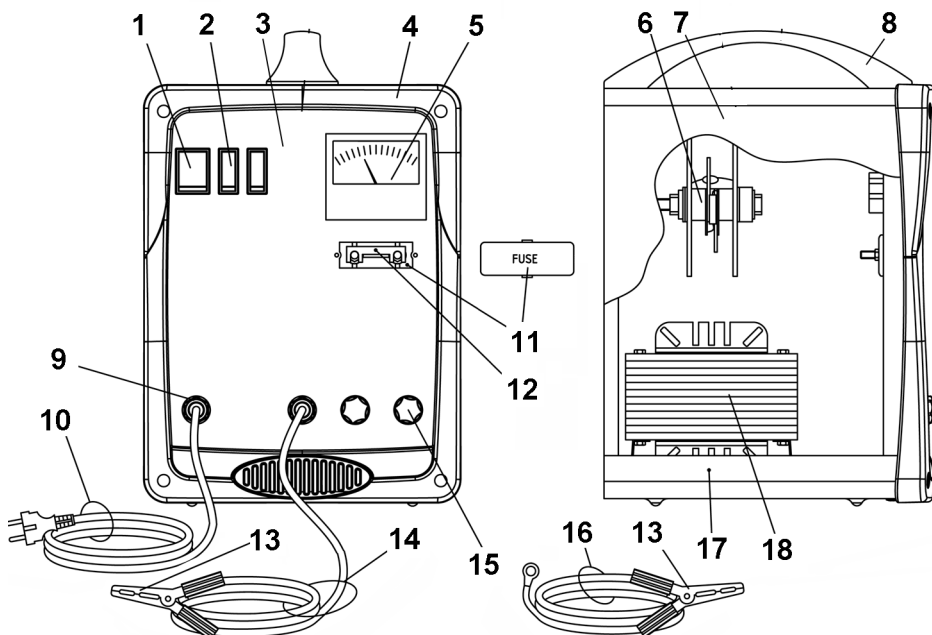
## PARTS LIST - BC130C



No	Description	Part No
1	Cover	EM33705451
2	Green Pilot Light Switch 16A-250V	EM22200039
3	Current Switch 16A 250V White	EM22200038
4	Kit Handle + Clips	EM04600259
5	Ammeter 20A	EM22600062
6	Frame	EM21690440
7	Rectifier 4 Diodes	EM22400042
8	Fuse Holder	EM04600251
9	Transformer 230V	EM44105060
10	Input Cable / Plug	EM20220067

No	Description	Part No
11	Cable Clamp	EM21605009
12	Black Cable 4 sq/ mm 1,6m R60A	EM43200055
13	Clamps 60A	EM04600066
14	Red Cable 1,6m	EM43200056
15	Lower Panel	EM33700380
16	Fuse 80A	EM22220044

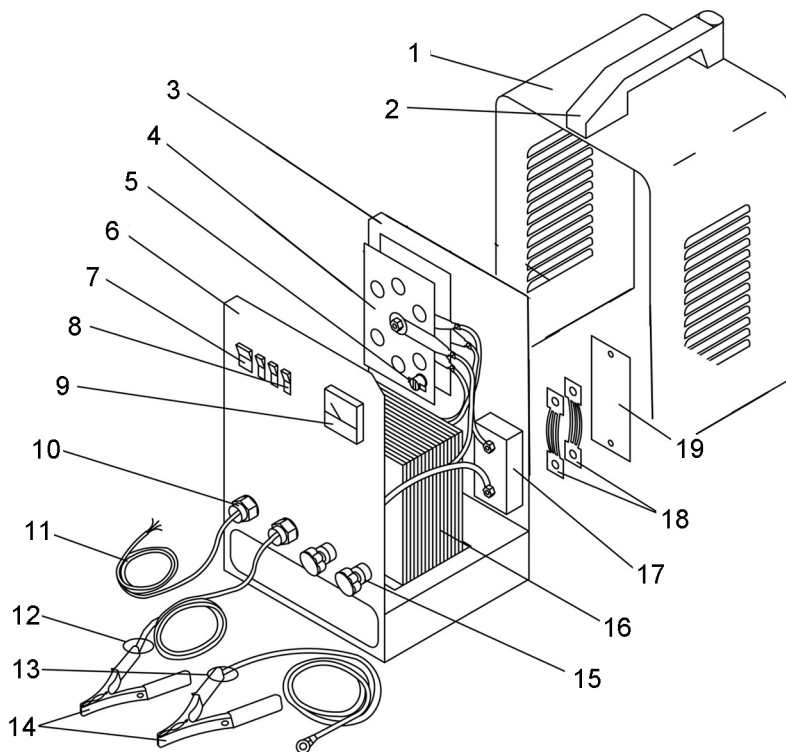
## PARTS LIST - BC210C



No	Description	Part No
1	Green Pilot Light Switch	EM22200039
2	Welding Current Switch	EM22200038
3	Front Panel	EM33710629
4	Frame for Starter	EM21690441
5	Ammeter 20A/Start	EM22600062

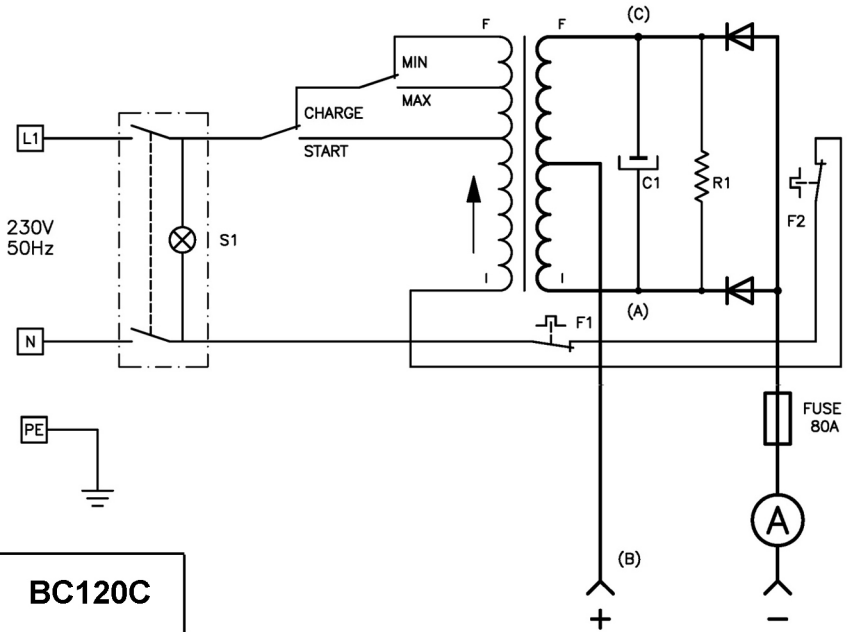
No	Description	Part No
10	Input Cable & plug	EM20220067
11	Fuse Holder Box Kit	EM04600251
12	Fuse 100A	EM22220047
13	Clamps 60A	EM04600066
14	Black (Neg) cable/ clamp	EM43200082
15	Red handwheel	EM04600005
16	Red Cable 60A	EM43200057
17	Lower Panel	EM33700078
18	Transformer	EM44105078

## PARTS LIST - BC410E

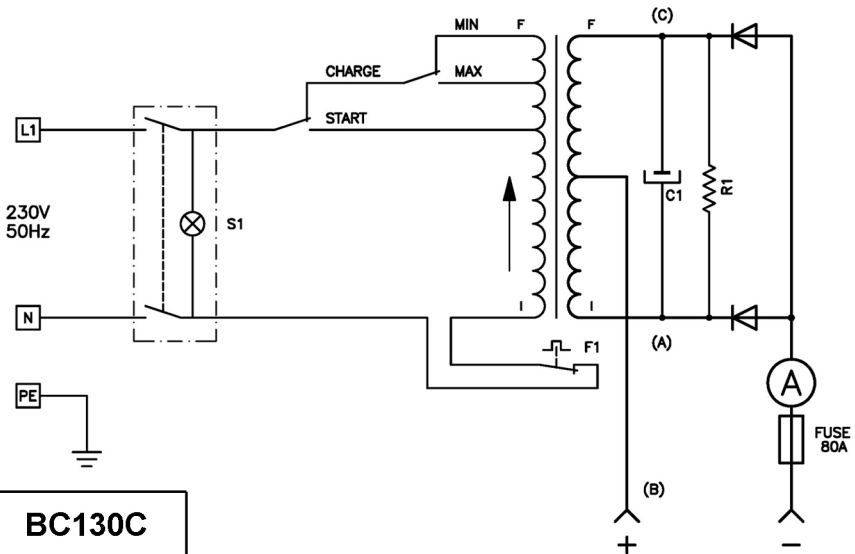


No	Description	Part No	No	Description	Part No
1	Upper Panel	EM33705007	11	Input Cable	EM20220014
2	Handle	EM21600004	12	Black Cable	EM43200012
3	Back Panel	EM33715037	13	Red Cable	EM43200050
4	Rectifier	EM22400020	14	Clamps 120A	EM04600067
5	Thermostat	EM04600113	15	Black Connector	EM04600022
6	Lower Panel	EM33700088	16	Transformer	EM44105038
7	Green Switch	EM22200039	17	Fuse Holder Box	EM21690113
8	Current Switch	EM22200038	18	Fuse 75A	EM22220031
9	Ammeter 30A	EM22600009	19	Small Fuse Cover	EM21690109
10	Cable Clamp	EM04600233			

# WIRING CIRCUIT DIAGRAMS



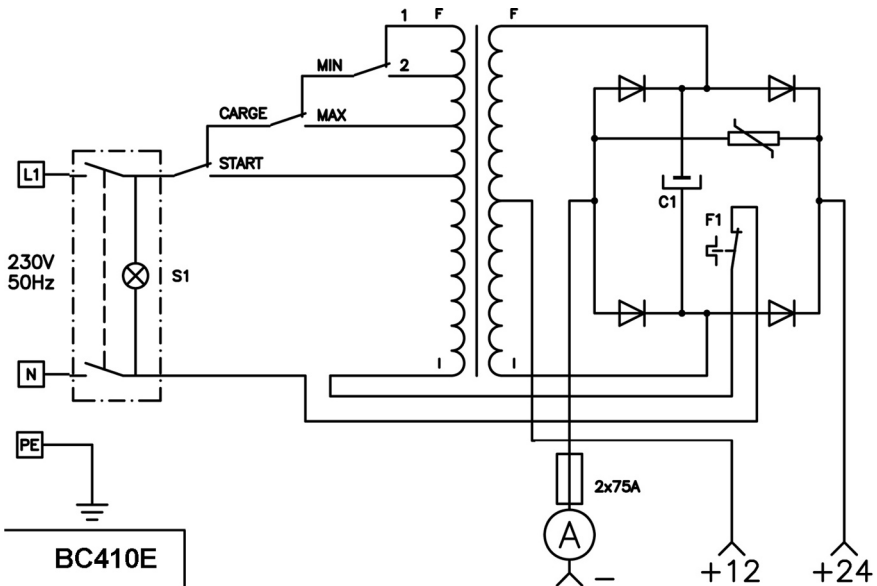
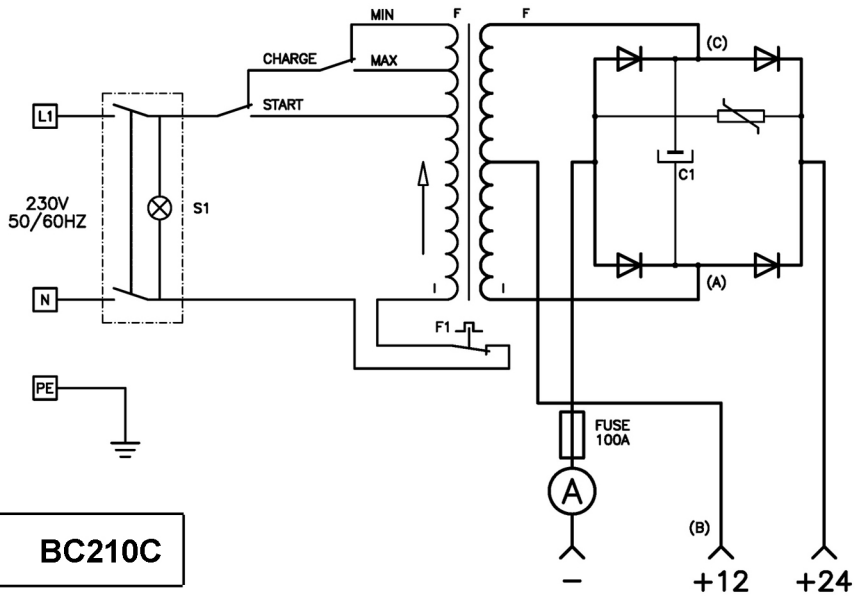
**BC120C**



**BC130C**



# WIRING CIRCUIT DIAGRAMS



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## SPECIFICATIONS

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<b>Model Number</b>	<b>BC120C</b>	<b>BC130C</b>	<b>BC210C</b>	<b>BC410E</b>
Part No	6261090	6261095	6261130	6240100
Dimensions (DxWxH)	215 x 215 x 300	280 x 275 x 280	215 x 215 x 300	250 x 270 x 440
Weight	9 kg	7 kg	12 kg	18 kg
Input Voltage @50Hz	230 V AC	230 V AC	230 V AC	230 V AC
Duty Cycle (Starting)	5 sec On / 20 sec Off	5 sec On / 30 sec Off	10 sec On / 60 sec Off	10 sec On / 30 sec Off
Max charge	15A	15A	25A	35
Max Boost	120A	120A	200A	400A
Boost/Charge	12V	12V	12/24V	12/24V



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