

CLARKE®

Start··charge



BATTERY BOOSTERS / CHARGERS

BC120N • BC130N • BC210N • BC320E • BC410E • BC520N

OPERATING INSTRUCTIONS



© 1106

SPECIFICATIONS

MODEL	120N	130N	210N	320E	410E	520N
MAX CHARGE (AMPS)	15	15	25	35	35	50
MAX BOOST (AMPS)	120	120	200	310	400	510
BOOST/CHARGE (VOLTS)	12	12	12/24	12/24	12/24	12/24
BOOST START DUTY CYCLE	Max 5 secs ON 20 secs OFF	Max 3 secs ON 30 secs OFF	Max 10 secs ON 30 secs OFF	Max 10 secs ON 30 secs OFF	Max 10 secs ON 30 secs OFF	Max 10 secs ON 30 secs OFF
THERMAL OVERLOAD PROTECTION	YES	YES	YES	YES	YES	YES
DIMENSIONS (LxWxH) mm.	230x280x335	200x260x170	230x280x335	280x340x590	230x280x335	280x340x590
WEIGHT kg.	9	6	11.5	19	13.5	24
PART NO.	6261005	6261010	6261035	6230500	6240100	6261080

This battery charger is designed to charge either 12V or 24V lead-acid automotive batteries. Do not attempt to recharge any other type of battery. Do not use the battery charger as a power source.

REPLACEMENT FUSES

MODEL	PART No..	AMPS	QTY REQUIRED
BC120N	EM22220044	80	1
BC130N	EM22220044	80	1
BC210N	EM22220047	100	1
BC320E	EM22220029	120	1
BC410E	EM22220031	75	2
BC520N	EM22220008	200	1

PARTS & SERVICE CONTACTS

For Spare Parts and Service, please contact your nearest dealer, or CLARKE International, on one of the following numbers.

PARTS & SERVICE TEL: 020 8988 7400

PARTS & SERVICE FAX: 020 8558 3622

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com



Thank you for purchasing this CLARKE Battery Booster/Charger.

These units are suitable for charging and boosting 12 Volt lead acid batteries. Models BC210N, BC320E, BC410E and BC520N are also capable of charging 24 Volt batteries.

Before attempting to operate the unit, please read this instruction manual thoroughly, and follow all directions carefully. By doing so you will ensure the safety of yourself, and others around you, and at the same time, you should look forward to the unit giving long and trouble free service.

GUARANTEE

This product is guaranteed against faults in manufacture for 12 months from date of purchase. Please keep your receipt as proof of purchase.

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

The reason for return must be clearly stated.

This guarantee does not affect your statutory rights.

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IMPORTANT SAFETY PRECAUTIONS

PLEASE READ BEFORE USING THIS UNIT

WARNING:

Some electronic equipment can be damaged by boost charging or use of start facility. Check vehicle handbook before using your Start 'N' Charge. If in doubt consult vehicle manufacturer.

1. **WARNING:** Because highly inflammable hydrogen gas is released in the process of battery charging, ALWAYS remember to switch OFF first and so avoid sparking which will occur when connecting or disconnecting LIVE LEADS,
2. Black negative (-) lead must always be clipped to the negative.
Red positive (+) lead must always be clipped to the positive.
First connect the appropriate lead to the unearthed battery terminal (on most modern cars this is the positive (+) terminal), then connect the other lead to the chassis (or a suitable engine bolt) away from the battery and fuel line.
To stop charging/boosting, disconnect the mains electricity supply, chassis lead, and battery lead in that order.
3. To prevent battery overheating and consequent damage, use the BOOST facility sparingly and do not exceed our recommendations.
4. Battery acid is highly corrosive. If spillage occurs, wipe off immediately and wash copiously with water. Particularly avoid contact with the eyes.
5. When charging is completed, ensure that the vehicle battery leads are secured to the proper terminals which should be clean and lightly smeared with petroleum jelly to prevent corrosion. Finally, re check the electrolyte level.
6. Do not expose this unit to rain,
7. Never touch together the negative and positive leads on this unit whilst the unit is switched on.
8. Never attempt any electrical or mechanical repair. If you have a problem with your machine contact your local stockist for service information.
9. **WARNING:** Certain types of sealed or maintenance-free batteries need extra care when charging. Please consult battery manufacturers instructions before using this unit.
10. **WARNING:** Since toxic fumes may be released during battery charging, ONLY USE THIS UNIT IN A WELL VENTILATED AREA.
11. Before charging ensure the battery terminals are clean and that the cells are filled with electrolyte to the correct level by adding distilled water where necessary.
12. Where appropriate we recommend that the positive (+) lead to the battery is disconnected on the vehicle prior to charging.

ELECTRICAL CONNECTIONS

BC120N, BC130N and BC210N

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.

BC320E, BC410E and BC520N

Connect the three core mains lead to a suitable industrial supply isolator, or heavy duty plug. These chargers 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 currents for these units are:

BC320E - 20 amps • BC410E - 25 amps • BC520N - 33 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 cord to plug terminal marked letter 'E' or Earth Symbol (⏏) or coloured Green and Yellow.
- Connect BROWN cord to plug terminal marked letter 'L' or coloured Red.
- Connect BLUE cord to plug terminal marked letter 'N' or coloured Black.

ASSEMBLY

Models BC320E and BC520N require the handle and wheels to be assembled before use.

Locate the Handle at the back of the upper panel and secure with the four self tapping screws provided.

Thread the axle into its housings at the bottom of the unit, then slide a wheel on to each end. Retain in position by tapping on the retaining washer supplied, ensuring the tines of the washers point outwards.

FEATURES

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.

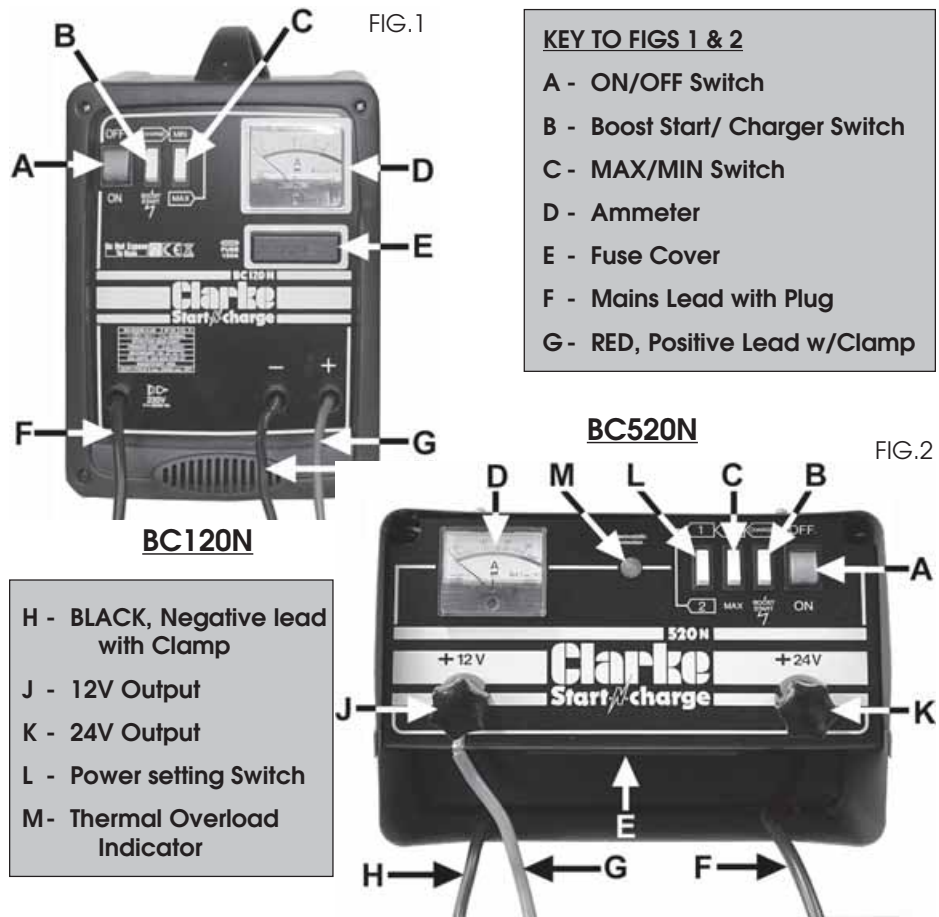
A single, Boost Start/ Charge Switch allows for switching between functions.

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 BC130 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 two illustrations below identify the various components and controls, which are similar for all products.



PROCEDURE FOR NORMAL CHARGING

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

- a. 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.

- b. Check that the ON/OFF switch on the unit is in the OFF position.
- c. For 12V/24V chargers, connect the RED, positive lead to either the 12V or 24V output on the charger, as appropriate.
- d. 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.
- e. Remove the battery filler caps, where applicable, during charging, in order to prevent the build up of dangerous gases within the battery.
- f. Switch the CHARGE/BOOST START switch to the CHARGE position.

NOTE: For those chargers provided with a Power setting switch (models BC320N, BC410E and BC520N), set the switch to position '1'

- g. 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.).
- h. 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.
- i. 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.
- j. ALWAYS disconnect in the following order - 1. Supply, 2. Chassis/Earth conductor and 3. Battery Conductor.

WARNING

If the fixed positive lead and the fixed negative lead are connected to the wrong terminals, then a flash will occur when the 2nd. clamp is attached. Damage to the charging unit and the battery will be avoided as your START N CHARGE 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 burnt 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.

PROCEDURE FOR ENGINE STARTING

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.

- a. Check that the ON/OFF switch is in the OFF position.
- b. Connect the cables as for normal charging - see para c and d, page 6.
- c. Check that the CHARGE/BOOST START switch is in the CHARGE position.
- d. Switch the ON/OFF switch to the ON position.
- e) 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 - shown in 'Specifications' on page 2. i.e 5 seconds ON, followed by a period of 20 seconds before retrying, in the case of BC120N, or 10 secs ON followed by 30secs before retrying - BC320E

Failure to do this could damage some vehicle electronic equipment, the battery, and possibly the Start 'N' Charge unit which may invalidate your guarantee.

THERMAL OVERLOAD

These Booster/Chargers are provided with a Thermal Overload cut-out.

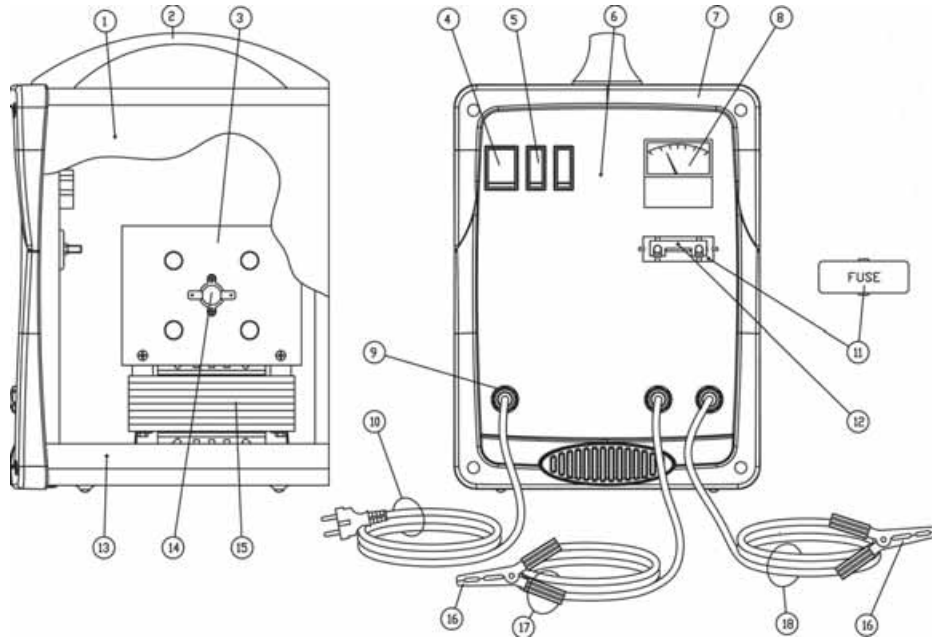
Should the Duty Cycle be exceeded, or should the unit overheat for any reason, the thermal overload will intervene, shutting down the system.

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

Models BC320E and BC520N are provided with an amber indicator lamp, on the top panel, which will illuminate when the Overload has intervened. It will extinguish once it has reset and the unit is ready for use once again.

PARTS LIST AND DIAGRAM

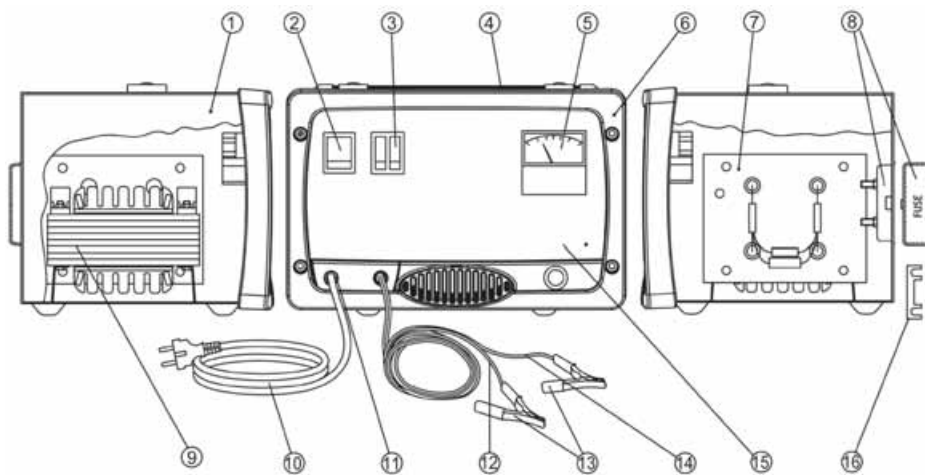
BC120N



No.	Description	Qty	Part No.
1	Cover Panel	1	EM33705460
2	Handle	1	EM21600045
3	Rectifier 4 Diodes	1	EM22400042
4	Green Pilot Light Switch 16A-250V	1	EM22200039
5	Welding Current Switch 16A 250V	2	EM22200038
6	Front Panel	1	EM33710413
7	Frame For Starter	1	EM21690441
8	Ammeter 20A	1	EM22600026
9	Cable Clamp	3	EM21605009
10	Input Cable W/U.K. Plug +Fuse 13A	1	EM20220067
11	Fuse Holder Box Kit	1	EM04600251
12	Fuse 80A	1	EM22220044
13	Lower Panel	1	EM33700078
14	Thermostat 1001 I0A	1	EM22210014
15	Transformer 230v 40x50	1	EM44105033
16	Clamps 60A	2	EM04600066
17	Black Cable 10 Sqmm Mt.1,6 W/Clamp 60	1	EM43200029
18	Red Cable 10 Sqmm Mt.1,6 W/Clamp 60	1	EM43200030

PARTS LIST AND DIAGRAM

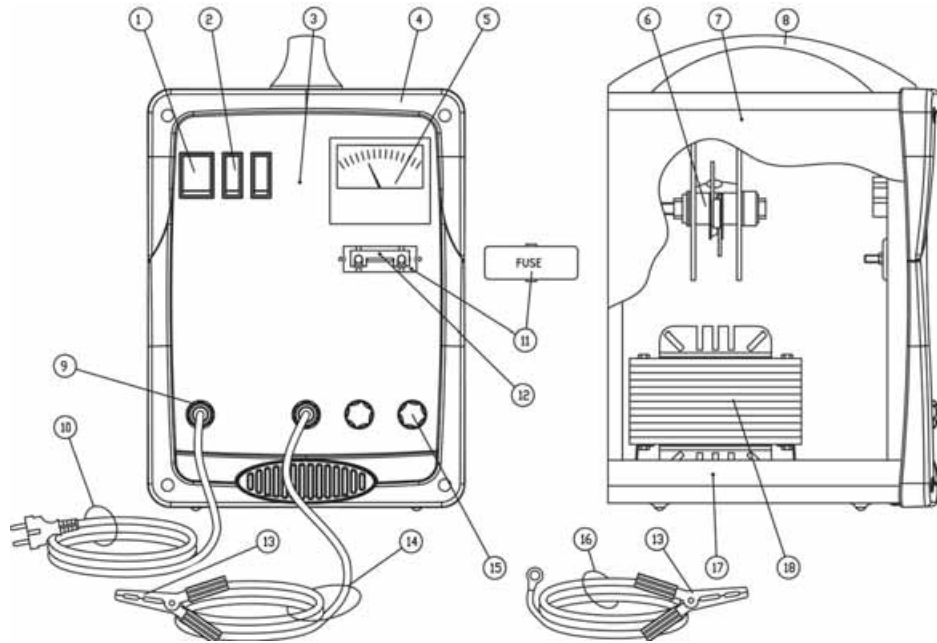
BC130N



No.	Description	Qty	Part No.
1	Cover	1	EM33705451
2	Green Pilot Light Switch 16A-250V	1	EM22200039
3	Current Switch 16A 250V White	1	EM22200038
4	Kit Handle + Clips	1	EM04600259
5	Ammeter 20A	1	EM22600026
6	Frame	1	EM21690440
7	Rectifier 4 Diodes	1	EM22400042
8	Fuse Holder	1	EM04600251
9	Transformer 230V	1	EM44105060
10	Input Cable W/U.K. Plug +Fuse 13A	1	EM20220067
11	Cable Clamp	2	EM21605009
12	Black Cable 4 Sqmm 1,6m R60A	1	EM43200055
13	Clamps 60A	1	EM04600066
14	Red Cable 4 Sqmm 1,6m	1	EM43200056
15	Rear Panel	1	EM33700250
16	Fuse 80A	1	EM22220044

PARTS LIST AND DIAGRAM

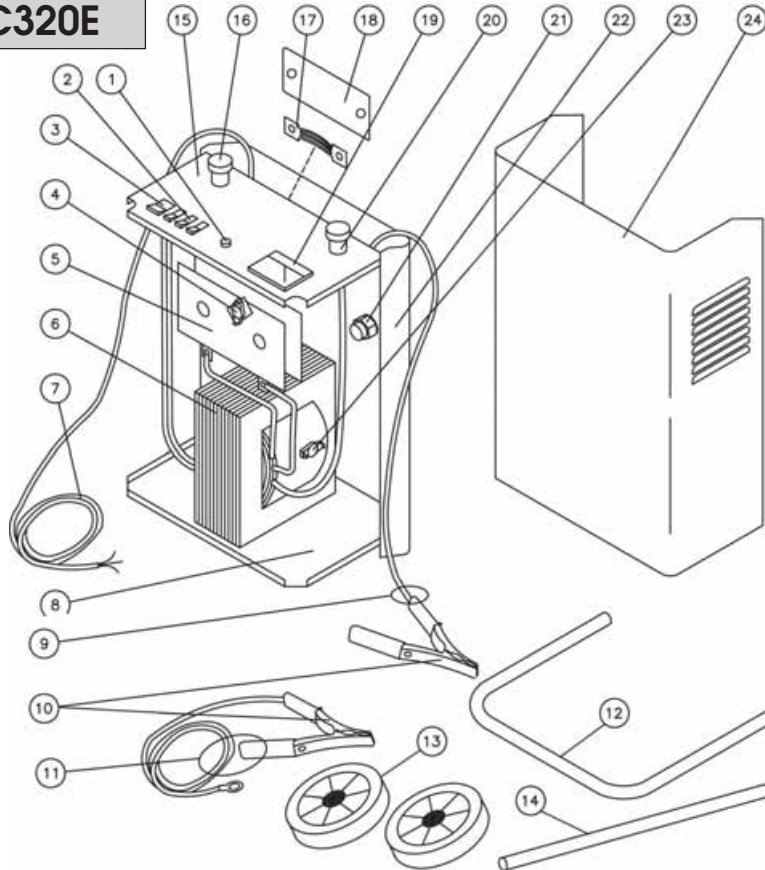
BC210N



No.	Description	Qty	Part No.
1	Green Pilot Light Switch	1	EM22200039
2	Welding Current Switch	2	EM22200038
3	Front Panel	1	EM33710371
4	Frame For Starter	1	EM21690441
5	Ammeter 20A/Start	1	EM22600014
6	Rectifier 35A	1	EM22400100
7	Cover Panel	1	EM33705460
8	Handle	1	EM21600045
9	Cable Clamp	2	EM21605009
10	Input Cable W/Plug +Fuse 13A	1	EM20220067
11	Fuse Holder Box Kit	1	EM04600251
12	Fuse 100A	1	EM22220047
13	Clamps 60A	1	EM04600066
14	Black Cable W/Clamp	1	EM43200029
15	Complete Red Handwheel	2	EM04600005
16	Red Cable 10mmsq 60A	1	EM43200057
17	Lower Panel	1	EM33700078
18	Transformer Complete	1	EM44105078

PARTS LIST AND DIAGRAM

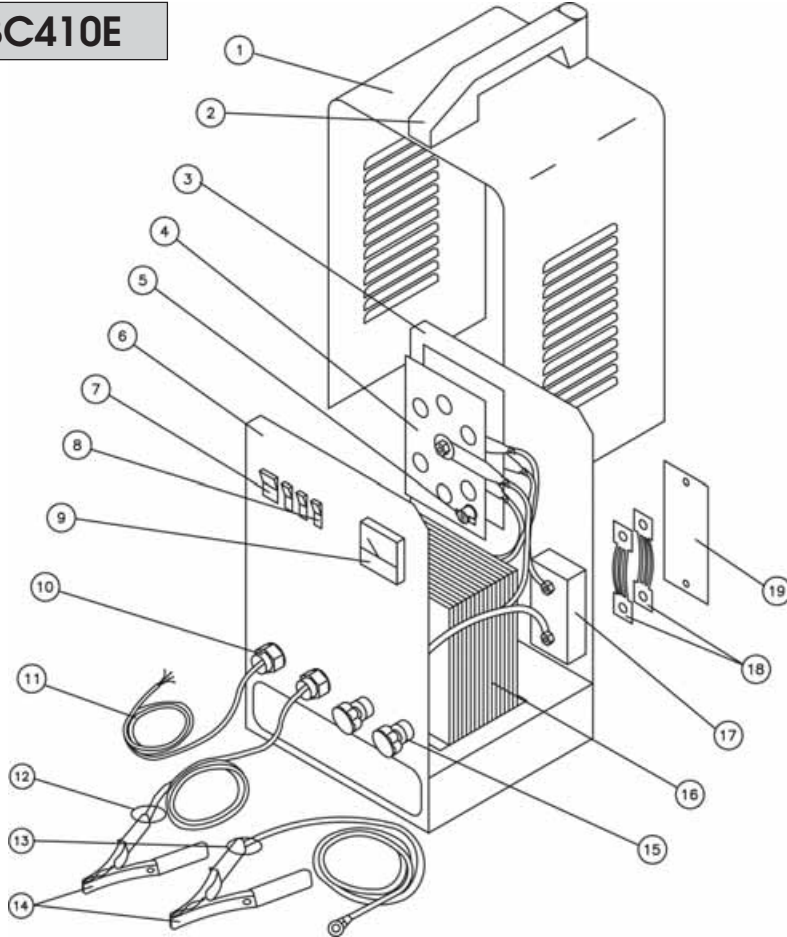
BC320E



No.	Description	Qty	Part No.	No.	Description	Qty	Part No.
01	Orange Led 220V	1	EM22610036	13	Wheel D.125	2	EM21625006
02	Current Switch	3	EM22200038	14	Wheels-axle D.16	1	EM55200005
03	Green Switch	1	EM22200039	15	Control Panel	1	EM33710085
04	Thermostat	1	EM04600113	16	Hand-wheel D.40	2	EM21800042
05	Rectifier PMS	1	EM22400048	17	Fuse 120A	1	EM22220029
06	Transformer 230V	1	EM44105029	18	Small Fuse Cover	1	EM21690109
07	Input CableM 2,5	1	EM20220014	19	Ammeter 30A	1	EM22600009
08	Lower Panel	1	EM33700076	20	Insulating Washers	2	EM21615012
09	Cable W/Clamp	1	EM43200042	21	Cable Clamp	2	EM04600233
10	Clamps 120A	1	EM04600067	22	Front Panel	1	EM33710086
11	Cable 10sqmm	1	EM43200041	23	Thermostat 16A	1	EM22210038
12	Handle	1	EM33725016	24	Upper Panel	1	EM33705106

PARTS LIST AND DIAGRAM

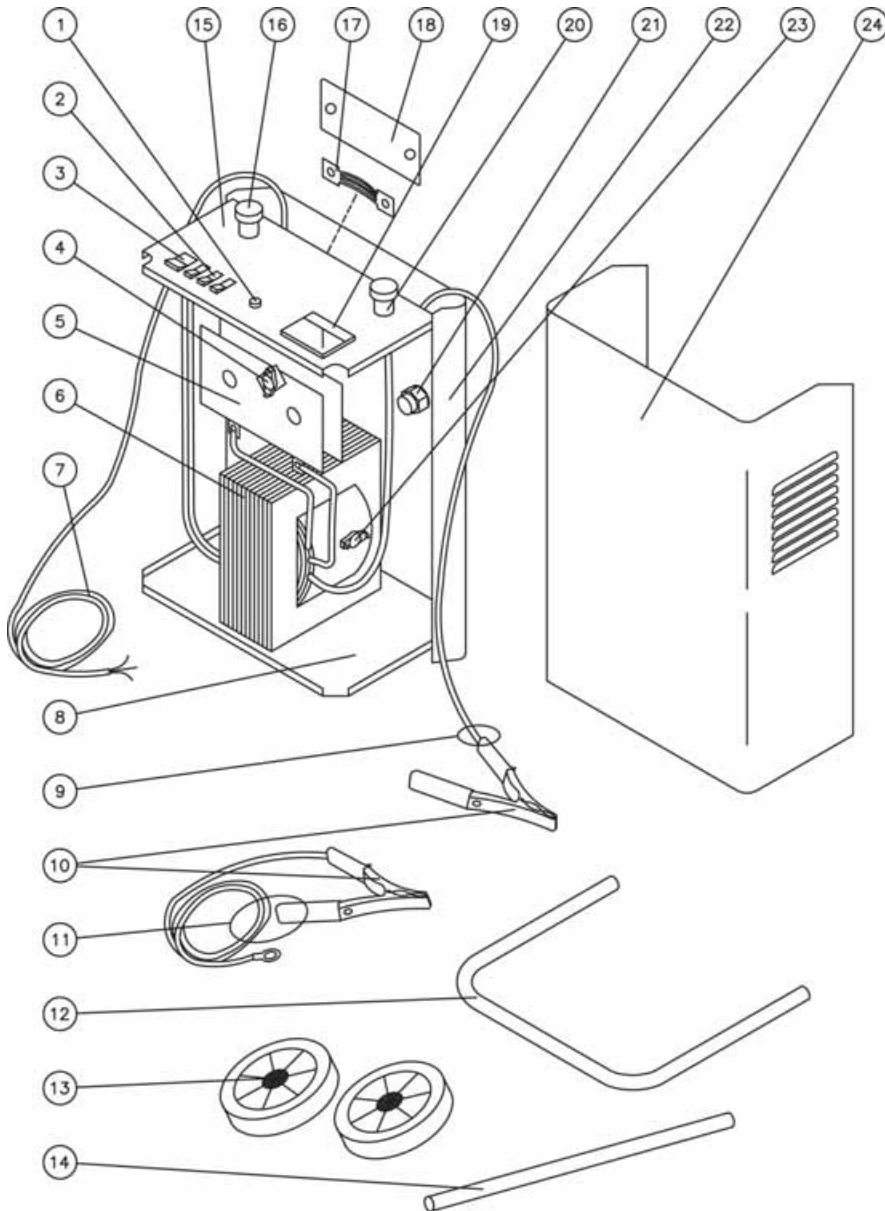
BC410E



No.	Description	Qty	Part No.	No.	Description	Qty	Part No.
1	Upper Panel	1	EM33705007	11	Input Cable	1	EM 20220014
2	Handle	1	EM21600004	12	Black Cable	1	EM43200012
3	Back Panel	1	EM33715037	13	Red Cable	1	EM43200050
4	Rectifier	1	EM22400020	14	Clamps 120A	1	EM04600067
5	Thermostat Compl.	1	EM04600113	15	Black Connector	2	EM04600022
6	Lower Panel	1	EM33700088	16	Transformer	1	EM44105038
7	Green Switch	1	EM22200039	17	Fuse Holder Box	1	EM21690113
8	Current Switch	3	EM22200038	18	Fuse 75A	2	EM22220031
9	Ammeter 30A	1	EM22600009	19	Small Fuse Cover	1	EM21690109
10	Cable Clamp	2	EM04600233				

PARTS LIST AND DIAGRAM

BC520N

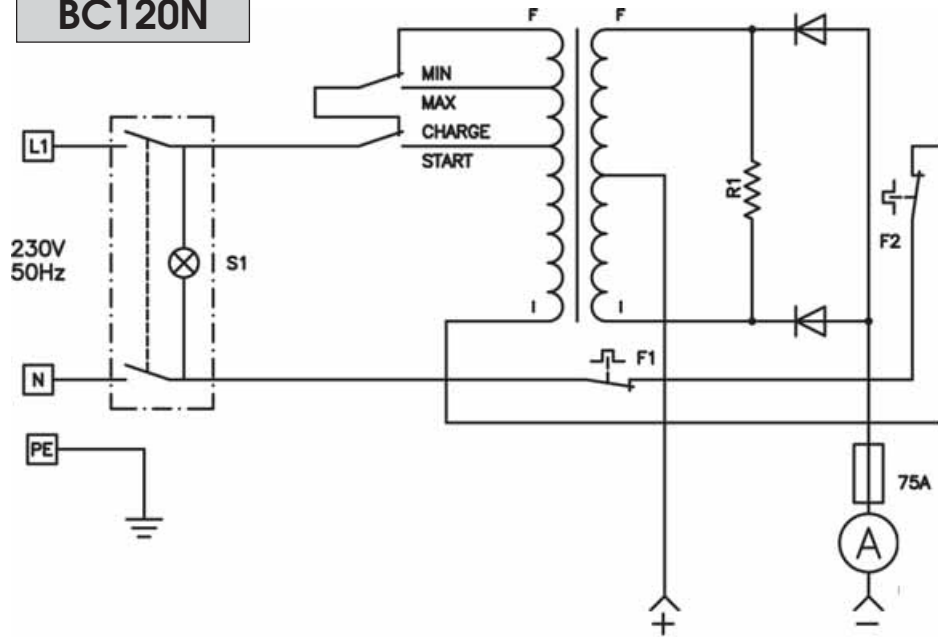


BC520N

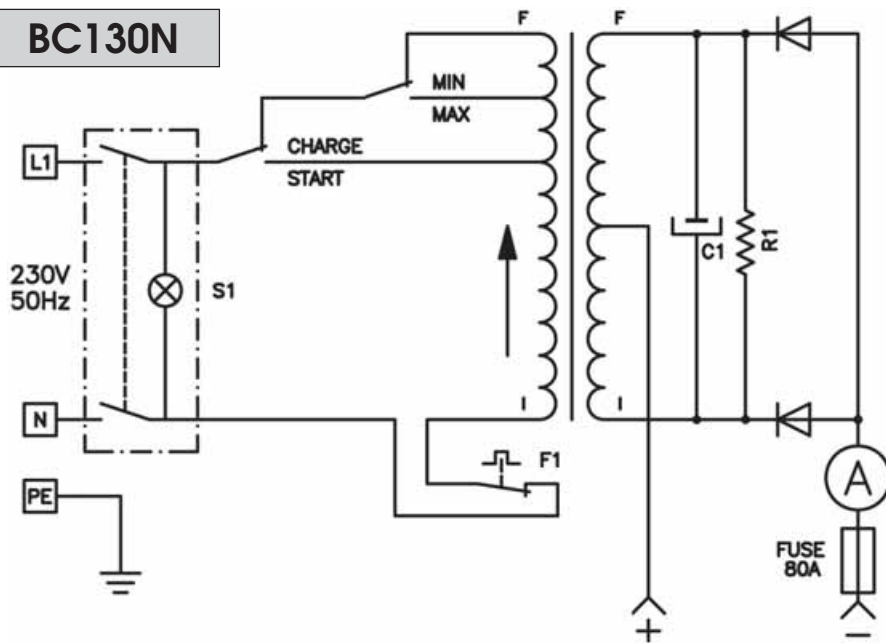
No.	Description	Qty	Part No.
1	Orange Pilot Lamp	1	EM22610013
2	Welding Current Switch 16A 250V	3	EM22200038
3	Green Pilot Light Switch 16A-250V	1	EM22200039
4	Complete Thermostat	1	EM04600113
5	Rectifier	1	EM22400045
6	Transformer	1	EM44105032
7	PVC Input Cable 3x2,5 M.2,5	1	EM20220020
8	Lower Panel	1	EM33700076
9	Black Cable W/Clamp	1	EM43200016
10	Earth Clamp	2	EM22110005
11	Red Cable 16 Sqmm Mt.2,5	1	EM43200043
12	Handle	1	EM33725016
13	Wheel D125	2	EM21625006
14	Wheels-Axle	1	EM55200005
15	Control Panel	1	EM33710085
16	6 Lobes Handwheel D.40	2	EM21800042
17	Fuse 200A	1	EM22220008
18	Small Fuse Cover	1	EM21690109
19	Ammeter 50A	1	EM22600027
20	Insulating French Washers	2	EM21615012
21	Cable Clamp D.10 + Screw	2	EM04600234
22	Front Panel	1	EM33710086
23	Upper Panel	1	

WIRING DIAGRAMS

BC120N

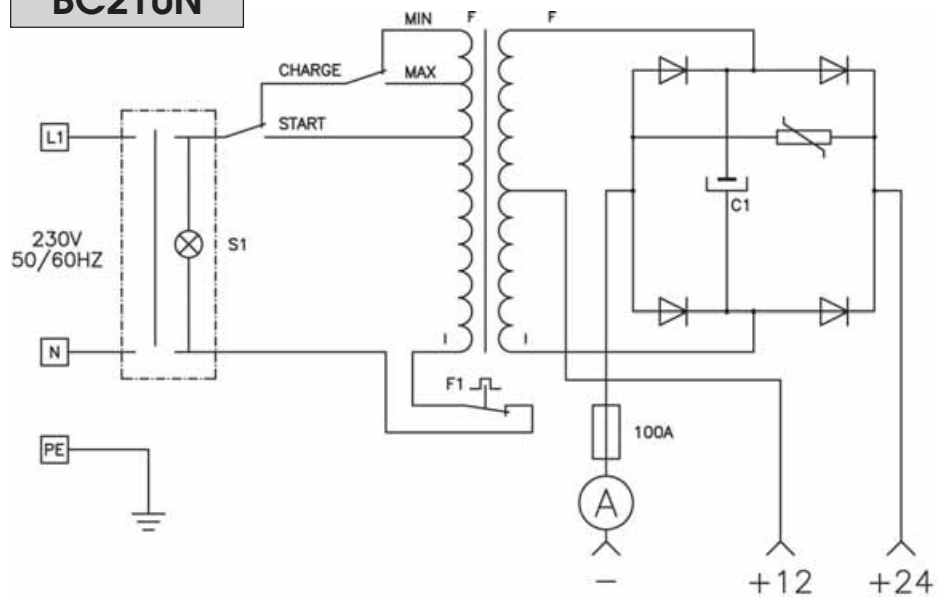


BC130N

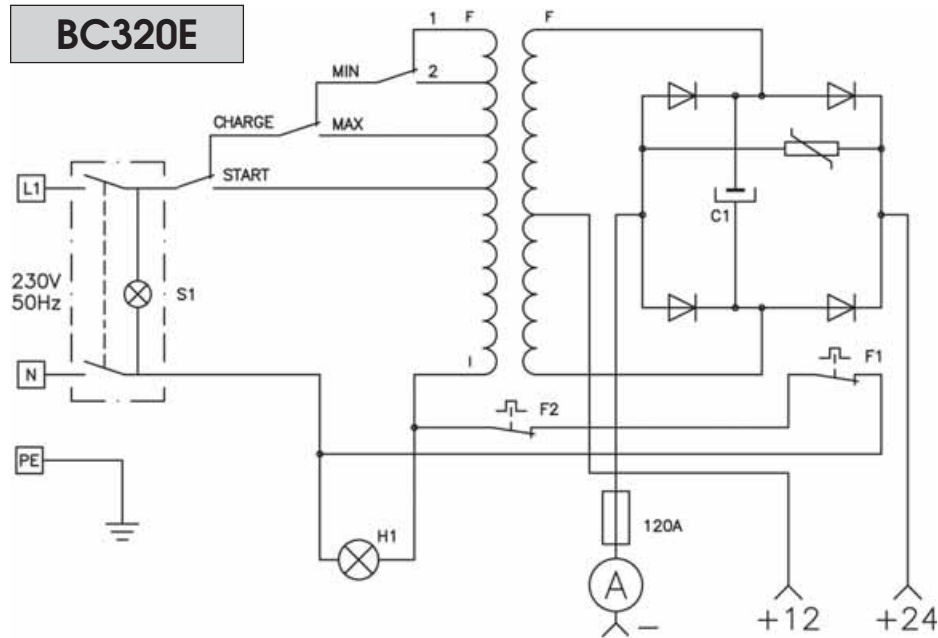


WIRING DIAGRAMS

BC210N

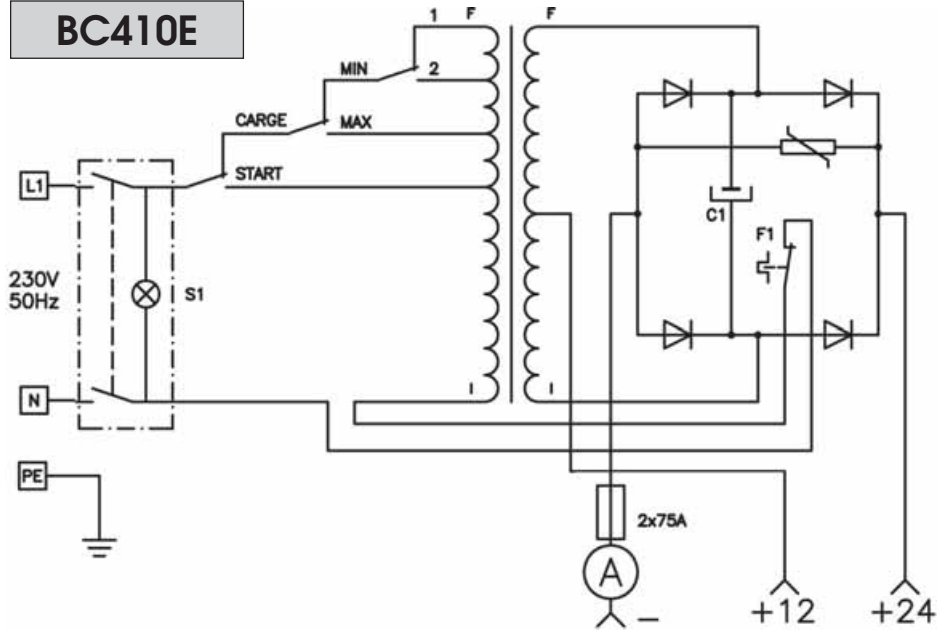


BC320E



WIRING DIAGRAMS

BC410E



BC520N

