Clarke™

Start·N·charge

HEAVY DUTY BATTERY BOOSTERS / CHARGERS

MODEL Nos. BC150, BC170, BC180B & BC200B

OPERATING INSTRUCTIONS

CE

1202

Clarke
INTERNATIONAL

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

NOTES

Thank you for purchasing this CLARKE Battery Charger. These units are suitable for charging and boosting 12 Volt lead acid batteries. Models BC180B and BC200B are also capable of charging 24Volt 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 in any way, or not used for the purpose for which it was intended, or to have been tampered with in any way. The reason for return must be clearly stated.

This guarantee does not affect your statutory rights.

CONTENTS

IMPORTANT: SAFETY PRECAUTIONS

PLEASE READ BEFORE USING THIS UNIT

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

   Nevertheless, you should not operate this equipment unless you are fully conversant with vehicle electrical systems, and battery charging techniques.

2. ***WARNING*:** Because highly inflammable hydrogen gas is released in the process of battery charging, please remember to switch OFF the charger first, and so avoid sparking which will occur when CONNECTING OR DISCONNECTING LIVE LEADS.

3. Black negative (-ve) lead must always be clipped to the negative, and Red positive (+ve) lead must always be clipped to the positive.

   When charging with battery installed in vehicle, or boosting, **FIRST** connect the appropriate lead to the **UNEARTHED** battery terminal (on most modern cars this is the positive (+ve) terminal), then connect the other lead to the chassis (or a suitable engine bolt) away from the battery and fuel line. It is advisable to disconnect the unearthed terminal from the battery, when charging in situ.

   When disconnecting, remove the chassis lead FIRST, then the battery lead.

4. To prevent battery overheating and consequent damage, use the BOOST facility sparingly and do not exceed our recommendations.

5. Battery acid is highly corrosive. If spillage occurs, wipe off immediately and wash copiously with water. Particularly avoid contact with the eyes, but if this occurs, you must seek medical advice.

6. 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.

7. Do not expose this unit to rain.

8. Never touch together the negative and positive leads on this unit whilst the unit is switched on.

9. Never attempt any electrical or mechanical repair. If you have a problem with your machine contact your local stockist for service information.

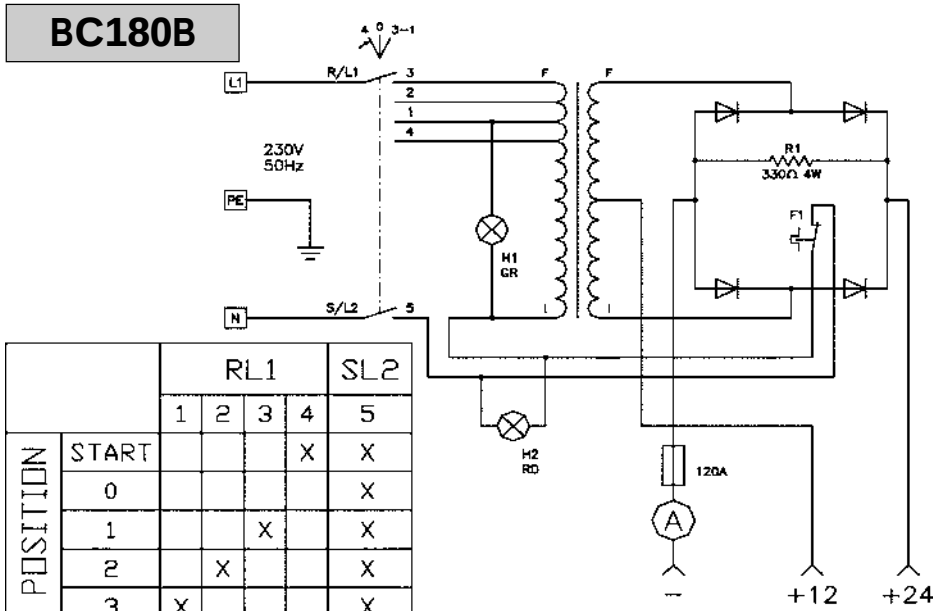
10. ***WARNING***: Certain types of sealed or maintenance-free batteries need extra care when charging. Please consult battery manufacturers instructions before using this unit.

11. ***WARNING***: Since toxic fumes may be released during battery charging, ONLY USE THIS UNIT IN A WELL VENTILATED AREA.

12. 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.

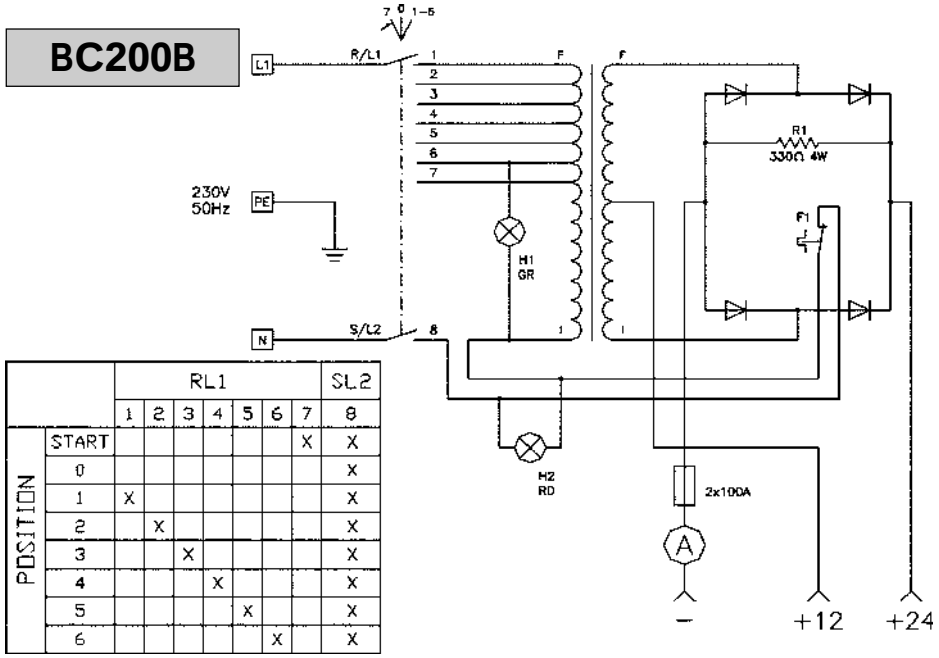
WIRING DIAGRAMS

BC180B



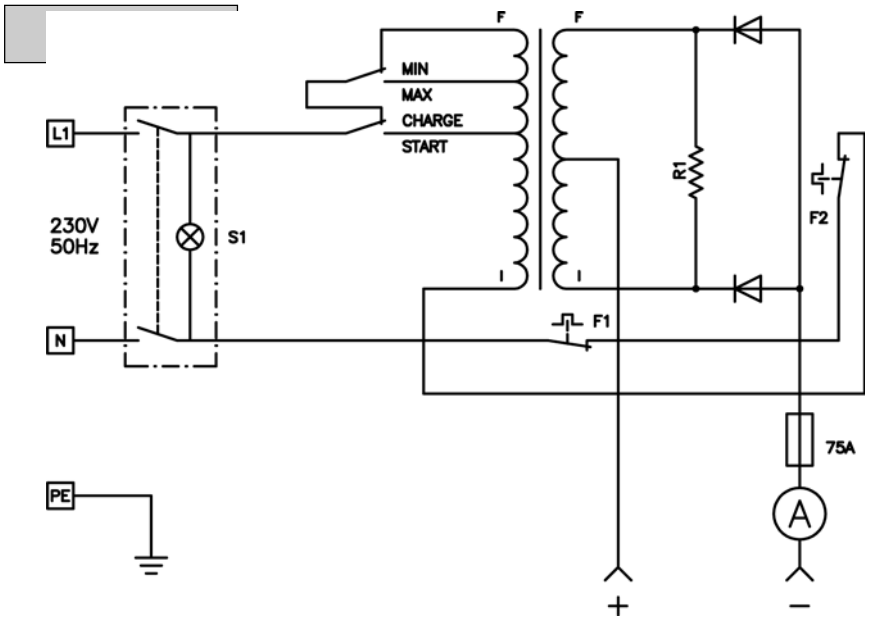
		RL1				SL2
		1	2	3	4	5
POSITION	START				X	X
	0					X
	1			X		X
	2		X			X
	3	X				X

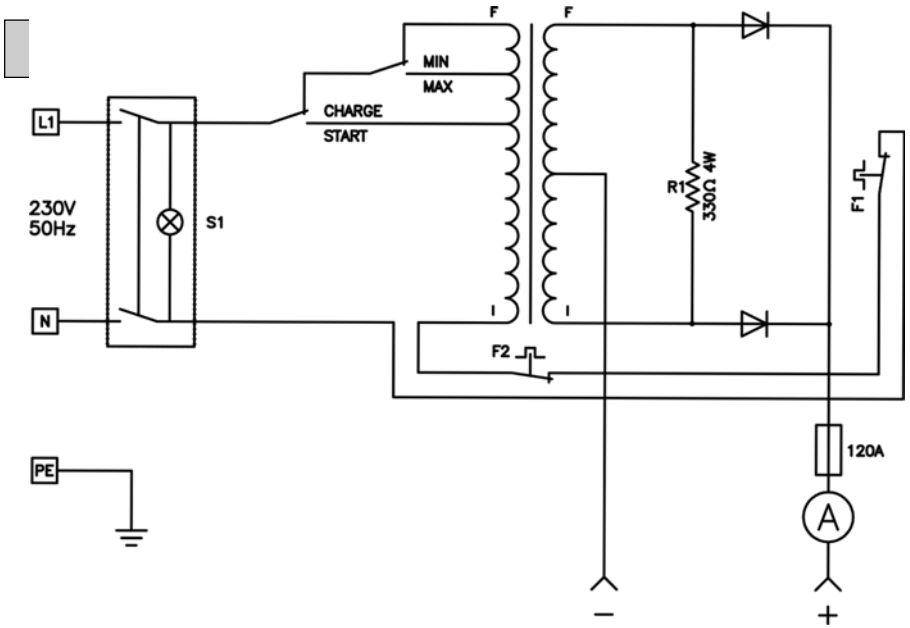
BC200B



		RL1							SL2
		1	2	3	4	5	6	7	8
POSITION	START							X	X
	0								X
	1	X							X
	2		X						X
	3			X					X
	4				X				X
	5					X			X
	6						X		X

WIRING DIAGRAMS





ASSEMBLY INSTRUCTIONS.

BCI80B and BC200B

1) Insert the plastic handle into the top of the unit and secure with the screws provided.
2) Insert the tubular metal handle into the plastic handle and secure with two screws provided.
3) Using the four small bolts supplied secure the metal supporting foot to the base of the charger and at same time locate the axle in the slot provided.
4) Push one wheel onto each end of the axle and retain in position by tapping one of the retaining washers supplied, about 5 mm. on to the axle shaft at each end using a piece of tube or old socket etc., noting that the tines of the washer face outwards.

ELECTRICAL CONNECTIONS

WARNING! THIS APPLIANCE MUST BE EARTHED.

A. 12 volt CHARGING - All Models

Connect the mains lead to a 230 volt (50Hz) domestic electrical supply via a standard 13 amp BS 1363 plug fitted with a 13 amp fuse, or a suitably fused isolator switch.

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

Green & Yellow	***-***	***Earth***
Blue	***-***	***Neutral***
Brown	***-***	***Live***

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 & YELLOW coloured cord to plug terminal marked with a letter 'E' or Earth symbol "⏚", or coloured GREEN or GREEN & YELLOW.
- Connect BROWN coloured cord to plug terminal marked 'L' or coloured RED.
- Connect BLUE coloured cord to plug terminal marked 'N' or coloured BLACK.

We strongly recommend that this unit is connected to the mains supply via a Residual Current Device (RCD).

IMPORTANT!
If this appliance is fitted with a plug which is moulded onto the electric cable (i.e. non-rewireable) please note:

1. The plug must be thrown away if it is cut from the electric cable. There is a danger of electric shock if it is subsequently inserted into a socket outlet.
2. Never use the plug without the fuse cover fitted.
3. Should you wish to replace a detachable fuse carrier, ensure that the correct replacement is used (as indicated by marking or colour code).
4. Replacement fuse covers can be obtained from your local dealer or most electrical stockists.

Fuse Rating

The fuse in the plug must be replaced with one of the same rating (**13 amps**) and this replacement must be ASTA approved to BS1362.

Extension Cable

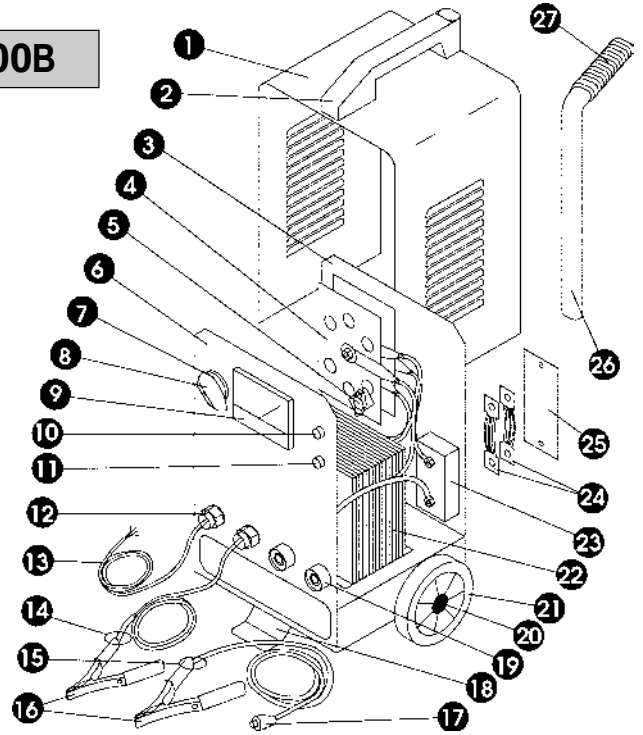
If an extension cable is fitted, ensure the minimum cross section of the conductor is 1.5mm^2 for up to 15 metres in length, and 2.5mm^2 for up to 25 metres.

B. 24 Volt Charging (BC180B and BC200B)

If these units are used for 24 volt boosting or charging, they MUST be connected to a 230V 50Hz, single phase supply, through a suitably fused isolator, with a fuse rating of 15 Amps. ***DO NOT connect via a 13 Amp Plug.***

PARTS LIST AND DIAGRAM

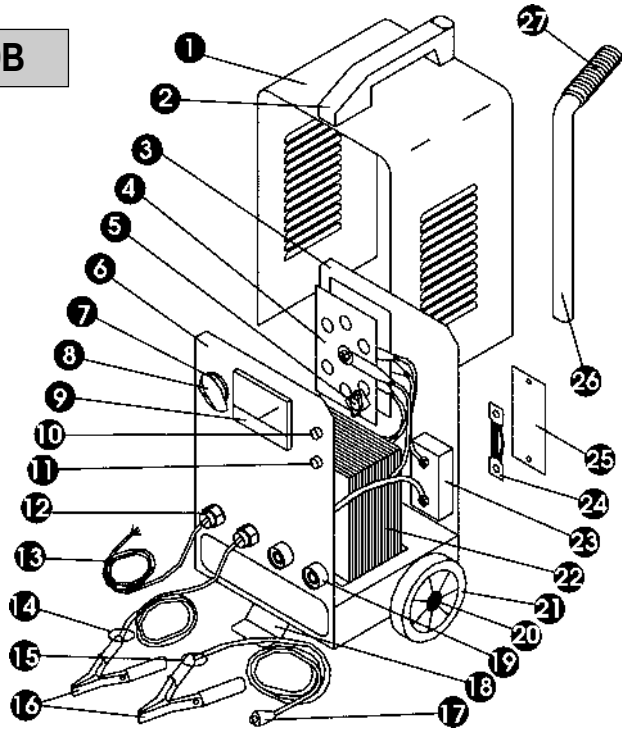
BC200B



No.	Description	Part No.		Description	Part No.
1	Upper Panel	EM33705007	15	Red Cable	EM43200026
2	Handle	EM21600004	16	Clamp	EM22110005
3	Back Panel	EM33715037	17	Din. Plug	EM22100001
4	Rectifier	EM22400006	18	Foot	EM33740015
5	Thermostat	EM04600113	19	Din. Socket	EM22100002
6	Lower Panel	EM33700023	20	Wheels-axle	EM55200012
7	Switch	EM22205007	21	Wheel	EM21625006
8	Switch Knob	EM21690015	22	Transformer	EM44105006
9	Ammeter	EM22600015	23	Fuse Holder Box	EM21690113
10	Input Cable	EM22610006	24	Fuse I00A	EM22220030
11	Orange Pilot-lamp	EM22610012	25	Small Fuse Box Cover	EM21690109
12	Cable Clamp	EM21605010	26	Handle	EM33725029
13	Input Cable	EM20220014	27	Handle-extension Knob	EM21600006
14	Black Cable	EM43200014			

PARTS LIST AND DIAGRAM

BC180B



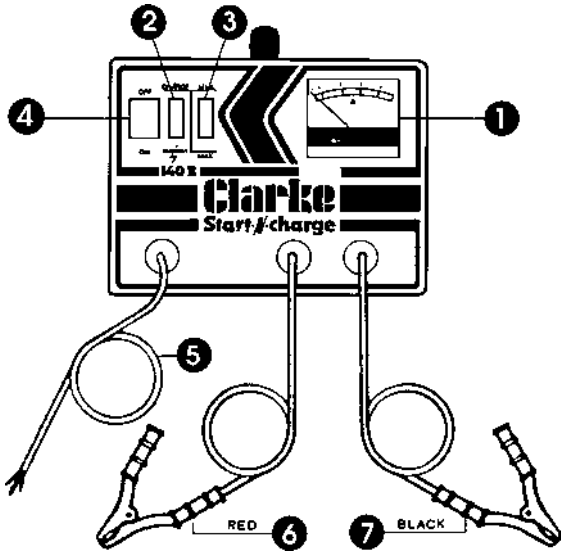
No.	Description	Part No.		Description	Part No.
1	Upper Panel	EM33705007	15	Red Cable	EM43200010
2	Handle	EM21600004	16	Clamp	EM22110005
3	Back Panel	EM33715037	17	Din. Plug	EM22100001
4	Rectifier	EM22400020	18	Foot	EM33740015
5	Thermostat	EM04600113	19	Din. Socket	EM22100002
6	Lower Panel	EM33700021	20	Wheels-axle	EM55200012
7	Switch	EM22205008	21	Wheel	EM21625014
8	Switch Knob	EM21690015	22	Transformer Starter	EM44105022
9	Ammeter	EM22600014	23	Fuse Holder Box	EM21690113
10	Green Pilot-lamp	EM22610006	24	Fuse 120A	EM22220029
11	Orange Pilot-lamp	EM22610012	25	Small Fuse Box Cover	EM21690109
12	Cable Clamp	EM21605010	26	Handle	EM33725029
13	Input Cable	EM20220014	27	Rubber Grip	EM21600006
14	Black Cable	EM43200012			

PARTS IDENTIFICATION

BC150 & 170

FIG. 1

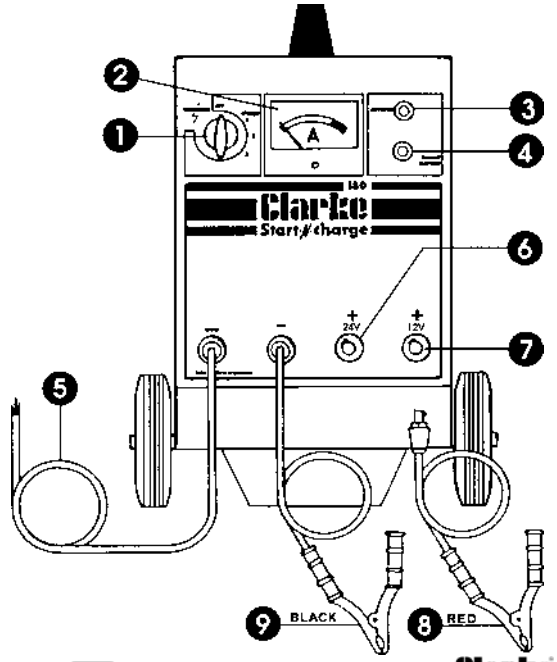
1 - Ammeter
2 - Charge/Boost Start Switch
3 - MIN/MAX Charge Rate Sw.
4 - ON/OFF Switch
5 - Mains Lead
6 - RED, Positive Lead
7 - Black Negative Lead



BC180B & BC200B

FIG. 2

1 - Amperage Control Knob
2 - Ammeter
3 - Mains indicator Lamp
4 - Thermal Overload indicator
5 - Mains Lead
6 - 24V Positive Terminal
7 - 12 V Positive Terminal
8 - RED, Positive Lead
9 - Black, Negative Lead



PROCEDURE FOR NORMAL CHARGING

BCI50 & BC170 (Ref: Fig. 1).

1) Before charging or boosting, ensure that the cells are filled with electrolyte to the correct level by adding distilled water where necessary.
2) 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 any electronically controlled system fitted to the vehicle such as engine management, anti-theft alarm, alternator etc.
3) Check that the ON/OFF switch **(4)** on the unit is in the OFF position.
4) Connect the appropriate lead to the unearthed battery terminal (on most modern cars this is positive (+ve) terminal), then connect the other lead to the chassis (or a suitable engine bolt) away from the battery and fuel line.
5) Remove the battery filler caps during charging in order to prevent the build up of dangerous gases within the battery.
6) Switch the CHARGE/BOOST START switch **(2)** to the CHARGE position.
7) Set the MIN/MAX (minimum charge/maximum charge) switch **(3)** to the MIN position. This is suitable for charging most normal car batteries (having a rating of approximately 40 A.H.).
8) Switch the ON/OFF switch **(4)** to ON, and charging will commence.
9) Keep the battery on charge until the Ammeter gauge **(1)** reads zero (or 0-2 amps) or has stopped moving down. Then switch OFF at the machine.
10) When disconnecting the charger, disconnect **1.** supply, **2.** chassis conductor and **3.** battery conductor, **IN THAT ORDER.**

Important:

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 back panel (marked 'fuse') and replace the burnt fuse with an exact replacement. See page 10 for replacement fuses.

Notes on charging procedure.

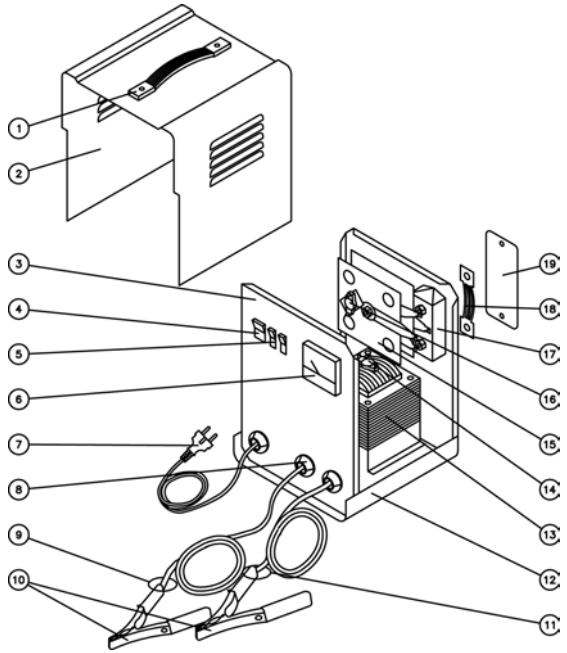
* ***A complete charge is best done slowly in order to protect your battery, so we recommend the MIN setting as described above. A complete charge may take up to 10 hours.***

** ***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: Do not attempt to re-charge non-rechargeable batteries.

PARTS LIST AND DIAGRAM

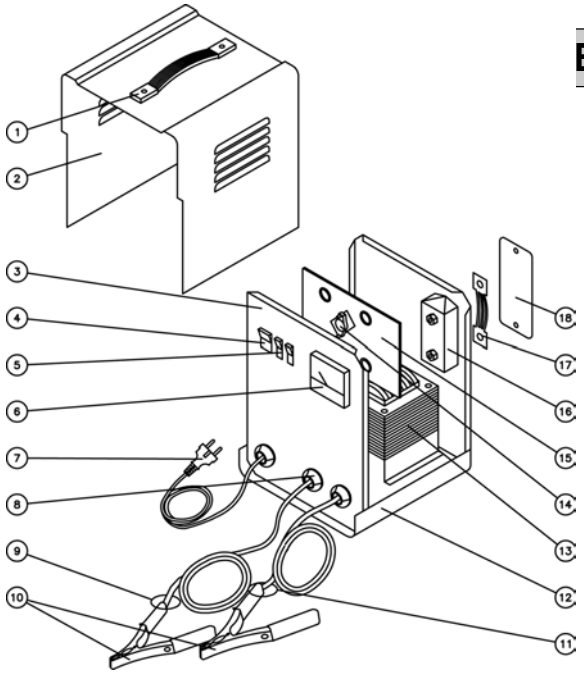
BC170



No.	Description		Part No.
1	Hamdle	1	EM21600001
2	Upper Pamel	1	EM33705108
3	Fromt Pamel	1	EM33710281
4	Om/Off Switch	1	EM22200002
5	Weldimg Curremt Switch	2	EM22200006
6	Ammeter	1	EM22600014
7	Imput Cable W/Plug+13a Fuse	1	EM20220068
8	Cable Clamp	3	EM21605009
9	Red Cable	1	EM43200011
10	Earth Clamp	2	EM22110005
11	Black Cable	1	EM43200012
12	Lower Pamel	1	EM33700089
13	Tramsformer	1	EM44105058
14	Tramsformer Thermostat	1	EM22210603
15	Rectifier	1	EM22400088
16	Complete Thermostat + Support	1	EM04600113
17	Fuse Holder Box	1	EM21690113
18	Fuse 120a	1	EM22220029
19	Small Fuse Cover	1	EM21690109

PARTS LIST AND DIAGRAM

BC150



No.	Description		Part No.
1	Handle	1	EM21600001
2	Upper Panel	1	EM33705108
3	Front Panel	1	EM33710281
4	On/Off Switch	1	EM22200002
5	Welding Current Switch	2	EM22200006
6	Ammeter	1	EM22600014
7	Input Cable W/Plug -13a Fuse	1	EM20220068
8	Cable Clamp	3	EM21605009
9	Red Cable	1	EM43200011
10	Earth Clamp 120a	2	EM22110005
11	Black Cable	1	EM43200012
12	Lower Panel	1	EM33700089
13	Transformer	1	EM44105067
14	Thermostat	1	EM22210014
15	Rectifier	1	EM22400042
16	Fuse Holder Box	1	EM21690113
17	Fuse 75a	1	EM22220031
18	Small Fuse Cover	1	EM21690109

7. BCI8OB and BC200B (Ref: Fig. 2).

1) Before charging or boosting ensure that the cells are filled with electrolyte to the correct level by adding distilled water where necessary.
2) 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 any electronically controlled system fitted to the vehicle such as engine management anti-theft alarm, alternator etc.
3) Check the mains supply is OFF and the amperage control knob **(1)** is in the OFF position.
4) Connect the red positive lead **(8)** to either the (+ve) 24V terminal **(6)**, or the (+ve) 12V terminal **(7)** as appropriate, by inserting the jack plug and twisting clockwise to a locked position.
5) Connect the appropriate lead to the unearthed battery terminal (on most modern cars this is the positive (+ve) terminal), then connect the other lead to the chassis (or a suitable engine bolt) away from the battery and fuel line.
6) Remove the battery filler caps during charging to prevent the build-up of dangerous gases within the battery.
7) Switch on the mains supply.
8) Turn the amperage control knob **(1)** clockwise to the position necessary to obtain the desired charging rate as indicated on the ammeter **(2)** (see notes below).
9) Keep the battery on charge until the ammeter **(2)** reads zero (or 0-2 amps), or has stopped moving down. Then switch the amperage control knob **(1)** back to the OFF position.

NOTE: The BC180B is fitted with a 3 position amperage control knob...the BC200B with a 6 position knob, giving a wider range of control.

10) When disconnecting the charger, disconnect **1.** supply, **2.** chassis conductor and **3.** battery conductor, **IN THAT ORDER.**

Important:

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 back panel (marked 'fuse') and replace the burnt fuse with an exact replacement. See page 10 for replacement fuses.

Notes on charging procedure.

* ***A complete charge is best done slowly in order to protect your battery. We recommend that the charging rate (amps) should not exceed 10% of the battery capacity rating (Amps hours) i.e., an average normal car battery has an Amp hour rating of approximately 40 A.H. so the charging rate should not exceed 4 amps (a complete charge should therefore take approximately 10 hours). Select the position on the amperage control knob (1) which indicates as near as possible this charging rate on the Ammeter gauge (2).***

** ***If a low amperage reading (2 amps or less) is seen on the Ammeter gauge (2) at any of the settings on the amperage control knob (1), it 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.***

WARNING: Do not attempt to recharge non-rechargeable batteries.

PROCEDURE FOR ENGINE STARTING

BC150 & BC170 (Re: Fig.1)

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 big 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 **(4)** is in the OFF position.

b) Connect the cables as for normal charging.

c) Check that the CHARGE/BOOST START switch **(2)** is in the BOOST position.

d) Switch the ON/OFF, switch to the ON position.

e) Turn the key in the vehicles ignition to 'start', and get an assistant to switch the CHARGE/ BOOST START switch **(2)** to CHARGE position **IMMEDIATELY** the engine starts, or after a **maximum of 5 seconds (BC150) or 10 seconds (BC170),** if the engine fails to start. Failure to do this may cause damage to some electronic equipment.

IMPORTANT: You must return the CHARGE/BOOST START switch to CHARGE position after a maximum of 5 seconds - 150 or 10 seconds - 170, on boost start. Wait 20 seconds - 150 or 60 seconds - 170, before repeating. Failure to do this may damage the battery and the Start 'N' Charge unit and may invalidate your guarantee.

BCI8O and BC200B (Re: Fig.2)

Note: We recommend that before attempting to boost start, you charge the battery for 10 to 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 mains supply is OFF and that the amperage controller knob **(1)** is in the OFF position.

b) Connect the cables as for normal charging.

c) Switch ON the mains supply.

d) Turn the key in the vehicles ignition to 'start', and get an assistant to hold the amperage control knob **(1)** in the BOOST START position.
Release the amperage control knob so that it reverts to the OFF position immediately the engine starts, or after a maximum of 10 seconds if the engine fails to start. Failure to do this may cause damage to some electronic equipment. If in doubt consult vehicle handbook or manufacturer.

IMPORTANT: You must return the amperage control switch to the OFF position after a maximum of 10 seconds on boost start, then wait at least 30 seconds before repeating. Failure to do this may damage the battery AND the Start 'N' Charge unit and may invalidate your guarantee.

NOTE: If the Start and Charge unit is overloaded at any time, a thermal cut out will automatically come into operation, rendering it inoperative. The BC180B & 200B are equipped with a thermal overload indicator (4) which will illuminate. Allow approximately 5-10 minutes, or wait for the indicator light to go out before using the unit again.

SPECIFICATIONS

MODEL	150	170	180B	200B
MAX CHARGE (AMPS)	15	20	20	30
MAX BOOST (AMPS)	140	160	180	200
BOOST/CHARGE (VOLTS)	12	12	12/24	12/24
BOOST START DUTY CYCLE	Max 5 secs ON 20 secs OFF	Max 10 secs ON 60 secs OFF	Max 10 secs ON 30 secs OFF	Max 10 secs ON 30 secs OFF
THERMAL OVERLOAD PROTECTION	YES	YES	YES	YES
DIMENSIONS (LxWxH) mm.	260X260X250	260X260X210	260X300X770	260X300X770
WEIGHT kg.	10	12.5	16	21
PART NO.	6210185	6210190	6210180	6220000

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
BC150	EM22220031	75	1
BC170	EM22220029	120	1
BC180B	EM22220029	120	1
BC200B	EM22220030	100	2

PARTS & SERVICE CONTACTS

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

PARTS & SERVICE TEL: 020 8988 7400

PARTS & SERVICE FAX: 020 8558 3622

or e-mail as follows:

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SERVICE: Service@clarkeinternational.com