

# CLAMPKE®

## Start·N·charge



### HEAVY DUTY BATTERY BOOSTERS / CHARGER

MODEL No. BC420N

OPERATING & MAINTENANCE  
INSTRUCTIONS



1206



## SPECIFICATIONS

Supply Voltage	230
Max Charge (Amps)	60 (cont)
Max Boost (Amps)	400
Boost/Charge (Volts)	12/24
Internal Fuse Part No.	EM22220012
Part No.	6225051



When disposing of this product, ensure it is disposed of according to all local ordinances

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](mailto:Parts@clarkeinternational.com)**

**SERVICE: [Service@clarkeinternational.com](mailto:Service@clarkeinternational.com)**



Thank you for purchasing this CLARKE Battery Charger. This unit is suitable for charging and boosting 12 or 24 Volt lead acid 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.

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## 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 dealer 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.

## ELECTRICAL CONNECTION

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.

**WARNING: A 13 Amp (BS1363) plug is not suitable.**

The maximum input current for this unit is **48amps**

**WARNING: THIS APPLIANCE MUST BE EARTHED**

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  $\perp$  or coloured GREEN or GREEN & YELLOW.
- Connect BROWN cord to terminal marked with a letter L or coloured RED
- Connect BLUE cord to terminal marked with a letter N or coloured BLACK

**If in doubt, consult a qualified electrician.**

## PARTS IDENTIFICATION

- A - Mains Indicator Lamp
- B - Current Control Knob
- C - Timer Control Knob
- D - 12 V Positive Terminal
- E - 24 V Positive Terminal
- F - Thermal Overload Indicator (yellow)
- G - Boost Start Indicator (red)
- H - Battery Charge Indicator (green)



## PROCEDURE FOR NORMAL CHARGING

**NOTE: All references in brackets refer to 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 mains supply is OFF and the Current Control Knob (B) is in the 'O' 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.

**NOTE: Ensure the lead is plugged into the 12V or 24V receptacle, depending upon the voltage of the battery to be charged**

- 5) Remove the battery filler caps during charging in order to prevent the build up of dangerous gases within the battery.
- 6) Switch ON the mains supply
- 7) Turn the Current Control Knob (B) to the position necessary to obtain the required charge rate, as indicated on the ammeter.
- 8) Keep the battery on charge until the Ammeter reads zero (or 0-2 amps) or has stopped moving down, then turn the Current Control Knob (B) to the OFF position.
- 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 'Specifications' for replacement fuses.*

## CHARGING WITH TIMER

1. Follow the same instructions as for NORMAL CHARGING UP TO AND INCLUDING PARA. 6
2. Turn the timer control knob (C) clockwise to the desired charging time setting.
3. Switch ON the mains supply.
4. Turn the Current Control Knob (B) clockwise to position 5 or 6, to obtain the desired charging rate as indicated on the ammeter.

### **Notes on charging procedure.**

- \* *A complete charge is best done slowly in order to protect your battery We ecommend the charging ratebe no more than 10% of the battery capacity rating (AH). eg. a typical battery has a rating of 40 Ampere Hours, therefore the charging rate should be 4 amps , and a complete charge will take 10 hours.*
- \*\* *If a low current reading (2 amps or less) is seen on the gauge, 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.  
Check the SG of the battery with a hydrometer*

## **PROCEDURE FOR ENGINE STARTING**

**Note:** *We recommend that where possible, and 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 however, 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 to ensure the mains supply switch is OFF and the Current Control Switch is in the OFF (O) position.
- b) Connect the cables as for normal charging.
- c) Switch ON the mains supply - the green lamp will illuminate.
- d) Turn the Current Control Knob to the 'START' position.
- d) Turn the key in the vehicles ignition to 'start'.

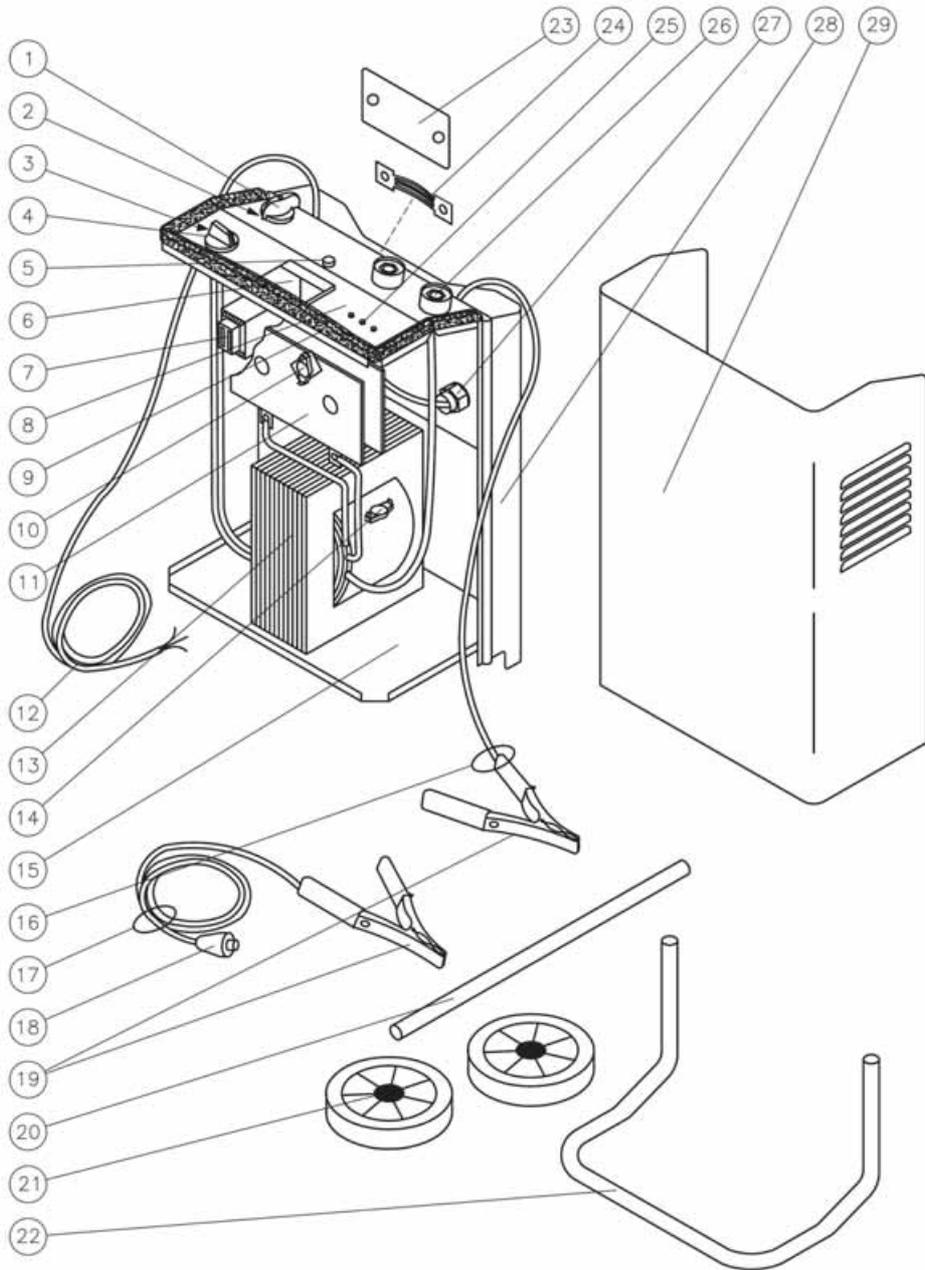
This equipment is provided with an automatic boost start function. The current required to start an engine will be detected by the systems' electronics and supplied to the starter motor. As the load reduces, the system will compensate accordingly.

Once the engine has started, the system will automatically shut down the boost start function.

At this point, switch the Current Control Knob to the OFF (O) position, and disconnect the leads from the battery in the same manner as that for normal charging.

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

## PARTS DIAGRAM



## PARTS LIST

No.	Description		Part No.
01	Knob D.38	1	21690318
02	Switch 12A	1	22205133
03	Timer 16A 250V	1	22215001
04	Timer Knob	1	21690034
05	Green Pilot-lamp 220V L=600	1	22610008
06	Ammeter 60A	1	22600018
07	Contactora 220V 10A	1	22225006
08	Upper Control Panel	1	33710272
09	Front Frame	1	21690322
10	Complete Thermostat 1001+ Support	1	04600113
11	Rectifier PMS 20/2/2 CB	1	22400011
12	PVC Input Cable 3x2,5 M.2,5	1	20220020
13	Transformer	1	44105075
14	Thermostat Vebe 1301	1	04600276
15	Lower Panel	1	33700028
16	Black Cable 25sqmm W/Clamp 120	1	43200025
17	Red Cable 25sqmm 2,5M	1	43200024
18	Dinse Plug 25sqmm Cx20	1	22100001
19	Clamps 120A Red-black	1	04600067
20	Wheels-axle D.20 L=488	1	55200001
21	Wheel D.175 Rubber. Hole D.20	2	21625009
22	Handle	1	33725080
23	Fuse Box Cover Dim.60x175	1	21690110
24	Fuse 300A	1	22220011
25	C.P.S. Control P.C.B.	1	22700015
26	Female Dinse Plug 25sqmm	2	22100002
27	Cable Clamp D.10 + Screw	2	04600234
28	Front Panel	1	33700722
29	Cover Panel	1	33705346

# WIRING DIAGRAMS

