

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.



IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.

The use of symbols in this document is to attract your attention to possible danger. The symbols and warnings themselves do not eliminate any danger, nor are they substitutes for correct accident prevention measures.

1. SAFETY INSTRUCTIONS

1.1. ELECTRICAL SAFETY. **WARNING!** It is the user's responsibility to read, understand and comply with the following:

You must check all electrical equipment and appliances to ensure they are safe before using. You must inspect power supply leads, plugs and all electrical connections for wear or damage. You must ensure the risk of electric shock is minimised by the installation of appropriate safety devices. An RCCB (Residual Current Circuit Breaker) should be incorporated in the main distribution board. We also recommend that an RCD (Residual Current Device) is used with all electrical products. It is particularly important to use an RCD with portable products that are plugged into an electrical supply not protected by an RCCB. If in doubt consult a professional electrician. You may obtain a Residual Current Device by contacting your Sealey dealer. **You must** also read and understand the following instructions concerning electrical safety.

1.1.1. The **Electricity At Work Act 1989** requires all portable electrical appliances, if used on business premises, to be tested by a qualified electrician, at least once a year, using a Portable Appliance Tester (PAT).

1.1.2. The **Health & Safety at Work Act 1974** makes owners of electrical appliances responsible for the safe condition of those appliances, and the safety of appliance operators. **If in any doubt about electrical safety, contact a qualified electrician.**

1.1.3. Ensure the insulation on all cables and the product itself is safe before connecting to the mains power supply.

See 1.1.1. & 1.1.2. above and use a Portable Appliance Tester (PAT).

1.1.4. Ensure that cables are always protected against short circuit and overload.

1.1.5. Regularly inspect power supply, leads, plugs and all electrical connections for wear or damage, especially power connections, and to ensure that none is loose.

1.1.6. **Important:** Ensure the voltage marked on the product is the same as the electrical power supply to be used, and check that plugs are fitted with the correct capacity fuse. A 13Amp plug may require a fuse smaller than 13Amps for certain products (*subject to 1.1.10. below*) - see fuse rating at right. **DO NOT** pull or carry the powered appliance by its power supply lead. Products such as welders must not be pulled or carried by their output cables.

1.1.8. **DO NOT** pull power plugs from sockets by the power cable.

1.1.9. **DO NOT** use worn or damage leads, plugs or connections. Immediately replace or have repaired by a qualified electrician. Where a U.K. 3 pin plug with ASTA/BS approval is fitted, in case of damage, cut off and fit a new plug according to the following instructions (discard old plug safely).


(UK only - see diagram at right). **Ensure the unit is correctly earthed via a three-pin plug.**

a) **Connect the GREEN/YELLOW earth wire to the earth terminal 'E'.**

b) **Connect the BROWN live wire to the live terminal 'L'.**

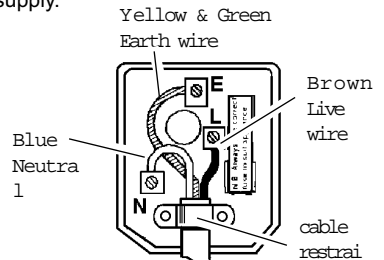
c) **Connect the BLUE neutral wire to the neutral terminal 'N'.**

After wiring, check there are no bare wires, that all wires have been correctly connected and that the cable restraint is tight.

Double insulated products are often fitted with live (BROWN) and neutral (BLUE) wires only. Double insulated products are always marked with this symbol . **To re-wire, connect the brown & blue wires as indicated above. DO NOT connect the brown or blue wires to the earth terminal.**

1.1.10. **NOTE:** If this product requires more than a 13Amp electrical supply, then **NO** plug is fitted. **You must** therefore contact a qualified electrician to ensure a 30 amp fused supply is available. We recommend you discuss the installation of a industrial round pin plug & socket with your electrician.

1.1.11. **Cable extension reels.** When a cable extension reel is used it should be fully unwound before connection. A cable reel with an RCD fitted is recommended since any product which is plugged into the cable reel will be protected. The section of the cores in the cable is important and should be at least 1.5mm², but to be absolutely sure that the capacity of the cable reel is suitable for this product and for others that may be used in the other output sockets, we recommend the use of 2.5mm² section.



FUSE RATING
THE PLUG FITTED TO PRODUCT
MUST BE EQUIPPED WITH A
13 Amp FUSE



DANGER! BE AWARE, LEAD-ACID BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS VERY IMPORTANT TO READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY, EACH TIME YOU USE THE CHARGING EQUIPMENT. Follow these instructions and those published by the battery and vehicle manufacturers, vehicle manufacturer and the maker of any equipment you intend to use in the vicinity of the battery. Remember to review warning marks on all products and on engines.

1.2. PERSONAL PRECAUTIONS

- 3 Ensure there is another person within hearing range of your voice, or close enough to come to your aid, should a problem arise when working near a lead-acid battery.
- 3 Wear safety eye protection and protective clothing. Avoid touching eyes while working near battery.
- 3 Have fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- 3 Wash immediately with soap and water if battery acid contacts skin or clothing. If acid enters eye, flush eye immediately with cool, clean running water for at least 15 minutes and seek immediate medical attention.
- 3 Remove personal metallic items such as rings, bracelets, necklaces and watches. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, which may cause severe burns.
- 3 Ensure hands, clothing (especially belts) are clear of fan blades and other moving or hot parts of engine, remove ties and contain long hair.
- 7 **DO NOT** smoke or allow a spark or flame in the vicinity of battery or engine.



1.3. GENERAL SAFETY INSTRUCTIONS

- 3 Familiarise yourself with the application and limitations of the booster/charger as well as the specific potential hazards relating to booster/chargers. Also refer to the vehicle manufacturer's hand book. **IF IN ANY DOUBT CONSULT AN ELECTRICIAN.**
- 3 Ensure the booster/charger is in good order and condition before use. If in any doubt do not use the unit and contact an electrician.
- 3 Only use recommended attachments and parts. To use non-recommended items may be dangerous and will invalidate your warranty.
- 3 Use the booster/charger in the horizontal position only and ensure it is placed on a stable surface which will adequately support its weight.

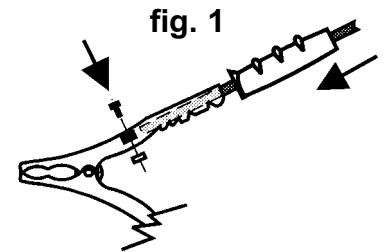
- 3 Check the 'Off' LED to ensure the booster/charger is registering 'Off' before handling the power clamps.
- 3 Ensure the booster/charger is 'Off' before attaching/detaching the power clamps to/from the battery.
- 3 Keep tools and other items away from the engine, and ensure you can see the battery and working parts of engine clearly.
- 3 Ensure the voltage on the booster/charger is set to the same voltage as the battery.
- 3 If battery has caps to access the battery fluid, remove the caps and check the fluid level before connecting the power clamps. If necessary top-up the battery with distilled water by referring to the battery manufacturer's instructions (*Apply the personal safety precautions described in part 1.2*).
- 3 The cables may become hot with excessive use. If so allow a few minutes for them to cool down before attempting to re-use.
- 3 If the booster/charger receives a sharp knock or blow the unit must be checked by a qualified service agent before using.
- 3 If the battery terminals are corroded or dirty clean them before attaching the power clamps.
- 3 Keep children and unauthorised persons away from the working area.
- 7 DO NOT dis-assemble the booster/charger for any reason. The booster/charger must only be checked by qualified service personnel.
- 7 DO NOT try to charge a non-rechargeable battery.
- 7 DO NOT try to start engine or to charge battery if battery is frozen.
- p **WARNING!** DO NOT drop metal tools in the battery area, or allow them to touch the battery terminals, to prevent the risk of sparking, short circuit and possible explosion.
- 7 DO NOT allow power clamps to touch each other or to make contact with any of the vehicle's metallic parts.
- 7 DO NOT cross connect power leads from booster/charger to battery. Ensure positive (+) (RED) is to positive and negative (-) BLACK is to negative. If symbols cannot be distinguished, remember that the negative terminal is the one directly connected to the vehicle bodywork.
- 7 DO NOT pull the cables or clamps from the battery terminals.
- 7 DO NOT use the booster/charger outdoors, or in damp, or wet locations, and DO NOT operate within the vicinity of flammable liquids or gases.
- 7 DO NOT use booster/charger inside vehicle or inside engine compartment. Ensure there is sufficient ventilation, and do not cover or obstruct booster/charger ventilation louvres.
- 7 DO NOT use this product to perform a task for which it has not been designed.
- p **WARNING!** DO NOT simultaneously charge batteries of different capacities or discharge levels .
- p **WARNING!** If a fuse blows, ensure it is replaced with an identical fuse type and rating.
- 3 When not in use, store the booster/charger carefully in a safe, dry, childproof location.

2. INTRODUCTION & SPECIFICATIONS

The Electrocharge 160 is a booster/charger with 230Volt ac input and an electronically controlled 12/24 V dc output. The unit is intended for charging free-electrolyte lead-acid batteries as used in motor vehicles (petrol and diesel), motorcycles and boats. The unit is also capable of supplying up to 30 amps to assist engine starting. The equipment casing meets IP20.

Power supply	.230V ac - 1ph
Supply current	.6A max. (starting) 3.6A max. (charging)
Output voltage	.12/24V
Charge current	.16A max
Start boost current	.30A max.
External fuse	.T5A
Internal fuse	.T63mA

The unit is ready for use with the exception of the Power Clamps which must be assembled as in fig.1.



3. OPERATING MODES

p **WARNING!** Ensure you have read and understood safety and operational instructions before connecting Electrocharge 160 power clamps to the battery. Only when you are sure that you understand the operating modes and procedures is it safe to proceed with the actual charging process.

3.1. OPERATING MODES

There are two operating modes as follows:

3.1.1. BOOST MODE (fig. 2. A).

In the 'Boost' mode the booster/charger micro-processor automatically controls current/voltage for starting and limits current output to 5 seconds in every 25.

3.1.2. CHARGE MODE (fig. 2. B).

The booster/charger will supply the selected charging current for up to ten hours. If the battery reaches the 'fully charged' voltage before this time the booster/charger will automatically switch from current to voltage mode. If, at ten hours, the battery voltage has not reached this level then charging will continue for a further two hours. To determine the charging current to select, take the battery capacity (Ah) and divide by 10 (h)

Example: Battery capacity = 65Amp.hours

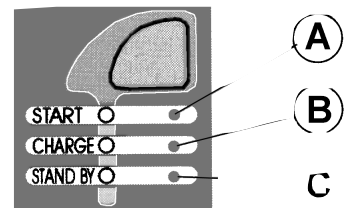
Nominal charge time = 10 hours

65Ah ÷ 10h = **6.5A**, the required charging current. Select nearest available - in this case 5A

3.1.3. STAND-BY (fig. 2. C).

The 'Stand-by' function produces an auxiliary output, 12Vdc 0.8A, which will maintain the vehicle's essential electronic functions whilst the battery is disconnected for charging. Connect the auxiliary power lead to the cigarette lighter socket on the vehicle before disconnecting the battery. This function is automatically available with either of the above modes.

fig. 2



4 THE CONTROL PANEL

View front control panel and cross reference to fig.3 in these instructions to fully familiarise yourself with the Electrocharge 160. Successful selection of a mode or function will be indicated by illumination of the appropriate LED and an audible signal.

4.1. BATTERY VOLTAGE SELECTION (fig 3. 1).

This key permits selection of the battery voltage. The voltages available are: **12 & 24 V**.

4.2. OPERATING MODE SELECTION (fig. 3. 2).

This key will select one of the following operating modes:

CHARGE (+ STAND-BY), BOOST (+ STAND-BY)

- Selection is performed by pressing the button until the LED display corresponds with required mode or setting.
- 'Stand-by' function provides a 12Volt 0.8A stabilised supply to power essential vehicle functions via the cigarette lighter socket. This function is available with charging/starting and is not switched off when booster/charger is 'Off' (see para. 3.1.3.)
- 'Charge' function permits charging of the battery at a preset constant current for a 10 hour period, but with the following automatic adjustments:
 - If the initial battery voltage is very low, a small current (2A) will be delivered until 1.5 V/cell is reached.
 - When 1.5V/cell has been achieved the booster/charger will charge at the preset current.
 - If the battery is not fully charged at the end of the 10 hour period, charging is extended for a further two hours after which the booster/charger will automatically switch off.
 - If, however, the battery reaches full charge before the end of the set time, booster/charger will then automatically switch current off.
- 'Boost' provides starting boost current, *at a constant voltage*, in cycles of **5 seconds 'ON', 20 seconds 'OFF'**.

4.3. CHARGE CURRENT (fig. 3. 3).

This key is used to select the required charging current.

The charge current settings are: **2, 5, 8, 12 & 16 Amps**.

4.4. 'ON' (fig. 3. 4).

Identified by 'I', this key switches on starter/charger output.

Important: before pressing 'On' key ensure you have selected all required settings and power clamps are correctly attached to battery terminals. If 'Boost' has been selected booster/charger will begin to deliver current only when the vehicle starter is operated.

4.5. 'OFF' (fig. 3. 5).

This key, identified by an 'O', switches off current during 'Charge' or 'Boost' modes.

WARNING! When 'Off' key is activated, the booster/charger remains fully powered (230v supply is NOT interrupted) and the 'stand-by' output is maintained.

4.6. DISPLAY (fig. 3. 6).

Two displays can be selected with this key:

- 'I' Current (Amps) in 'Charge' or 'Boost' modes.
- 'V' Output voltage.

4.7. BATTERY CHARGE STATUS INDICATOR (fig. 3. 7).

Three LEDs indicate battery charge status.

'100%' LED - battery is charged to a voltage equal to, or higher than, the end-of-charge voltage.

'50%' LED - battery is still being charged but the charge level is acceptable.


'0%' LED - battery is flat.

4.8. ALARMS & SAFETY CUT OUT DEVICE (fig. 3.8).

The machine is protected against overloads, short circuits and inversion of polarity by means of an internal electronic safety cut out device.

Three LEDs indicate status:

 - indicates thermal cut-out to protect against overloads/short circuits.

 - indicates low, or no battery voltage.


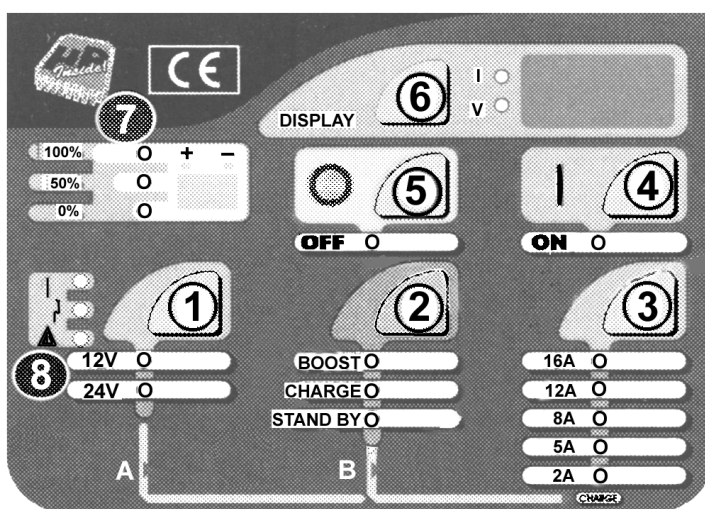
 - indicates inversion of polarity.

fig. 3



Note: All alarm conditions stop the delivery of current to the battery but do not affect the auxiliary power supply. This is equipped with independent safety devices, thus ensuring that power to the vehicle electronics is uninterrupted.

5. BATTERY CHARGING & ENGINE STARTING



WARNING! Ensure you have read, understand, and follow all safety features and key functions mentioned in these instructions before attempting to use the Electrocharge 160.

5.1. BATTERY CHARGING (Refer to fig.4)

- 5.1.1. Establish the battery voltage (noting that two 12V batteries in series will require a 24V charge), capacity and required charging current (see para.3.1.2.).
- 5.1.2. **Ensure power clamps are electrically isolated from each other and that the auxiliary (cigarette lighter) plug is protected with the insulating sleeve provided.**
- 5.1.3. Connect booster/charger to mains power supply, switch on (switch at rear of unit) and ensure 'Off' LED is illuminated.
- 5.1.4. Press keys 1 (voltage), 2 (mode) and 3 (charging current) to select required output.

Note: If battery is to be disconnected for charging and power is required to maintain vehicle electronics, plug 'Stand-by' auxiliary cable into cigarette lighter socket. Then disconnect earth strap/cable from battery negative (-) terminal.

WARNING! If positive cable also has to be disconnected (battery removal) remember that this cable will be 'live' even after disconnection, due to 'Stand-by' supply, and must be insulated from surrounding metalwork/tools - secure heavy gauge plastic bag over cable end. Remove negative (-) cable BEFORE removing positive (+) cable to reduce the risk of sparking.

- 5.1.5. Connect power clamps to the battery terminals, ensuring correct polarity.
- 5.1.6. Finally, double check correct polarity of power clamps and then press 'ON' key (4). Charging will now operate automatically.

5.2. ENGINE STARTING

- 5.2.1. As steps 5.1.1. to 5.1.3. above.
- 5.2.2. Connect power clamps to the battery terminals, ensuring correct polarity.
- 5.2.3. Press keys 1(voltage), 2 (mode), 3 (charging current), and 4 (on) to deliver a brief charge to the battery. Select voltage display (key 6) and check for increase in output voltage.

Note: Do not attempt to start engine with booster/charger if battery has been disconnected

- 5.2.4. When an increase in output voltage is noted, press key 2 to switch from 'Charge' to 'Boost'.
 - 5.2.5. Operate the vehicle starter (nothing will happen until the starter is operated) and the booster/charger will deliver cycles of 5 seconds starting current, followed by 20 seconds 'out of service' time.
- CAUTION!** The 'out of service' time may be shortened by switching the booster/charger 'Off' and then 'On' again. However doing this may well cause overheating. Therefore we recommend that the 20 second 'out of service' time is maintained when repeatedly trying to start a stubborn engine.

5.3. WHEN CHARGING/STARTING IS COMPLETE

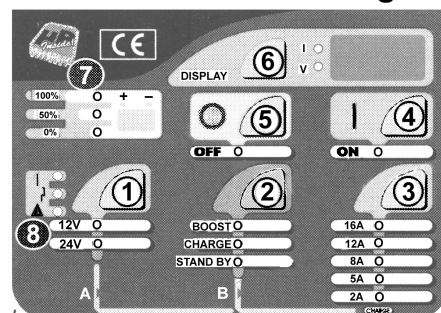
- 5.3.1. When battery is charged/engine started, **switch the booster/charger to 'Off'**.
- 5.3.2. Detach power clamps from battery terminals. **Do not** remove power clamps while the booster/charger is 'On'.
- 5.3.3. Carefully wipe any spillage of acid from the battery top and replace the caps.
- 5.3.4. Refit battery, if removed, and reconnect battery cable(s), if disconnected.
- 5.3.5. Disconnect the auxiliary cable if used.
- 5.3.6. Switch booster/charger off at mains switch on rear of unit and then switch off and disconnect mains supply.
- 5.3.7. Ensure all tools and other items are removed before closing the engine/battery compartment.
- 5.3.8. Ensure the booster/charger is clean, and store in a safe, dry, childproof location.

5.4. CHARGING MORE THAN ONE BATTERY

Simultaneous charging of several batteries may be made. This procedure must however be performed with *great caution*, and additional equipment will be required. Contact your Sealey dealer for information.

WARNING! DO NOT simultaneously charge different types of batteries or batteries with different capacities or levels of discharge.

fig. 4



Declaration of Conformity We, the sole UK importer, declare that the product listed below is in conformity with the following EEC standards and directives.

Booster/Charger

Model: Electrocharge 160

89/336 EEC (EMC) + Amendments
73/23 EEC (LVD)



The construction file for this product is held by the Manufacturer and may be inspected on request by contacting Jack Sealey Ltd

Signed by Mark Sweetman  1st May 1999

For Jack Sealey Ltd. Sole UK importer of Sealey Power Products.

NOTE: It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

IMPORTANT: No liability is accepted for incorrect use of this equipment

WARRANTY: Guarantee is 12 months from purchase date, proof of which will be required for any claim.

INFORMATION: For a copy of our latest catalogue call us on 01284 757525 and leave your full name and address, including postcode.

SEALEY POWER PRODUCTS

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