



INSTRUCTIONS FOR:

# SUPERSTART STARTER/CHARGERS

## SUPERSTART220.V3, SUPERSTART310.V2,

## SUPERSTART320/1.V2, SUPERSTART410.V2, SUPERSTART420/1.V3

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will give you years of trouble free performance if these instructions are carefully followed and the product is correctly maintained.



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

### 1. SAFETY INSTRUCTIONS

- ❑ **IMPORTANT!** Small battery chargers are supplied with plugs fitted. Starter/chargers, however, can draw more than 13 amps from the mains supply when being used to crank large engines. For this reason starter/chargers are not supplied with a fitted plug. We recommend that for maximum performance your starter/charger is plugged into a 30 amp electrical supply, and further recommend that you consult an electrician in order to fit an appropriate plug.

The following statements on electrical safety must also be read and understood before using the starter/charger.

#### 1.1. ELECTRICAL SAFETY

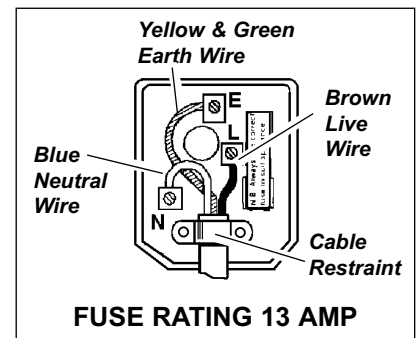
- ❑ **WARNING! It is the user's responsibility to check the following:**

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 and 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 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 qualified 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 person, using a Portable Appliance Tester (PAT), at least once a year.
- 1.1.2. The Health & Safety at Work Act 1974 makes owners of electrical appliances responsible for the safe condition of the appliance and the safety of the appliance operator. If in any doubt about electrical safety, contact a qualified electrician.
- 1.1.3. **DO** ensure the insulation on all cables and the product itself is safe before connecting to the mains power supply. See 1.2.1. above and use a Portable Appliance Tester (PAT).
- 1.1.4. **DO** ensure that cables are always protected against short circuit and overload.
- 1.1.5. **DO** regularly inspect power supply, leads, plugs for wear and damage and all electrical connections to ensure that none is loose.
- 1.1.6. **DO** check that the voltage marked on the product is the same as the electrical power supply to be used and check that all fused plugs are fitted with the correct capacity fuse.
- 1.1.7. **DO NOT** pull or carry the powered appliance by its power supply lead and do not pull the plug by the cable. Products must not be pulled or carried by their output cables.
- 1.1.8. **DO NOT** use worn or damage leads, plugs or connections. Immediately replace or repair by qualified persons.
- 1.1.9. We do not recommend the use of an extension cable with the charger as the power output may be seriously reduced.
- 1.1.10. Subject to 1.1. above, the following instruction is for fitting a 13 amp plug since this will be adequate for use when charging and when starting engines in small vehicles. No responsibility is accepted in the event that the product is misused and/or used with a 13 amp plug when a 30 amp supply is required.

- a) **Connect the GREEN/YELLOW earth wire to the earth terminal 'E'.**
- b) **Connect the BROWN live wire to live terminal 'L'.**
- c) **Connect the BLUE neutral wire to the neutral terminal 'N'.**
- d) **After wiring, check that there are no bare wires, that all wires have been correctly connected, that the external insulation extends beyond the cable restraint and that the restraint is tight.**



**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 STARTER CHARGER. Follow these instructions and those published by the battery and vehicle manufacturers and the manufacturer 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

- ✓ Ensure there is another person within hearing range of your voice and close enough to come to your aid, should a problem arise when working near a lead-acid battery.
- ✓ Wear safety eye protection and protective clothing. Avoid touching eyes while working near battery.
- ✓ Have fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- ✓ 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.
- ✓ 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 would cause severe burns.
- ✓ Ensure hands, clothing (especially belts) are clear of fan blades and other moving or hot parts of engine, remove ties and contain long hair.
- x **DO NOT** smoke or allow a spark or flame in the vicinity of battery or engine.



### 1.3. GENERAL SAFETY INSTRUCTIONS

- ✓ Familiarise yourself with the application, limitations and potential hazards relating to starter/chargers. Also refer to the vehicle manufacturer's hand book. *IF IN ANY DOUBT CONSULT AN ELECTRICIAN.*
- ✓ Ensure that the starter/charger is in good order and condition before use. If in any doubt do not use the unit and contact an electrician.
- ✓ Only use recommended attachments and parts. To use unauthorised items may be dangerous and will invalidate your warranty.
- ✓ Use the starter/charger in the normal upright position only.
- ✓ Check the 'Off' LED to ensure the starter/charger is registering 'Off' before handling the power clamps.
- ✓ Ensure the starter/charger is 'Off' before attaching/detaching the power clamps to/from the battery.
- ✓ Keep tools and other items away from the engine and ensure that you can see the battery and moving parts of the engine clearly.
- ✓ Ensure that the starter/charger output voltage is set to the same voltage as the battery.
- ✓ 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 1.3*).
- ✓ The cables may become hot with excessive use. If so, allow a few minutes for them to cool down before using again.
- ✓ If the starter/charger receives a sharp knock or blow it must be checked by a qualified service agent before using.
- ✓ If the battery terminals are corroded or dirty clean them before attaching the power clamps.
- ✓ Keep children and unauthorised persons away from the work area.
- ✗ DO NOT dis-assemble the starter/charger for any reason. The starter/charger must only be checked by qualified service personnel.
- ✗ DO NOT try to charge a non-rechargeable battery.
- ✗ DO NOT try to start engine, or to charge battery, if battery is frozen.
- ☐ **WARNING!** *To prevent the risk of sparking, short circuit and possible explosion DO NOT drop metal tools in the battery area, or allow them to touch the battery terminals.*
- ✗ DO NOT allow power clamps to touch each other or to make contact with any metallic parts of the vehicle.
- ✗ DO NOT cross connect power leads from starter/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.
- ✗ DO NOT pull the cables or clamps from the battery terminals and DO NOT remove power clamps while the starter/charger is 'On'.
- ✗ DO NOT use the starter/charger outdoors, or in damp or wet locations and DO NOT operate within the vicinity of flammable liquids or gases.
- ✗ DO NOT use starter/charger inside vehicle or inside engine compartment. Ensure there is sufficient ventilation and do not cover or obstruct starter/charger ventilation louvres.
- ✗ DO NOT use this product to perform a task for which it is not designed.
- ☐ **WARNING!** *Simultaneous charging of batteries is possible but must be done with great caution by a qualified person. Contact your Sealey dealer for information and accessories. DO NOT charge in series two batteries of differing type, capacity, or levels of discharge.*
- ☐ **WARNING!** *If a fuse blows, ensure it is replaced with a fuse of identical type and rating.*
- ✓ When not in use, store the starter/charger carefully in a safe, dry, childproof location.

## 2. SPECIFICATIONS

	S/START220.V3	S/START310.V2	S/START320/1.V2	S/START410.V2	S/START420/1.V3
Output 12V Charge Peak (EN)	.40A (20A)	.40A (30A)	.45A (30A)	.50A (45A)	.65A (48A)
Output 24V Charge Peak (EN)	.40A (20A)	.40A (30A)	.45A (30A)	.50A (45A)	.65A (48A)
Output 12V Start Peak (EN)	.200A (120A)	.250A (170A)	.270A (180A)	.350A (280A)	.400A (300A)
Output 24V Start Peak (EN)	.200A (120A)	.250A (170A)	.270A (180A)	.350A (280A)	.400A (300A)
Input-Charge	.3A/6A	.3.5A/7A	.3.8A/7.5A	.5.5A/10A	.5.5A/11A
Input-Start	.15A	.20A	.22A	.26A	.27A
Input	.230V	.230V	.230V	.230V	.230V
Output	.12V/24V	.12V/24V	.12V/24V	.12V/24V	.12V/24V
Fuse ref. (quantity)	.120/122351 (1)	.120/122350 (2)	.120/121003 (1)	.120/122351 (2)	.120/122351 (2)
Pack of 20 fuses	.120/802260	.120/802259	.120/802029	.120/802260	.120/802260

## 3. OPERATING INSTRUCTIONS

- ☐ **WARNING!** Ensure that you read and understand all safety instructions before attempting to use the charger.



### 3.1. PREPARATION

It is important to correctly prepare for charging ensuring that you follow Section 1 safety requirements carefully. Check that the capacity of the battery is compatible with charger output. Follow any vehicle manufacturer's instructions regarding battery charging. Note special instructions for the charging of non-removable vehicle batteries.

- 3.1.1. Check battery to ensure that the POSITIVE and NEGATIVE terminals are clearly identifiable before removing the battery from the vehicle.
- 3.1.2. Disconnect and remove the battery from the vehicle and place in an appropriate safe area ready for charging.
- 3.1.3. Remove the battery electrolyte cover or caps to allow the gases produced by charging to escape.
- 3.1.4. Check that the electrolyte fluid level in the battery is above the plates. If not, add distilled water to cover them by 5-10mm. DO NOT touch the battery fluid as it is corrosive.
- 3.1.5. The correct charging status of the battery may be determined by using a hydrometer which will measure the specific density of the electrolyte. The following figures (kg/ltr) apply at 20°C: **1.28 = Fully charged, 1.21 = Half charged, 1.14 = Fully discharged.**

- ☐ **WARNING!** *Be cautious and vigilant as the electrolyte is highly corrosive sulphuric acid.*

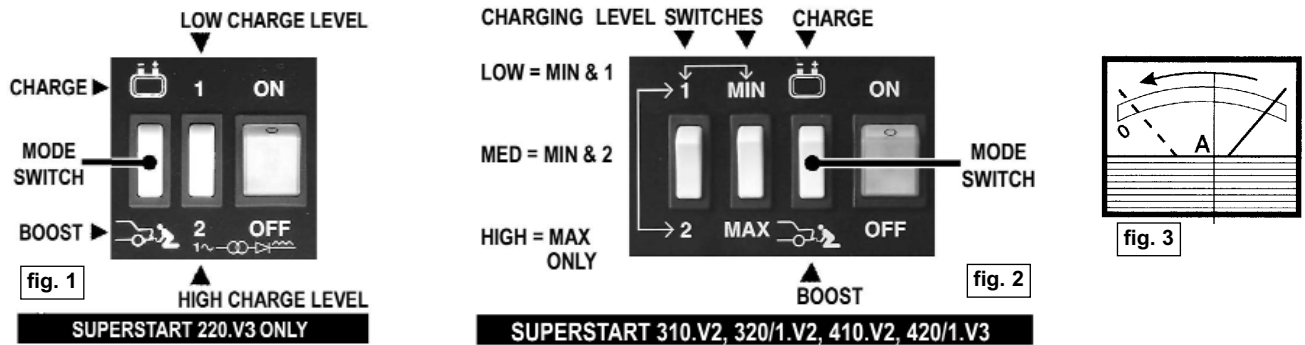
### 3.2. CONNECTING CHARGER TO BATTERY

- 3.2.1. Ensure that the battery charger is unplugged from the mains power supply before connecting power leads to the battery.
- 3.2.2. For chargers with dual voltage output, set the charger voltage to match that of the battery (i.e. 12 or 24 volts) by connecting the positive (red) clamp lead to either the 12 volt + output terminal or the 24 volt + output terminal as appropriate.
- 3.2.3. Check the charger clamps and battery terminals to ensure that they are clean and free from oxidation.
- 3.2.4. Connect the charger POSITIVE (Red or +) lead to the POSITIVE (+) terminal of the battery and the NEGATIVE (Black or -) lead to the NEGATIVE (-) terminal of the battery.

### 3.3. CHARGING THE BATTERY

- 3.3.1 Set the mode switch to 'Charge', indicated by the battery symbol.
- 3.3.2 Set the required rate of charge by using the charge level switches as shown in fig. 1 or fig. 2. Note that when MAX is selected in fig. 2 the switch marked 1 and 2 is over-riden.
- 3.3.3 Connect the charger to the mains power supply.
- 3.3.4 Check the current delivery to the battery by reading the ammeter on the front of the battery charger (fig. 3, ammeter face may vary by model). Initially, there will be a high rate of charge which will slowly decrease according to the capacity and condition of the battery.
- 3.3.5 When fully charged, the ammeter reading should be close to "0" and the electrolyte in the battery should begin to gas. Stop charging to protect the battery plates from oxidation and damage.
- 3.3.6 Switch the charger off and unplug from mains power. Disconnect the power clamps, clean the charger and store in a safe, dry area.
- 3.3.7 Replace the battery electrolyte cover or caps. Wipe up any splashes or spillage (remember that the electrolyte is a corrosive acid). Return the battery to the vehicle, secure according to the manufacturer's instructions and re-connect. Check to ensure that all tools are removed before closing the bonnet or boot.

**NOTE:** If the charger is connected to a fully charged battery the ammeter will show a low output. NO charging is necessary. DO NOT continue to charge a fully charged battery, as this will damage the battery. DO NOT leave a battery on charge unattended.



### 3.4. STARTING A VEHICLE WITH A FLAT BATTERY

- To charge a battery under normal circumstances refer to 3.3. To start a vehicle which has a flat battery proceed as follows:
- 3.4.1 Check the vehicle manufacturer's handbook and follow any special instructions. Check that the battery is in good condition.
  - 3.4.2 Ensure the starter/charger is disconnected from the mains power supply and, for models with dual voltage output, set the output voltage to the same as the vehicle battery: i.e. 12 or 24 volts.
  - 3.4.3 Check that the charger clamps and battery terminals are clean and free from oxidation.
  - 3.4.4 Without removing the cables that connect the battery to the vehicle, connect the charger POSITIVE (red) lead to the POSITIVE (+) terminal on the battery and the NEGATIVE (black) lead to NEGATIVE (-) terminal on the battery.
  - 3.4.5 Plug starter/charger into mains power supply, select a low rate of charge and turn on. Allow the battery to charge for 2-3 minutes.
  - 3.4.6 Turn starter/charger switch to the 'Boost' position (see figs. 1 & 2) and wait for approximately 25 seconds, to allow charge to build. Turn the vehicle ignition on and crank the engine for a MAXIMUM of 10 seconds. If the vehicle does not start, wait 30 seconds and then try again.
- WARNING!** If the vehicle does not start after two attempts, DO NOT continue as vehicle battery and electrical circuits may be damaged, and the fuse in the charger will blow. Disconnect the charger and investigate for vehicle faults.
- 3.4.7. When the vehicle is running successfully, switch the starter/charger off, unplug from the mains power and disconnect the power terminals from the battery. DO NOT attempt to start engine with starter/charger if the battery is disconnected from the vehicle.

## 4. FUSES

Your starter/charger is equipped with a safety fuse, or fuses, which will cut the power to the unit in the following circumstances:

- a) Overload - too high a current to the battery.
- b) Short circuit - clamps touch, or cross-connection to battery.
- c) Prolonged starting attempts.

Should the fuse blow take the following action:

- 4.1. Turn the unit off and disconnect from the mains power supply.
- 4.2. Allow the unit to cool down, establish the reason for failure and correct.
- 4.3. Replace the fuse (under fuse cover on control panel). Use only Sealey replacement fuses. DO NOT use a fuse with copper bridge or similar as these will damage your starter charger. Refer to Section 2 'Specifications' for fuse information and part numbers. We recommend that you hold 2 or 3 spare fuses with the starter/charger.

Note: The use of an incorrect fuse will invalidate your warranty.

## 5. DECLARATION OF CONFORMITY

### BATTERY STARTER/CHARGER

SuperStart 220.V3, 310.V2,  
320/1.V2, 410.V2 & 420/1.V3

89/336/EEC EMC Directive  
73/23/EEC LV Directive  
93/68/EEC CE Marking Directive

**Declaration of Conformity** We, the sole importer into the UK, declare that the products listed here are in conformity with the following standards and directives.



The construction files for these products are held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Mark Sweetman  27th May 2003

For Jack Sealey Ltd. Sole importer into the UK 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 the product. **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 and promotions call us on 01284 757525 and leave your full name and address, including postcode.



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