

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



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 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.

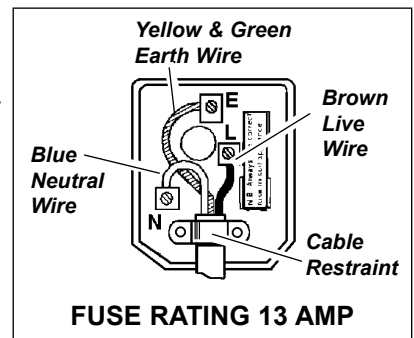


DANGER! BE AWARE, LEAD-ACID BATTERIES CONTAIN CORROSIVE SUBSTANCES. FOR THIS REASON, IT IS VERY IMPORTANT TO READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY, EACH TIME YOU USE THE CHARGING EQUIPMENT. Follow these instructions and those published by the battery and vehicle manufacturers and the manufacturer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

1.1. 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 1.1.1. 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 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 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.**

1.2. GENERAL SAFETY INSTRUCTIONS

- ✓ Familiarise yourself with the application, limitations and potential hazards relating to starter/chargers. Also refer to the vehicle manufacturer's handbook. **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 non-recommended items may be dangerous and will invalidate your warranty.
- ✓ Use the starter/charger in the horizontal position only and ensure it is placed on a stable surface which will adequately support the weight.
- ✓ 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 the voltage on the starter/charger is set to the same voltage as the battery.
- ✓ If the 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.
- ✓ The cables may become hot with excessive use. If so, allow a few minutes for them to cool down before attempting to re-use.
- ✓ If the starter/charger receives a sharp knock or blow the unit 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.
- x **DO NOT** dis-assemble the starter/charger for any reason. The starter/charger must only be checked by qualified service personnel.
- x **DO NOT** try to charge a non-rechargeable battery.
- x **DO NOT** try to start engine, or to change the battery, if the 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.

- X **DO NOT** allow power clamps to touch each other or to make contact with any metallic parts of the vehicle.
- X **DO NOT** cross connect power leads from starter/charger to battery. Ensure positive (+ or RED) is to positive and negative (- or BLACK) is to negative. If symbols cannot be distinguished, remember that the negative terminal is the one directly connected to the vehicle bodywork.
- X **DO NOT** pull the cables or clamps from the battery terminals and **DO NOT** remove power clamps while the starter/charger is 'On'.
- X **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.
- X **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.
- X **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 an identical fuse type and rating.
- ✓ When not in use, store the starter/charger carefully in a safe, dry, childproof location.

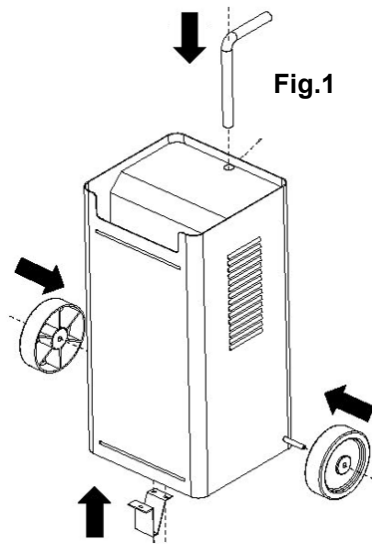
2. INTRODUCTION AND SPECIFICATION

2.1 Introduction

A hybrid starter/charger utilising traditional transformer power supply with advanced electronic control. The unit features digital read-out of the battery condition or battery charging current and current control setting to allow batteries to be fast-charged. Advanced electronics provide battery conditioning cycle for badly discharged batteries. Once a battery has been brought up to fully charged status, the Tronic function maintains the battery in this condition by reading the charged status of the cells. The unit also has the power to start vehicles fitted with batteries up to 700Ah.

2.2 Specification

| | |
|-----------------------------------|--------------------|
| Model No: | Tecstart420 |
| Output 12V Charge Peak (EN) | .45A(30A) |
| Output 24V Charge Peak (EN) | .45A(30A) |
| Output 12V Start peak (EN) | .300A (180A) |
| Output 24V Start Peak (EN) | .300A(180A) |
| Input - Charge | .4.5A |
| Input - Start | .28A |
| Power Input | 230V |
| Power Output | .12V/24V |
| Polarity Protection | Fuse |
| Fuse Reference | .120.829326(1) |

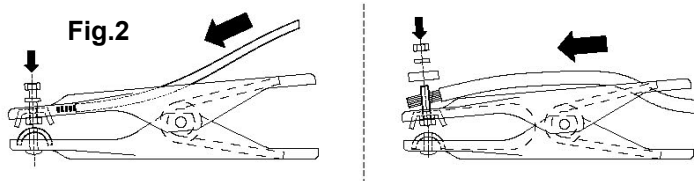


3. ASSEMBLY

3.1 Assemble the handle, wheels and foot as indicated in fig.1.

3.1.1 Battery clamps. (See fig.2)

Assemble the clamp with the red handle to the movable cable.
Assemble the clamp with the black handle to the fixed cable which comes directly out of the battery charger.

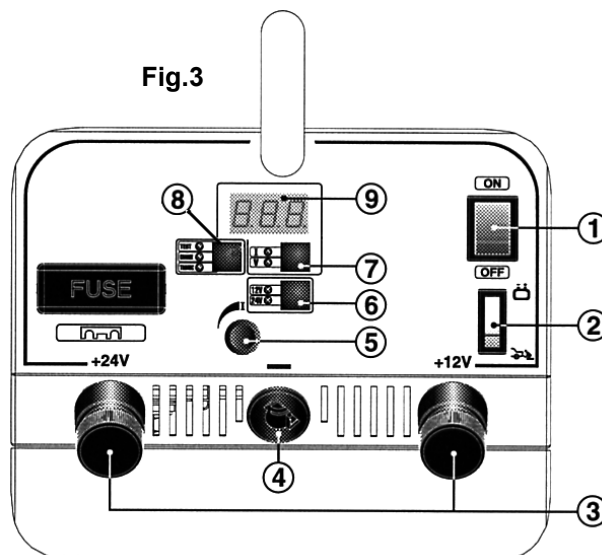


4. BATTERY CHARGER CONTROLS

4.1 Introduction

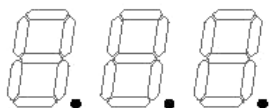
4.1.1 The Tecstart 420 is electronically controlled by a microprocessor. The adjustments and indicators are as shown in Fig.3.

- 1: ON/OFF Switch.
- 2: Selector switch BATTERY CHARGER/STARTER.
- 3: Positive sockets 12V/24V.
- 4: Negative output.
- 5: Charge current adjustment potentiometer.
- 6: 12V/24V battery voltage selection key.
- 7: Amps/Volts parameters selection key for the display.
- 8: Operating mode selection key TEST, CHARGE and TRONIC.
- 9: Display for showing the selected parameter. The display also shows several abbreviations indicating the present status or mode of the battery charger.



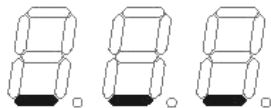
4.2 Battery Charge Status Indicators

- 4.2.1 A very flat, or sulphated, battery is indicated by the display at Fig.4.
- 4.2.2 A flat battery is indicated by the display at Fig.5.
- 4.2.3 A half-charged battery is indicated by the display at Fig.6.
- 4.2.4 A charged battery is indicated by the display at Fig.7.



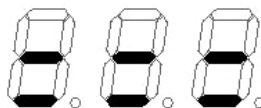
Very Flat or Sulphated Battery

Fig.4



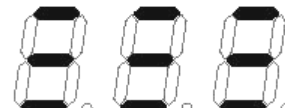
Flat Battery

Fig.5



Half-Charged Battery

Fig.6



Charged Battery

Fig.7

5. OPERATION

5.1 BEFORE CHARGING

NOTE: **DO NOT** allow the two clamps to come into contact when the battery charger is plugged into the mains, as blown fuses will result.

- 5.1.1 When the battery charger is used with a battery which is always connected to a vehicle, check the vehicle instruction manual under the heading Electric System or Maintenance. Before charging, it is advisable to disconnect the positive cable, which is part of the vehicle electrical system.
- 5.1.2 Check the battery voltage before connecting it to the battery charger. Remember the 3 caps correspond to a 6-volt battery, while 6 caps correspond to a 12-volt battery.
- 5.1.3 Occasionally, there may be two 12-volt batteries in series, in which case a voltage of 24-volts is required to charge both batteries. Ensure that they have the same specification, thus preventing uneven charging.
- 5.1.4 Before using the charger as a starter, charge it for several minutes. This limits the starting current and uses less current from the mains supply.

NOTE: Check the capacity (Ah) of the battery to be charged, ensuring that it is not less than the figure given in the data sheet.

- 5.1.5 Remove the battery charger caps to release the gas produced.
- 5.1.6 Ensure the electrolyte covers the battery plates. If it does not, add distilled water to cover the plates to between 5 - 10mm.
- WARNING!** Battery electrolyte is a highly corrosive acid.
- 5.1.7 Using a hydrometer, check the electrolyte specific gravity. The approximate density, at 20 °C is:
 - Charged battery; 1.28.
 - Half-charged Battery: 1.21.
 - Flat battery: 1.14.
- 5.1.8 Connect the RED charge clamp to the battery positive terminal (+ symbol).
- 5.1.9 Connect the BLACK charge clamp to the vehicle chassis, at a safe distance from the battery and the fuel pipe.
- 5.1.10 Insert the power cable into the socket and set the mains switch to ON.
- 5.1.11 Ensure the settings on the battery charger panel are compatible with the battery specifications. This check is carried out with the operating mode selection key in the TEST mode. See 8 in fig.3.
- 5.1.12 If there is an error in the connection or the setting, the display will show the flashing message "Err" until the problem has been solved. See fig.8.

5.2 CHARGING

- 5.2.1 On the battery charger front panel, set the operating mode selection key to CHARGE. See 8 in fig.3.
- 5.2.2 Set an appropriate charging current with the variable resistor (see 5 in Fig.3).
- 5.2.3 Monitor the battery voltage and charge current on the display using the V/I key (9 in Fig.3).

5.3 AUTOMATIC CHARGING

- 5.3.1 On the battery charger front panel, set the operating mode selection key to TRONIC. See 8 in fig.3. If the battery voltage is particularly low, the charger supplies a fixed current of about 2A until it reaches the safety voltage of 1.5 volts per element. Under these operating conditions the display shows the fixed current value alternating with "LCC". See fig.9.

NOTE: The battery charger will constantly monitor the voltage across the battery terminals, automatically supplying, or cutting off, the charge current as necessary.

- 5.3.2 Monitor the battery voltage and charge current on the display using the V/I key (9 in Fig.3).
- 5.3.3 When the supply current is cut off, the display will show the message at Fig.11.

5.4 SEALED BATTERIES

- 5.4.1 Charge the battery slowly, carefully monitoring the voltage across the battery terminals.
- 5.4.2 When the battery terminal voltage reaches **14.4V** for 12V batteries or **28.8V** for 24V batteries, stop charging.

5.5 MULTIPLE CHARGING

- WARNING! DO NOT** simultaneously charge different types of battery or batteries with different capacities or levels of discharge.
- 5.5.1 Simultaneous multiple charging should be carried out in series, since this enables monitoring of the current circulating in each battery. Refer to Fig.11.

NOTE: If two batteries with rated voltages of 12V are connected in series, set the battery voltage selection key on the front panel to 24V.

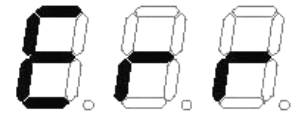
5.6 COMPLETION OF CHARGING

- 5.6.1 On the battery charger front panel, set the operating mode selection key to TEST. See 8 in fig.3.
- 5.6.2 Set the battery charger mains switch to OFF.
- 5.6.3 Disconnect the BLACK clamp from the chassis, or from the battery negative terminal (- symbol).
- 5.6.4 Disconnect the RED clamp from the battery positive terminal (+ symbol).
- 5.6.5 Store the battery charger in a dry location.

5.7 STARTING

- 5.7.1 On the battery charger front panel, set the CHARGER/STARTER selection switch to STARTER. See 2 in fig.3. The display will show the message at Fig.12.
- WARNING!** Ensure that the power supply line is fused or has an automatic switch corresponding to that shown in the data plate in the top lefthand corner of the control panel.
- 5.7.2 Rapidly charge the battery for between 5 to 10 minutes, to ease starting.

NOTE: The starting operation must strictly follow the the WORK/PAUSE cycle (e.g. START 3 seconds ON, 120s OFF, 5 cycles).
- 5.7.3 If the engine does not start, discontinue the operation, or the battery and/or the vehicle electrical system will be damaged.



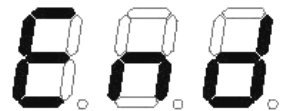
**Test Mode Correction/
Setting Error**

Fig.8



**Charge and/or Tronic
Mode Charge Current
Limitation ON**

Fig.9



Mode Pause Phase

Fig.10

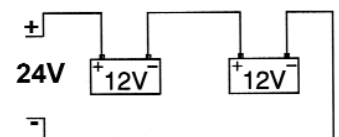


Fig.11



Starter Mode

Fig.12

6. ALARMS AND SAFEGUARDS

- 6.1 The overheating safeguard is displayed as shown in Fig.13. It shows that the battery charger is overheated. It will stay displayed, without supplying current, until it returns to normal temperature. Reset is automatic.
- 6.2 The battery charger has three protection levels, shown in Figs.14, 15 and 16. **L1** gives maximum protection with connection and/or setting error detection and charge current limitation. **L2** gives intermediate protection with connection and/or setting error detection. **L3** has ALL safeguards disabled.

NOTE: The user has the option of totally or partially removing the safeguards (3 PROTECTION LEVELS) by the following procedure:

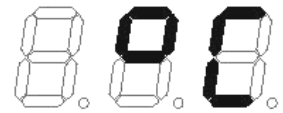
A) In test mode press the I/V key for about 5 seconds until the current is no longer displayed and either L1, L2 or L3 is displayed.

B) Turn the potentiometer to select the desired protection level

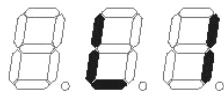
NOTE: The protection level shown initially depends on the actual position of the potentiometer.

Save the choice by pressing the I/V key.

NOTE: To enable the charging of very flat, or sulphated, batteries it may be necessary to disable all safeguards. Each time the battery charger is switched on, it automatically returns to the maximum protection level (L1).

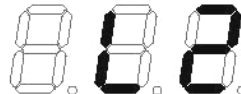


**Overheating
Protection**
Fig.13



Maximum Protection Level
Setting/Connection Detection ON
Charge Current Limitation ON

Fig.14



Intermediate Protection Level
Setting/Connection Detection ON

Fig.15



**All Safeguards
Disabled**

Fig.16

7. MAINTENANCE

7.1 Cleaning

7.1.1 Regularly clean the positive and negative terminals of oxidation, ensuring a good contact with clamps.

7.2 Use

7.2.1 Prior to each use, inspect the Tecstart420 for worn or damaged leads, broken plugs or connections.

7.2.2 Inspect the insulation of all cables prior to connection to the mains supply.

7.2.3 Ensure the cables are protected against short circuit and overload.

7.2.4 The above checks should also be carried out on the regular, annual Portable Appliance Test (PAT) test.

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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ELECTRONIC STARTER/CHARGER

MODEL:

TECSTART420


DECLARATION OF CONFORMITY

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

TECSTART420 Electronic Starter/Charger
73/23/EEC Low Voltage Directive
2004/108/EC EMC Directive
93/68/EEC CE Marking Directive

The construction file for this product is held by the Manufacturer and may be inspected, by a national authority, upon request to Jack Sealey Ltd.

Signed by Tim Thompson

CE 

22nd August 2007

For Jack Sealey Ltd. Sole importer
into the UK of Sealey Power Welders.

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 and promotions call 01284 757525 and leave your full name and address, including postcode.



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