



INSTRUCTION MANUAL FOR:

## START STARTER/CHARGERS

# START180, START240, START360, START560

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.

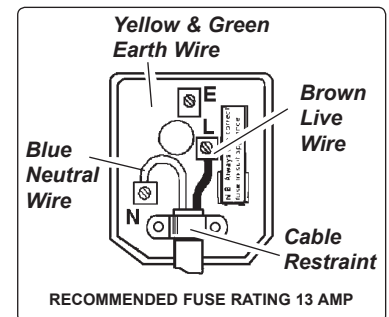


**IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS AND CAUTIONS. USE THIS PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE RETAIN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

### 1. SAFETY INSTRUCTIONS

#### 1.1. ELECTRICAL SAFETY

- IMPORTANT!** Small battery chargers are supplied with plugs fitted. Starter/chargers, however, can draw more than 13Amps 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 30Amp 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.
- 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 1.1.2. 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 are 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 rating of 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 13Amp 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 30Amp 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.
- ✗ **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.
- ✓ 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 1.2).
- ✓ 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 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.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they don't play with the appliance.

## 2. INTRODUCTION & SPECIFICATIONS

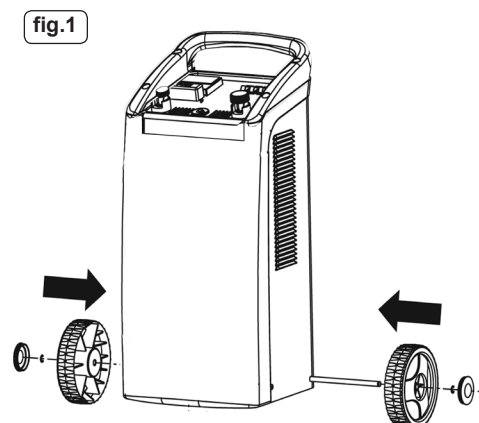
Heavy-duty starter/chargers for professional garages, workshops or bodyshops. The START range caters for all requirements from cars right up to commercial vehicles. Model numbers START360 and 560 feature a fast-charger timer device to enable rapid battery recovery with reduced risk of boiling the battery. All models have large wheels for easy mobility and feature analogue ammeters and switchable charge circuitry for accurate charge control.

	START180	START240	START360	START560
Input:	230V	230V	230V	230V
Output:	12V/24V	12V/24V	12V/24V	12V/24V
Output 12V Charge Peak (EN):	45A (30A)	60A (40A)	75A (50A)	90A (60A)
Output 24V Charge Peak (EN):	45A (30A)	60A (40A)	75A (50A)	90A (60A)
Output 12V Start Peak (EN):	180A (120A)	240A (160A)	360A (280A)	560A (350A)
Output 24V Start Peak (EN):	180A (120A)	240A (160A)	360A (280A)	560A (350A)
Input-Charge:	5A	6A	7A	9A
Input-Start:	15A	15A	18A	20A
Polarity Protection:	Fuse (2 x 50A)	Fuse (2 x 50A)	Fuse (1 x 110A)	Fuse (1 x 110A)

## 3. ASSEMBLY

### 3.1. GENERAL ASSEMBLY (See Fig.1)

- 3.1.1. Slide the axle through the casing at the bottom back corner. Slide a wheel onto each protruding end of the axle and retain them with the circlips provided. Push a plastic covering cap into the centre of each wheel.



## 4. OPERATING INSTRUCTIONS



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

### 4.1. 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.

- 4.1.1. Check battery to ensure that the POSITIVE and NEGATIVE terminals are clearly identifiable before removing the battery from the vehicle.
- 4.1.2. Disconnect and remove the battery from the vehicle and place in an appropriate safe area ready for charging.
- 4.1.3. Remove the battery electrolyte cover or caps to allow the gases produced by charging to escape.
- 4.1.4. 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.
- 4.1.5. 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.**

### 4.2. CONNECTING CHARGER TO BATTERY

- 4.2.1. Ensure that the battery charger is unplugged from the mains power supply before connecting power leads to the battery.
- 4.2.2. For chargers with dual voltage output, set the charger voltage to match that of the battery (i.e. 12 or 24Volts) by connecting the positive (red) clamp lead to either the 12Volt + output terminal or the 24Volt + output terminal as appropriate.
- 4.2.3. Check the charger clamps and battery terminals to ensure that they are clean and free from oxidation.
- 4.2.4. 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.

### 4.3. CHARGING THE BATTERY

- 4.3.1. Connect the charger to the mains power supply and set the rate of charge according to your model type as follows:
- 4.3.2. **START180 & START240** (see fig.2) set the mode switch to the 'charge' function indicated by the battery symbol.
  - Low rate charging rate:- select MIN & 1
  - Med charging rate:- select MIN & 2
  - High charging rate:- select BOOST only (please note that when BOOST is selected the switch marked 1 & 2 is over-riden)
- START 360 & START560** (see fig.3). Select charge level 1,2,3,4,5, or 6 using the rotary switch above the timer.
- 4.3.3. Check the current delivery to the battery by reading the ammeter on the front of the battery charger (fig.4, 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. **NOTE:** If the charger is connected to a fully charged battery the ammeter will show a low output. NO charging is necessary.

### 4.4. SEALED BATTERIES

- 4.4.1. Charge a sealed battery very slowly, carefully monitoring the voltage across the battery terminals using a normal tester.
- 4.4.2. When the battery terminal voltage reaches 14.4V for 12V batteries or 28.8V for 24V batteries, stop charging.

### 4.5. MULTIPLE CHARGING

- **WARNING! DO NOT** simultaneously charge different types of battery or batteries with different capacities or levels of discharge.
- 4.5.1. Simultaneous multiple charging should be carried out in series, since this enables monitoring of the current circulating in each battery. See fig.5.
- 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 and move the positive cable to the 24V terminal.
- 4.5.2. 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 damage. **DO NOT** continue to charge a fully charged battery, as this will damage the battery. **DO NOT** leave a battery on charge unattended.

### 4.6. END OF CHARGING

- 4.6.1. Switch the charger off and unplug from mains power. Disconnect the power clamps, clean the charger and store in a safe, dry area.
- 4.6.2. 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.

### 4.7. RAPID CHARGING

- 4.7.1. The START360 and the START560 both have a rapid charge function which is controlled by the fast-charge timer device to a maximum of 60 minutes.
- 4.7.2. To initiate rapid charging turn the fast-charge timer device to the required charging time in minutes and turn the charging level rotary switch to one of the fast-charge charging levels of either 4,5 or 6. When the pre-set time has elapsed the current is automatically switched off. Turn the charging level rotary switch to the 'off' position.

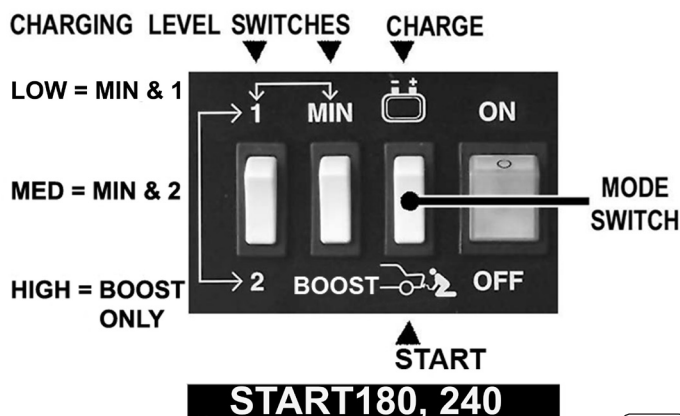


fig.2

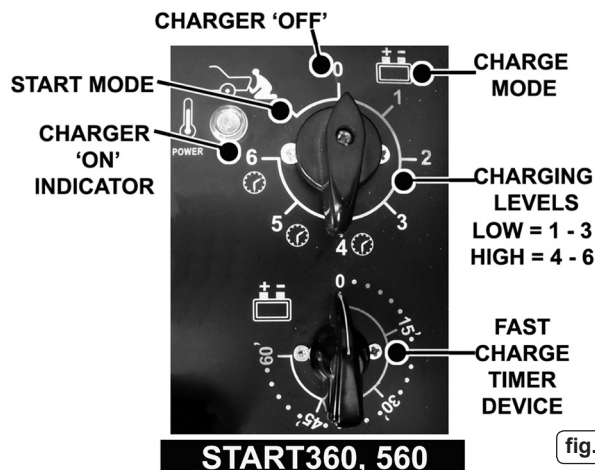


fig.3

#### 4.8. STARTING

- WARNING! DO NOT** attempt to start engine with starter/charger if the battery is disconnected from the vehicle. The presence of the battery is essential for the elimination of possible overvoltage that may be generated due to energy accumulating in the connection cables at the starting stage.
- 4.8.1. Check the vehicle manufacturer's handbook and follow any special instructions. Check that the battery is in good condition.
- 4.8.2. 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 24Volts.
- 4.8.3. Check that the charger clamps and battery terminals are clean and free from oxidation.
- 4.8.4. 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.
- 4.8.5. **Starting will be greatly eased if the battery is given a short charge before the ignition switch is turned. This must always be done with the selector switch set to the charge position and NOT to boost.** 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.
- 4.8.6. Move the starter/charger switch to the 'START' position (see figs.2 & 3). Turn the vehicle ignition on and crank the engine for a MAXIMUM of 3 seconds. If the vehicle does not start, wait 120 seconds and then try again to a maximum of 5 cycles.
- WARNING!** If the vehicle will not start, **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.
- 4.8.7. When the vehicle is running successfully, switch the starter/charger off, unplug from the mains power and disconnect the power terminals from the battery.
- IMPORTANT NOTE!** We recommend the use of an Auto Electronic Protection Device in order to protect the vehicle's electronic system from damage due to voltage spikes. Order model numbers PROSAF/12 (12V) or PROSAF/24 (24V) from your local Sealey dealer.

## 5. FUSES

### 5.1. BLOWN FUSE

The 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:

- 5.1.1. Turn the unit off and disconnect from the mains power supply.
  - 5.1.2. Allow the unit to cool down, establish the reason for failure and correct.
  - 5.1.3. 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. 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.

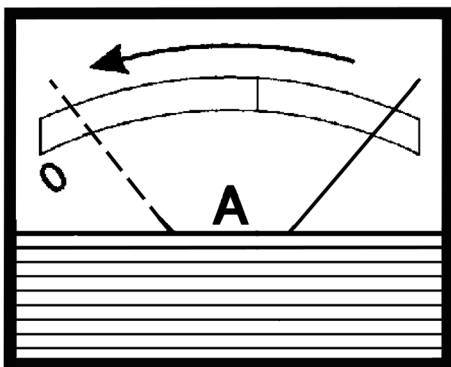


fig.4

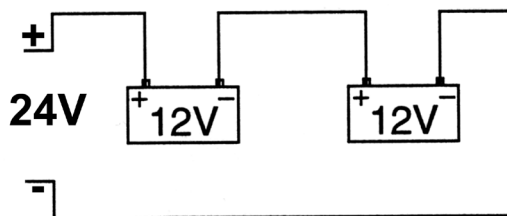


fig.5

### Environmental Protection.



Recycle unwanted materials instead of disposing of them as waste.

All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.



When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

Parts support is available for this product. To obtain a parts listing and/or diagram, please log on to [www.sealey.co.uk](http://www.sealey.co.uk), email [sales@sealey.co.uk](mailto:sales@sealey.co.uk) or phone 01284 757500.

**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 product.

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



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