

Model: BT121.5

INSTRUCTION MANUAL

AUSTRALIAN & NEW ZEALAND STANDARD AS/NZS 60335.2.29 APPROVED

Congratulations on purchasing the Battery Town BT121.5 fully automatic switched mode 12 Volt / 1.5 Amp battery charger, maintainer and rejuvenator. Please take the time to carefully read and understand this manual before using this product.

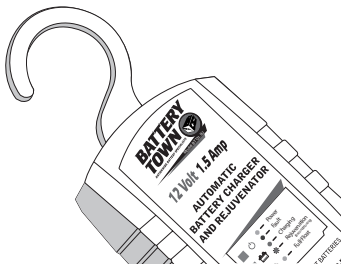
IMPORTANT SAFETY ADVICE AND WARNINGS

- The charger is designed to charge **12V lead-acid batteries from 5Ah to 35Ah**. However the charger can also be used to **maintain batteries up to 120Ah**.
- Always refer to the battery manufacturers specifications and recommendations if you're unsure of your battery charging requirements. E.g. Such as removing or not removing cell caps whilst charging.
- Explosive gases may escape from the battery during charging so please ensure the battery is charged in a well ventilated area.
- This charger is designed for indoor use only and should never be exposed to water, rain, snow, liquids etc.
- Do not attempt to use the charger if it has been dropped or damaged.
- Do not attempt to use the charger if the cables or plugs are damaged.
- If battery acid contacts your skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flush the eye with running cold water for at least 10 minutes and seek medical attention. Someone should always be within range of your voice.
- Never attempt to charge a damaged battery, frozen battery or non rechargeable battery.
- Never place the charger on the battery or battery on the charger.
- When working with lead-acid batteries, remove personal metal items such as rings, bracelets, necklaces, watches and make sure you don't short circuit the battery terminals with any type of metal tool or piece of jewellery as this will cause an explosion. You can wrap your spanner with insulation tape to minimise the risk of a short circuit.
- NEVER smoke, use an open flame or create sparks near a battery or charger during charging operation as this may cause an explosion and explosive gases.
- Do not disassemble the charger. Take it to a qualified and authorised person for repair.
- If using a generator, you must ensure you use a surge protector to protect the charger from voltage spikes.
- The charger must not be used or played with by infirm persons or children. Also keep it away from any pets.

MAIN FEATURES

- **100% automatic smart battery charger & maintainer with reconditioning.**
- **The battery charger is easy to use and requires no technical experience.**
- **Fully microprocessor controlled with safety timers at every stage.**
- **Battery condition analysis.**
- **Senses whether battery is still connected in vehicle.**
- **Patented battery rejuvenation (reconditioning).**
- **Battery voltage retention analysis.**

- **Pulse charge for long term maintenance.**
- **Ultra lower power consumption (ECO Mode).**
- **Multi Stage:**
 - 1 - Qualification - Battery condition check
 - 2 - Battery rejuvenation (recondition mode)
 - 3 - Soft start charging
 - 4 - Bulk charging
 - 5 - Absorption charging
 - 6 - Battery analysis
 - 7 - Float mode
 - 8 - Long term maintenance pulse charge
- **Automatic diagnosis and charge:** On power up, the charger will automatically diagnose the battery condition and determine if the rejuvenation mode (reconditioning) or charge cycle is required.
- **Patented battery rejuvenation technology:** The charger has a unique and patented rejuvenation feature which uses high voltage equalising and peak pulse reconditioning to repair sulphated batteries. This feature is fully automatic and depends on the internal impedance of the battery. It also depends on whether the battery is still connected in the vehicle.
- **Can be left on 24/7 to ensure your battery is always maintained and fully charged:** The battery charger can be left unattended and left permanently connected all year round. The intelligent charger will monitor the battery voltage and will maintain it at peak performance with a special pulse charge during long term maintenance.
- **Short circuit and reverse polarity protection.**
- **Heavy-duty and corrosion-resistant output connectors.**
- **Crocodile clips and ring terminals:** It comes with a quick connect fly lead and 2 different kinds of connectors, crocodile clips and ring terminals. The ring terminals are perfect for permanent connection to your battery. You can connect the lead to the battery and tuck the lead away while you are using your vehicle and when you get back to your garage simply plug the lead back into the charger.



- **Smart Hook:** The battery charger contains a built in foldable mounting hook at the rear of the unit. This can be used to hang the charger on a wall or motorcycle handlebars. The mounting hook conveniently folds back into the unit when not in use.

TEMPERATURE & SAFETY PROTECTION:

- **INTERNAL OVERHEAT PROTECTION:** The charger has a built-in overheat and an overload electronic circuit. This protects the charger from being damage if overheated or overloaded and will automatically decrease the charging current. Once the units internal temperature decreases to a safe level, the charger will resume normal charging.
- **SAFETY TIMER PROTECTION:** The charger has safety timers for every stage. If the battery voltage doesn't reach a certain voltage within a certain time, the unit will stop charging as it's highly likely that you're attempting to charge a severely discharged or heavily sulphated battery. If any of the stages time out, the charger will immediately stop charging in order to protect the battery. This will be indicated with the fault LED flashing slowly.
- **REVERSE POLARITY:** The charger has reverse polarity protection. If the charger output leads are connected reverse polarity, the fault LED will come on and the charger will be disabled. Simply unplug the charger from AC power and then connect the output leads to the correct polarity.
- **SHORT CIRCUIT PROTECTION:** The charger will automatically turn off if the output leads are short circuited and the fault LED will come on. This prevents the charger from being damaged if the positive and negative crocodile clips or ring terminals accidentally touch each other while the charger is turned on.
- **ECO MODE:** This battery charger has a built in ultra low power consumption circuit. If AC power is connected and the battery is disconnected, after 10 seconds the charger will automatically go into an ECO mode. During this mode the power drawn is less than 0.36W which totals 0.01kWh per day power consumption. If AC power is connected and the battery is connected, once the battery is fully charged and during the long term maintenance stage, the total power consumption is around 0.03kWh per day.

The Green power LED flashes to indicate ECO mode.

BATTERY TYPES & CAPACITY:

- Suits 12V conventional lead acid batteries (VRLA) AGM, Gel & Wet. It can also be used as a maintenance charger only for Calcium batteries if required.
- The Ah (Ampere-hour) capacities shown below are to be used as a general guide only. Some batteries may be able to handle a higher charge current. Refer to the battery manufacturers specifications and recommendations for your charging requirements.

Battery Capacity: Charging	5 - 35Ah
Battery Capacity: Maintaining	5 - 120 Ah

ELECTRICAL PARTS & ACCESSORIES:

AC Power Cord:	1.8m with SAA 2 Pin AU Plug
DC Output Lead:	1.2m with quick connect
Charging Leads:	Quick connect 60cm Crocodile Clip Harness Quick connect 60cm Ring Terminal Harness

TECHNICAL SPECIFICATIONS:

Model Number	OC121.5
Output	1500mA @ 12V
Input Voltage	100-240Vac / 0.4A(24W)
Input Frequency	50/60Hz
Charge Voltage	14.4V
Float Voltage	13.6V
Start Voltage	3V
Operating Temperature	-15 to 50° C
Storage Temperature	-25 to 85°C
Operating Humidity	90% RH Max.
Size (L*W*H)	140mm x 65mm x 35mm
Weight	0.45kg
Approvals	CE, UL/cUL, AS/NZS, EMC

CHARGING INSTRUCTIONS:

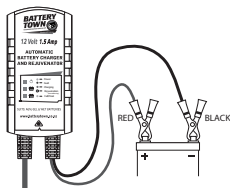
STEP 1 - Pre charge check & electrolyte level check

- Check the Battery Electrolyte levels (Not required on sealed & maintenance free batteries).
If necessary, remove the vent caps and add distilled water so the levels are halfway between the upper and lower fill lines.
- Check the battery voltage, type and Ah capacity to ensure the charger is compatible.
- Ensure the battery is in a well ventilated area and the charger should be as far away from the battery as the cables permit.

STEP 2 - Connecting the battery charger to your battery

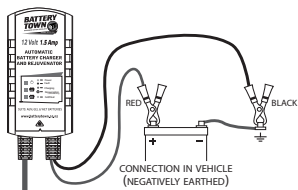
- If the Battery is **out of the vehicle**:

Connect the Red (+) Crocodile clip or ring terminal to the positive (+) battery terminal.
Connect the Black (-) Crocodile clip or ring terminal to the negative (-) battery terminal.

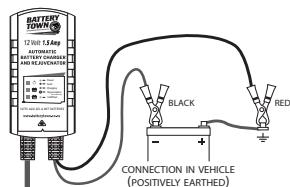


- If the battery is still **in the vehicle**, determine if the vehicle is positively or negatively earthed.

If **Negatively Earthed (Most Common)** – FIRST Connect the Red (+) Crocodile clip or ring terminal lead to the positive (+) battery terminal and then connect the Black (-) Crocodile clip or ring terminal lead to the vehicle's chassis. DO NOT connect the Black (-) lead to the carburettor or fuel lines.



If **Positively Earthed** – FIRST Connect the Black (-) Crocodile clip or ring terminal lead to the negative (-) battery terminal and then connect the Red (+) Crocodile clip or ring terminal lead to the vehicle's chassis. DO NOT connect the Red (+) lead to the carburettor or fuel lines.



STEP 3 - Connect the battery charger to Mains Power (240Vac)

- The charger will automatically start when AC power is connected and switched on.

Note: If the Fault Indicator LED illuminates Red, please check your connections as it's likely that the Positive and Negative Leads are reversed. Refer to Trouble Shooting Page for further information.

THE CHARGING PROCESS:

1) **Qualification - Battery Condition Check**

When the charger is first switched on it checks the battery condition to determine whether the battery needs reconditioning. During this qualification process it checks the internal impedance and initial voltage of the battery and it will determine how much charge current, if any that the battery will accept. It's also senses whether the battery is still connected in the vehicle.

2) **Enhanced Battery Rejuvenation - Blue Rejuvenation LED Flashing**

If the initial qualification detected that the battery was in poor condition, the patented rejuvenation process will begin automatically. During the rejuvenation process a high voltage equalising and peak pulse reconditioning charge is used to repair the sulphated battery. This unique patented feature will break down and dissolve the lead-sulphate crystal build up on the battery plates which will extend the life of your battery. It can also balance out high concentrations of acid.

Note: If the unit senses that battery is still connected in the vehicle, the equalisation voltage will be 16V maximum. If it senses that the battery isn't connected then the equalising voltage will be 20V maximum. For severely sulphated batteries, we recommend that the battery is disconnected from the vehicle.

If the battery voltage doesn't reach 9V within 24 hours, the Rejuvenation process will time out.

3) **Soft Start Charging - Blue Charging LED Flashing**

Gently charges the battery using a reduced charge output until the battery voltages reaches 11V. If the battery voltage doesn't reach 11V within 6 hours, the safety timer protection will stop the unit from charging and the Red Fault LED will start flashing.

4) **Bulk Charging - Blue Charging LED ON**

Uses the maximum charge output (1.5A) until the battery voltage reaches 14.4V. If the battery voltage doesn't reach 14.4V within 20 hours, the safety timer protection will stop the unit from charging and the Red Fault LED will start flashing.

5) **Absorption Charging - Blue Charging LED ON**

Uses a constant voltage while reducing the charging output current to ensure the battery receives a full charge without overcharging the battery.

6) **Battery Analysis - Blue LED ON**

The battery analysis stage checks the condition of the battery after the charge cycle is completed. If the battery voltage drops too quickly during the analysis mode, this means the battery is probably faulty. This is indicated by both the Yellow charging LED and Green full LED being ON.

7) **Float Mode - Full / Float Green LED ON**

This stage allows you to keep the charger connected 24/7 to ensure your battery is well maintained and kept 100% fully charged. Float mode will maintain the battery at a constant 13.6V.

8) **Long Term Maintenance - Full / Float Green LED ON**



During long term maintenance / float mode, the unit will apply a special pulse charge to ensure the battery is kept in optimal condition.



STEP 4 - Disconnecting the Battery charger from Battery



- **If the Battery is out of the vehicle:**
 - (1) Switch OFF and Remove the AC Power Socket from the outlet.
 - (2) Remove the Black lead and then the Red lead.
- **If the battery is still in the vehicle:**
 - (1) Switch OFF and Remove the AC Power Socket from the outlet.
 - (2) Remove the lead from the vehicle chassis.
 - (3) Remove the lead from the battery.



Note: Check electrolyte levels if possible after charging as they may need topping up with distilled water. (This does not apply to sealed maintenance free batteries)



LED STATUS INDICATOR TABLE:











— Power

— Fault

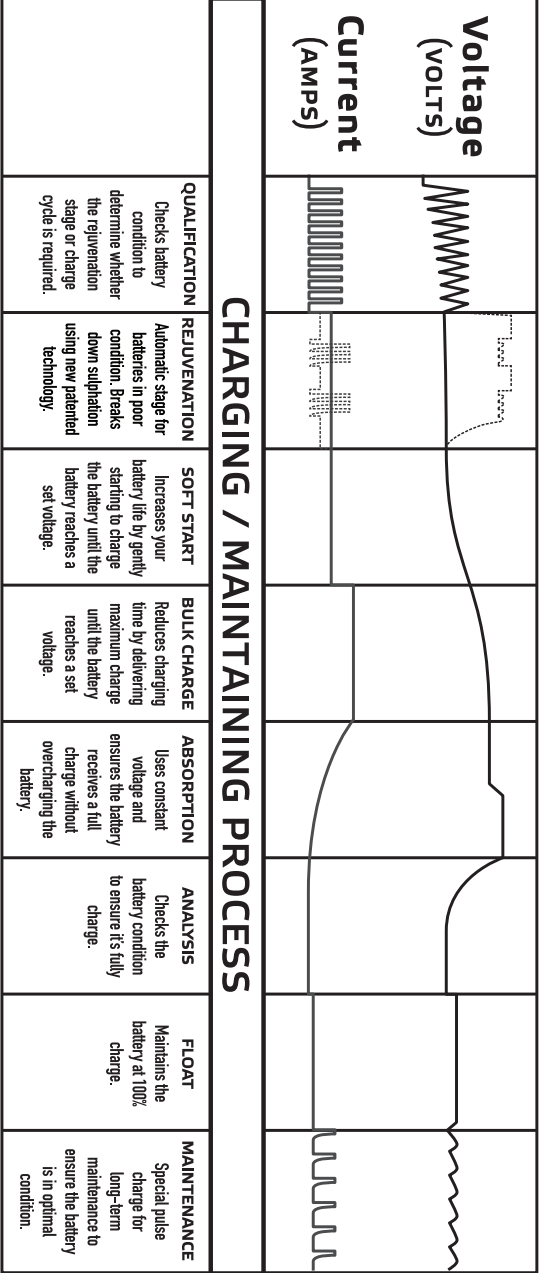
— Charging

— Rejuvenation
(Reconditioning)

— Full/Float

LED	Status	Description
Power / Fault LED – Green / Red		
Green	ON	AC power is connected
Green	Flash	ECO mode and no battery connected
Red	ON	Short circuit / reverse polarity connection
Red	Flash (Slow)	Automatic Rejuvenation or charge cycle has timed out
Red	Flash (Fast)	Over temperature protection mode
Charge / Reconditioning LED – Blue / Yellow		
Blue	Flash	Rejuvenation (Reconditioning) or Soft start charging
Blue	ON	Bulk charge or Absorption charging
Yellow	ON	Battery is flat (less than 3V) or Battery failed analysis test
Full LED -Green		
Green	ON	Fully charged - Float / Maintenance mode

CHARGING CURVE



CHARGING / MAINTAINING PROCESS

	QUALIFICATION	REJUVENATION	SOFT START	BULK CHARGE	ABSORPTION	ANALYSIS	FLOAT	MAINTENANCE
	Checks battery condition to determine whether the rejuvenation stage or charge cycle is required.	Automatic stage for batteries in poor condition. Breaks down sulphation using new patented technology.	Increases your battery life by gently starting to charge the battery until the battery reaches a set voltage.	Reduces charging time by delivering maximum charge until the battery reaches a set voltage.	Uses constant voltage and ensures the battery receives a full charge without overcharging the battery.	Checks the battery condition to ensure it's fully charge.	Maintains the battery at 100% charge.	Special pulse charge for long-term maintenance to ensure the battery is in optimal condition.

TROUBLE SHOOTING

Problem	Indication	Possible Causes	Suggested Solution
Charger does not work?	No Indicator lights on	- No AC power	- Check AC connections and make sure the AC Power Point is switched ON. - Try a different AC Power Point which you know is working.
Charger has no DC output?	Fault Red LED is ON or Green power LED ON or flashing	- Output is short circuited - Reverse polarity protection - Loose / bad connection to the battery	- Check DC connection between charger and battery and make sure they are not short circuited. (Touching each other) - Check that the crocodile clips have not fallen off or come loose. - Check that the crocodile clips/ ring terminals are connected to the correct polarity. Note: The charger output is only present when connected to a battery.
No charging current?	Fault Red LED is Flashing	- Battery is severely sulphated - Battery has a damaged cell - Over temperature protection mode	- Check the battery condition, age etc. - Battery may need replacement. - Move battery & charger to a cooler environment.
The full / float light won't come on.	Fault Red LED is Flashing	- Battery Ah capacity too large for the battery charger and it has timed out - Battery is defective - Battery is severely sulphated	- Check the charger specifications match the battery capacity. Eg. make sure battery capacity is not too big for the charger. - Battery may need replacement.

2 YEAR PRODUCT WARRANTY

HCB Technologies Ltd warrants to the customer that this product is substantially free from defects in materials and workmanship under normal use for a period of Two Years from the Date of Purchase. Please ensure you keep a copy of your purchase receipt on file as this will be required to validate your warranty.

Obtaining Warranty Service:

Within the warranty period, the Customer must contact the Battery Town outlet or authorised supplier / retailer where the product was purchased.

Alternatively you can contact the HCB Technologies Ltd via the website www.hcb.co.nz.

If the Battery Town outlet or authorised supplier / retailer concludes that while under normal use, a product failure or malfunction occurred during the warranty period and was caused by a defect in material or workmanship (see Exclusions), the Customer will be asked to ship to the nearest service point for repair or replacement, at our discretion.

The product must be packaged appropriately for safe shipment. To prove that the product is under warranty, the customer should enclose a copy of their receipt for proof of purchase. HCB Technologies Ltd accepts no responsibility for goods lost or damaged in transit.

Exclusions:

If upon receiving a product for repair and if testing and examining the product has disclosed that the alleged defect or malfunction in the product does not exist or was caused by the Customer or any third persons misuse, neglect, physical abuse, water damage, unauthorised attempts to open, exposure to extremely high temperatures, tampered with or repaired by an unauthorised persons, this will not be covered under this warranty.

Also charges may apply to any product returned which has no fault found or if the warranty has expired or been void.

This Warranty is also void if:

1. The warranty seal is broken or altered.
2. The warranty period has expired.
3. The product has been tampered with or repaired by an unauthorised person.
4. If used on a generator without using a surge protector.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

For New Zealand customers, this warranty is in addition to statutory rights observed under New Zealand legislation.



SAA Approval No. GMA-102826-EA-002 / GMA-102826-EA-003

BT121.5 Owner's Manual: Rev 1.1 - 04/15 - Specifications subject to change without notice.