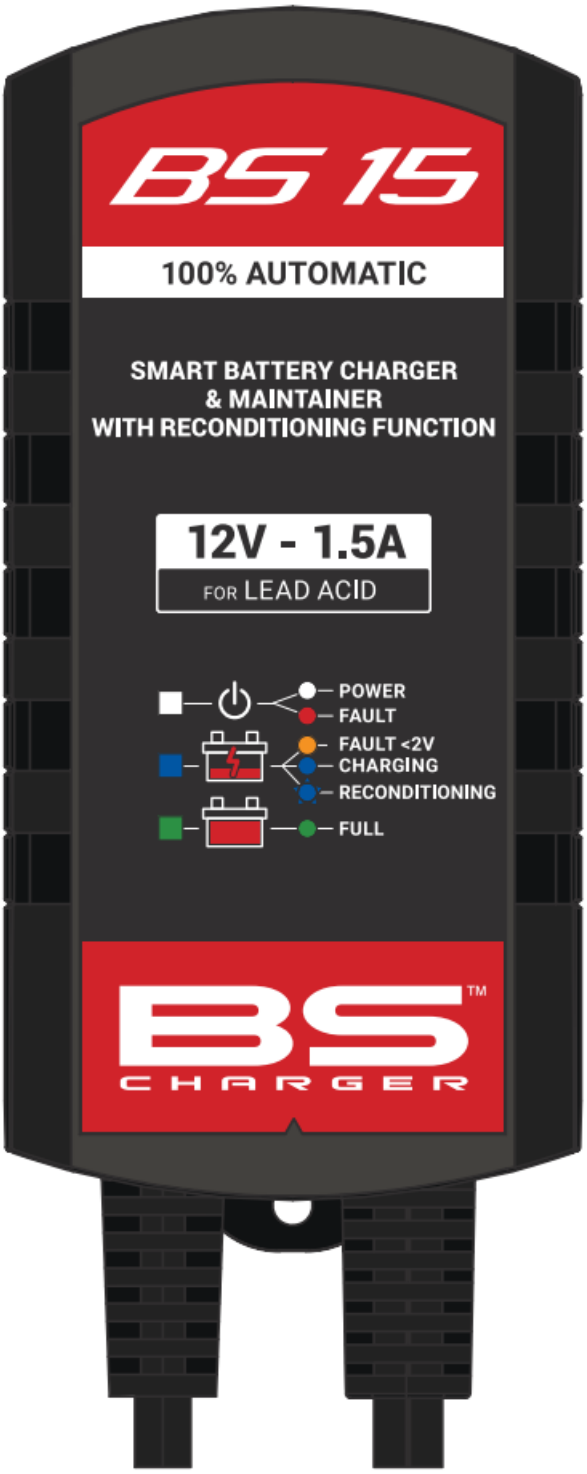
BS CHARGER BS15 Smart Battery Charger and Maintainer with Reconditioning Function Instruction Manual

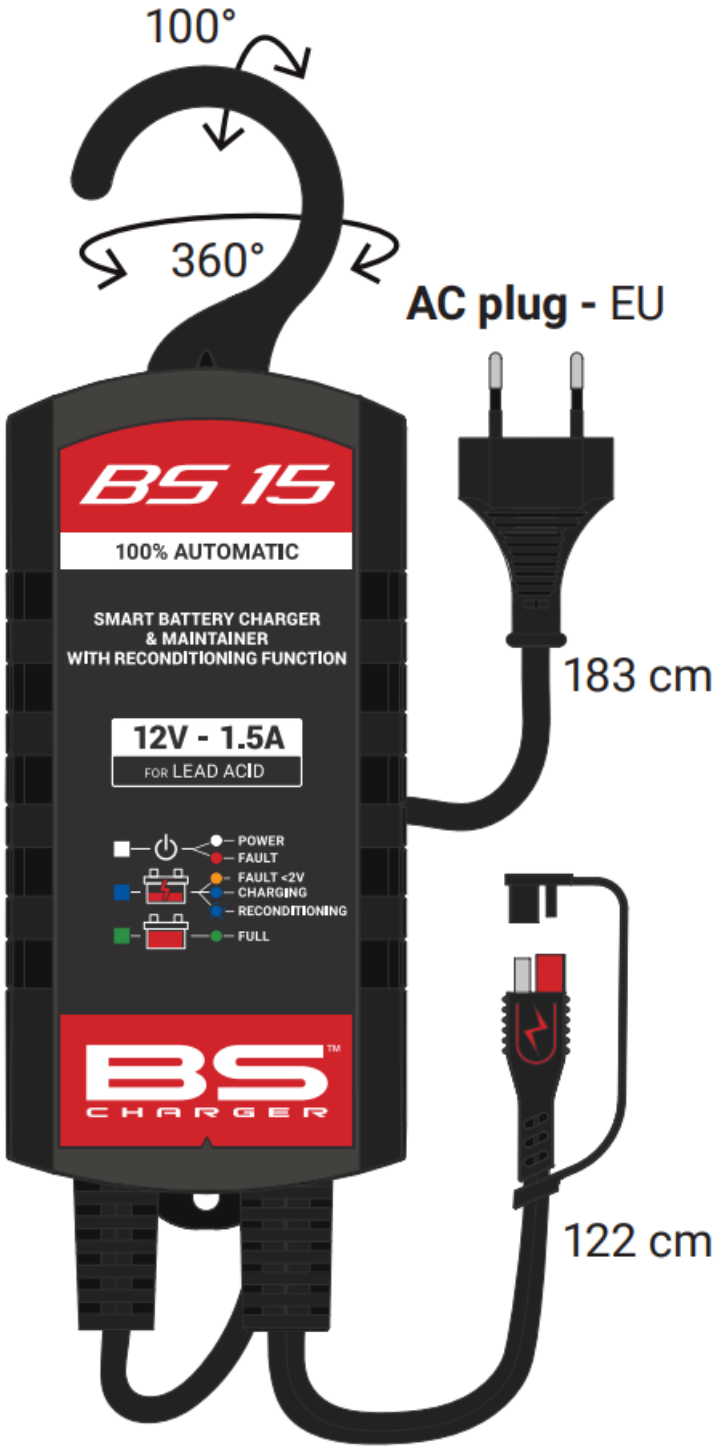
BS CHARGER BS15 Smart Battery Charger and Maintainer with Reconditioning Function


BS 15
100% AUTOMATIC
SMART BATTERY CHARGER
& MAINTAINER
WITH RECONDITIONING FUNCTION
12V - 1.5A
FOR LEAD ACID
POWER
FAULT
FAULT <2V
CHARGING
RECONDITIONING
FULL
BS™
CHARGER

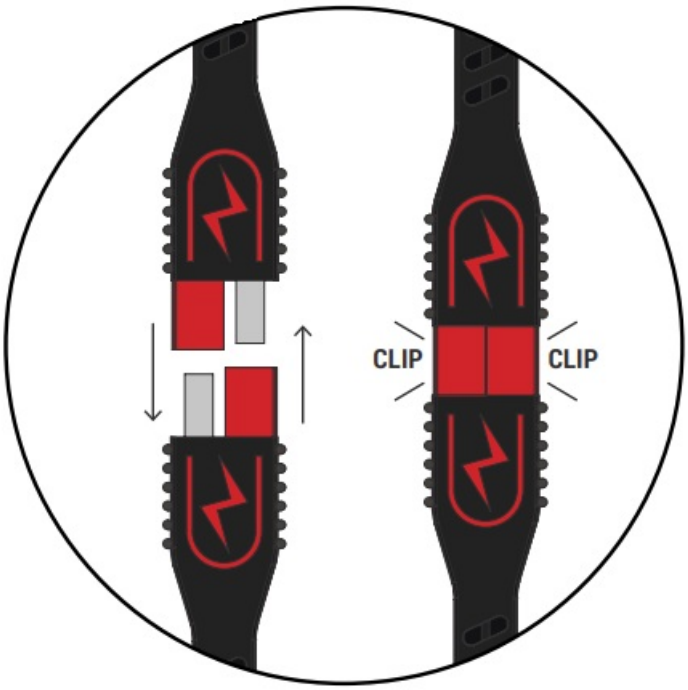
Contents

BOX CONTENT

- 1x CHARGER

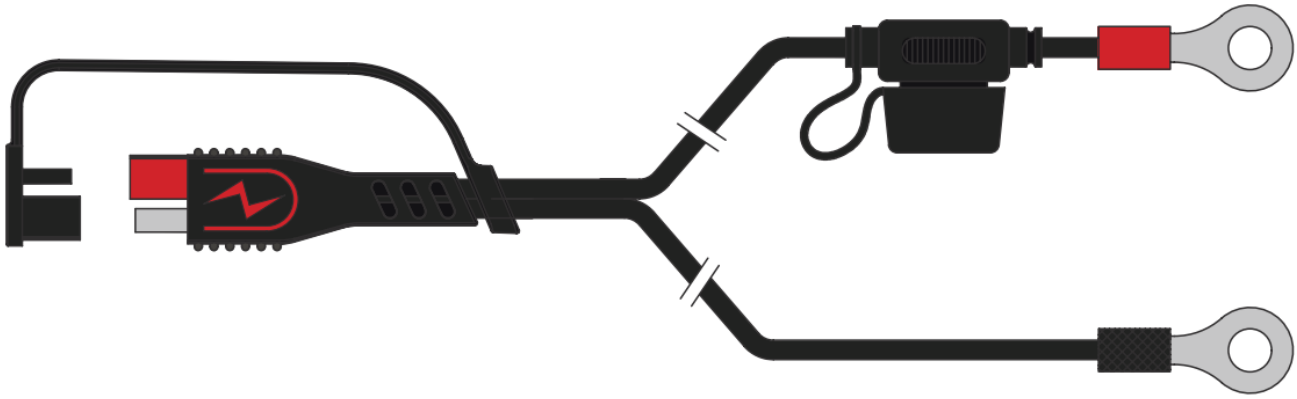


- QUICK CONNECTION



- 1x Clamps set – 61 cm

- 1x Eyelets terminals set (m6) – 61 cm



IMPORTANT SAFETY INSTRUCTIONS

Please read this manual and follow the instructions carefully before using the charger.

WARNING

- The charger is designed to charge 12V lead-acid batteries from 4Ah to 30Ah. However, charger can maintain batteries up to 120Ah.
- We always recommend that you check the Battery Manufacturers specifications before using this charger
- Explosive gases may escape from the battery during charging. Provide ventilation to prevent flames and sparks.
- For indoor use. Do not expose charger to rain, snow or liquids.
- For charging lead-acid batteries ONLY (of the size & voltage indicated in the specifications table).
- Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes.
- The charger should be used on a flat surface.
- Never charge a frozen battery.
- Never charge a damaged battery.
- Never place the charger on the battery while charging.
- Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or shortcircuit battery or other electrical part that may cause explosion.
- When working with a lead-acid battery, remove personal metal items such as rings, bracelets, necklaces, watches…
- NEVER smoke or allow a spark or flame in vicinity of battery or engine.
- Do not charge non-rechargeable batteries.
- In order to reduce risk of electric shock, unplug charger from AC outlet before doing any maintenance or cleaning. Turn off controls will reduce risk.
- The kit is not supposed to be used by children or by people who are not able to understand the manual, unless they are supervised by a responsible person who ensures the proper use of the kit.

MAIN FEATURES

Smart Charger plus Maintenance and Rejuvenation Function

- Easy to use: the battery charger is easy to operate and requires no technical experience.
- Fully controlled by Microprocessor.
- Battery initial condition diagnose.
- Battery wiring in vehicle circuit sense.
- Enhanced battery rejuvenation (patented technology).
- Battery voltage retention analysis.
- Peak pulses for long term maintenance.
- Ultra lower power consumption for ECO mode.
- Multi Charge Stages:
- Battery condition check
- Enhanced battery rejuvenation
- Soft Start
- Bulk Charging

- Absorption Charging
- Voltage analysis
- Float Mode
- Long term maintenance pulse charge
- Diagnosis & Charge – Automatic diagnosis and charge: on power up, the charger will automatically diagnoses the battery condition, and then determine if the battery charger engages the rejuvenation stage or goes into charging cycle.
- Enhanced battery rejuvenation stage – Patented battery rejuvenation technology: the program will engage a unique rejuvenation method with high voltage equalizing and peak pulse reconditioning stage alternatively applied in turn, which is subjected to the initial battery internal impendence detection and battery load detection in vehicle electric system, it could be efficiently desulphated to the some batteries with deep-charge or no charge for many months, and without any risk if it is connected to the vehicle electric system.
- Charge & Maintain – Automatic Maintenance: the battery charger could be left unattended and it is full time managed by program; when the battery is charged to «full» state, the charger automatically switches to maintain the battery. It will monitor the battery voltage and continue to peak performance with special pulse charge in long term maintenance.
- Short circuit or Reverse polarity protection: the charger will automatically turn off when the output short circuit or reverse polarity occurred and prevent any damage.
- Never overcharge your battery.
- Heavy-Duty cables.
- Corrosion-resistant output connectors.
- Output clips and ring terminals provided: it comes with a quick connect fly lead and 2 different kinds of connectors, crocodile clips and a 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.
  • Folding Hook: the battery charger is built with a foldable hook at the bottom of the unit, which is convenient to hook up the charger onto the motorcycle or wall mounting desired.

When the users take off the charger from the motorcycle, they can simply fold the hook back to the bottom of the unit.

TEMPERATURE & SAFETY PROTECTION

The charger contains 4 safety protections:

- INTERNAL OVERHEAT PROTECTION: the BS 15 is built-in with overheat and overload electronic circuit. When the charger is overheated, the charger will decrease the charging current. If temperature is decreased, the charger will resume to normal charging.
- TIMER PROTECTION: the charger provides the maximum charging timer management for each charging stage; this condition may occur if attempting to charge any severely discharged or heavily sulfated battery. Once the charger is timed-out, the charger will stop charging for protecting your battery and the RED LED will be slow FLASH, while this situation occurs, please check with your battery statues.
- REVERSE POLARITY: the charger has reverse battery protection. If a reverse battery exists (Red LED ON, while output leads are connected backwards), simply unplug charger from AC power and properly remake the

connections as described in this manual.

- SHORT CIRCUIT PROTECTION: the charger has output short-circuit protection. If the charger output lead short condition exists (Red LED ON, while output leads are connected backwards), simply unplug charger from AC power and properly remake the connections as described in this manual. The charger employs the firm hardware and smart program to automatically detect the output connections. Once the charger.

BATTERY TYPES & CAPACITY

- Suits all Lead Acid Type Batteries. (GEL, SLA, AGM, Calcium)
- 12 Volt Output, Charging current 1500mA
- Battery Capacity: The following maximum AH capacities are to be used as a general guide only: some batteries maybe able to handle a higher Charge Current. Check with the battery Manufacturer when charging batteries with small capacity.

Charge current	**Battery capacity: charging**	**Battery capacity: maintaining**
1500mA	4-30AH	4-120AH

ELECTRICAL PARTS

Delivered with:

- A.C Power Cord:
  - 183cm with VDE Plug.
- Output Lead:
  - 122cm with Trailer Connector.
- Extension Cord:
  - 61cm with Trailer Connector + Battery Clamp or.
  - 61cm with Trailer Connector + Ring Connector.

ENVIRONMENTAL CHARACTERISTICS

- Operating Temperature: 0 to 40° C.
- Storage Temperature: -10 to 80°C.
- Operating Humidity Range: 90% RH Max.

TECHNICAL SPECIFICATIONS

Part number	BS 15
Type	Smart
Input Voltage Range	100-240Vac
Input Frequency	50/60Hz
Output	1500mA @ 12V
Size (L*W*H) in mm	140x65x35
Weight	0.45Kg
Approvals	CE, UL/cUL, AS/NZS

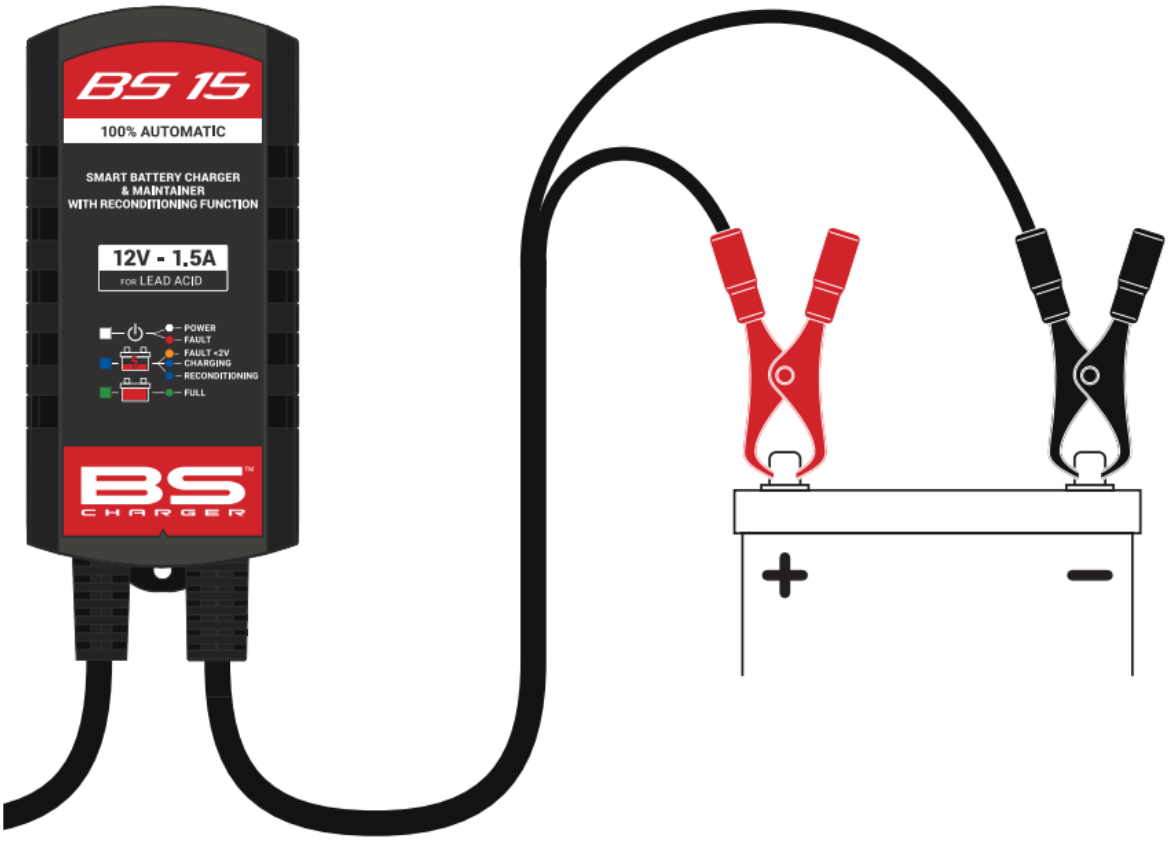
CHARGING INSTRUCTIONS

STEP 1 – Pre Charge Check & Electrolyte Level Check

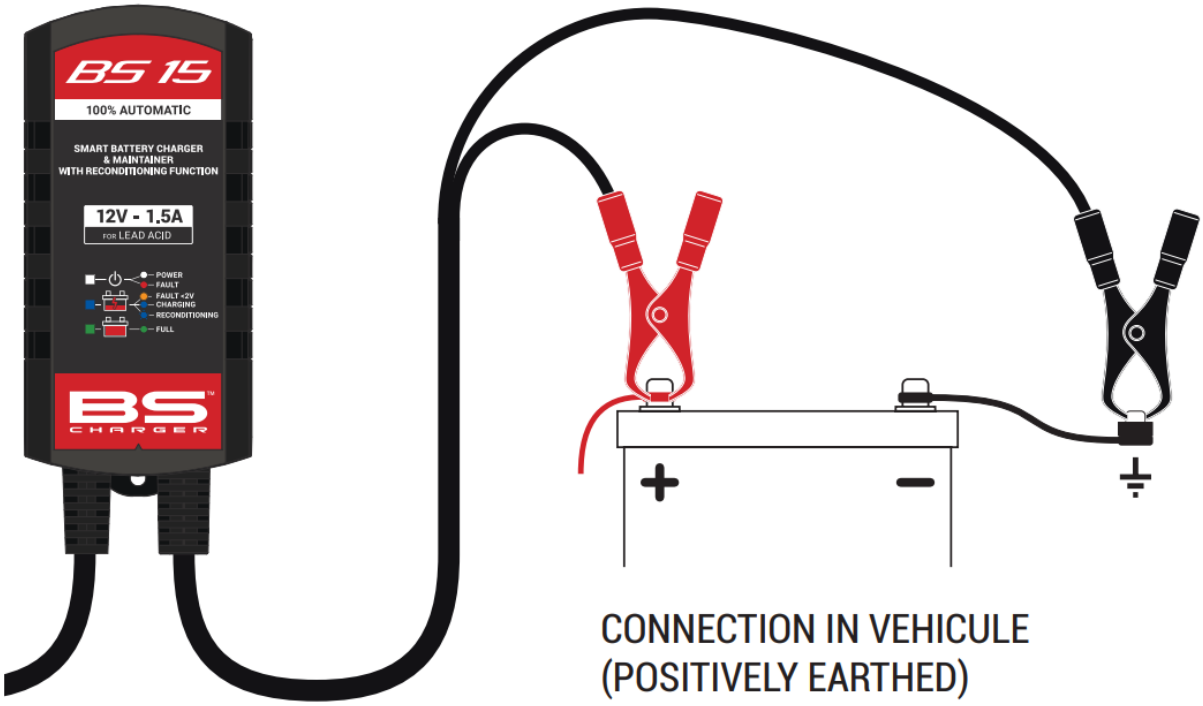
- Check the Battery Electrolyte level (Not required on sealed & Maintenance Free Batteries). If necessary, remove the vent caps and add distilled water so the levels are halfway between the upper and lower fill lines.

STEP 2 – Connecting the Battery charger to your Battery

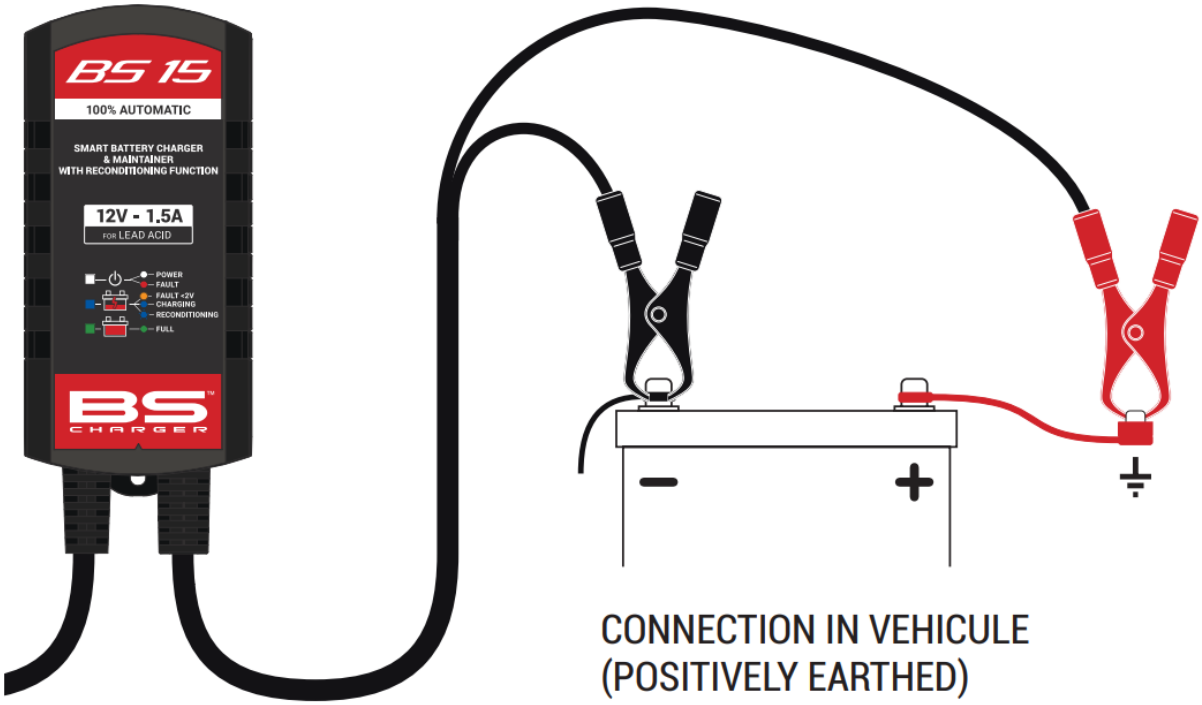
- If the Battery is out of the vehicle:
  - Connect the Red lead from the charger to the positive (+) battery terminal.
  - Connect the Black lead from the charger to the negative (-) battery terminal.



- If Battery is still in the vehicle, determine if the vehicle is positively or negatively earthed.
  - If Negatively Earthed (Most Common) – FIRST Connect the Red (+) battery charger lead to the positive (+) Battery post and then connect the Black (-) battery charger lead to the vehicle's chassis and away from the fuel line.



  - If Positively Earthed – FIRST Connect the Black (-) battery charger lead to the Negative (-) battery post and then connect the Red (+) battery charger lead to the Vehicle's chassis and far away from the fuel line.



STEP 3 – Connect the battery charger to Mains Power (230Vac)

- Connect the battery charger to a 230VAC Mains Powered socket.
- 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)

STEP 4 – Disconnecting the Battery charger from Battery

- If the Battery is out of the vehicle.
  - Switch OFF and Remove the AC Power Socket from the outlet.
  - Remove the Black lead and then the Red lead.
  - Check electrolyte levels if possible.
    (As they may need topping up with distilled water after charging).
- If the Battery is in the vehicle.
  - Switch OFF and Remove the AC Power Socket from the outlet.
  - Remove the lead from the vehicle chassis.
  - Remove the lead from the battery.
  - Check electrolyte levels if possible.
    (As they may need topping up with distilled water after charging)

THE CHARGING PROCESS

The charging stages and performance are as follows:

ECO Mode

If ac power is connected, and the battery is not connected, after 10 seconds, the charger will automatically go into

ECO mode, this battery charger is built with ultra low power consumption circuit, When Ac power is presented and battery disconnected, the power drawn is less than 0.36W, equal to power consumption of 0.01kWh per day; after the battery is fully charged and during long term maintenance stage, the total power consumption is around 0.03kWh per day.

- The white LED is fast flashing indicates the ECO mode.

Battery Initial Qualification

When the battery is connected and ac powers on, the program will automatically run qualification as the following processes:

- Detect the battery internal impendence and initial voltage.
- Judge the capability of charging current acceptance.
- Diagnose the battery sulphated intensity.
- Check the battery load statues and assess whether it is connected into the vehicle electronic circuit.
  The program will determine the next stage subjected to above result of initial qualification.
- The **red** LED is ON and **yellow** LED is ON, (the initial voltage is at very low level).

Enhanced Battery Rejuvenation

Two alternative- rejuvenation stages work in turn to the stratified electrolyte liquid and lead sulphated crystal, which is not only dissolve the lead sulphated crystal but also bring the electrolyte fluid to a well distributed state, it consists of two alternative stage with high voltage equalizing stage (16V or enhanced 20V) and high peak pulse reconditioning stage.
If the battery is detected under an extreme flat or heavy sulphated stage, further, the program will automatically detect whether the battery is connected into the vehicle electronic system, if detected the battery has been connected into the vehicle electronics system, the battery charger will engage a safe rejuvenation method; which is to run high voltage equalizing stage (16V) and high peak pulse reconditioning stage alternatively; If detected the battery is not connected into the vehicle electronics system or battery moved from the vehicle, the program will engage an enhanced equalizing voltage (20V) and peak pulse conditioning stage for the extreme flat batteries.

If the program detects the battery is slightly sulphated, it will run high voltage equalizing stage (16V) and high peak pulse reconditioning stage alternatively.

- The blue LED is flashing indicates the Rejuvenation stage.

If the program detects the battery can be normally accepted charging current, it will directly go into Soft start stage; if the battery still can not accept the charging current after 24 hours rejuvenation, it expresses the Battery Rejuvenation fails and the battery is not healthy.

- The red LED will be ON to indicate the battery rejuvenation failure.

Smart Charging Mode

There are following stages:

- Sof start Charging Mode (C.C. Mode)
  - Blue Charging LED is flashing.

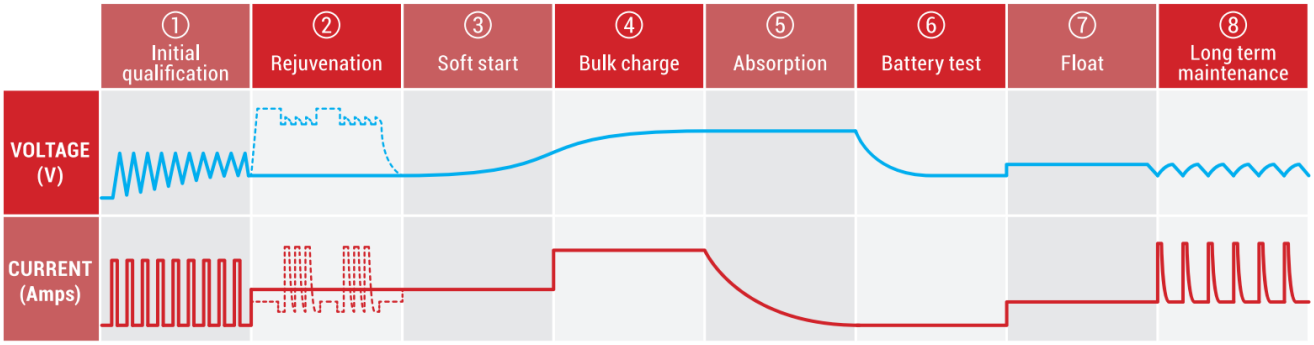
    - Gently ramps up the battery voltage to 11V
- Bulk Charging Mode (C.C. Mode)
    - Blue Charging LED is ON.
    - The battery can be charged about 80%.
    - The charger delivers an almost constant current 1500mA until the battery voltage reaches the set value.
- Absorption Mode (C.V Mode)
    - Blue Charging LED is ON.
    - The battery can charge up to almost 100%.
    - The charging current tapers and the charging voltage are kept constant at the set value.
- Analysis Mode (Battery retention test Mode)
    - The charging is interrupted for a short period for battery voltage measured
    - If the battery voltage falls too quickly, the battery is probably faulty.
    - The yellow Charging LED is ON (if above situation occurred)
- Float Mode (Safe voltage level of 13.6V)
    - Full green LED is ON.
    - The Float Mode allows the charger to effectively be left connected to your batteries; it works at a safe level of 13.6V, and ready for use.
- Maintenance mode (Special pulse for long term maintenance)
    - Full green LED is ON.
    - The program engages a special charging waveform and monitors the battery voltage variety, if the battery voltage sinks, the special pulses will keep the battery in optimal state, if the battery voltage drops even lower, the battery charger will switch into Bulk charging stage. The maintenance mode allows the charger can be connected to the battery over the course of a season; if possible; check the electrolyte liquid level in the battery.

LED STATUS INIDICATOR TABLE

LED	Status	Description
Power / Fault LED – White / Red		
White	ON	AC power is connected
White	Flash	ECO mode and no battery presented
Red	ON	Short –circuit or Reverse polarity
Charge / Reconditioning LED – Blue / Yellow		
Blue	Flash	Recondition / Soft start
Blue	ON	Bulk charge (C.C) mode / Absorption charge (C.V) mode
Yellow	ON	Battery is flat (less than 2V)
Full LED – Green		
Green	ON	The charger is at Float mode (Full)

CHARGING CURVE

- Initial qualification: test automatically battery condition and determine if chargers engages rejuvenation or charging cycle.
- Rejuvenation: rejuvenates sulphated batteries with a high frequency pulse.
- Soft start: increases battery life by gently starting to charge the battery.
- Bulk charge: reduces charging time by delivering maximum charge to set voltage.
- Absorption: ensures a full charge to the battery without overcharging.
- Battery test: tests the battery to ensure fully charged.
- Float: float charge maintains the battery at 100% charge. 21 days restart.
- Long term maintenance: if the battery voltage sinks, the special pulses will keep the battery in optimal states.



TROUBLE SHOOTING

Types of Problems	Indication	Possible Causes	Suggested Solution
Charger does not work?	No Indicator lights ON.	• No AC power.	• Check AC connections and make sure Power Point is switched ON.
Charger has no DC output?	Fault RED LED is ON.	• Output is short circuited. • Reverse polarity connection to Battery.	• Check DC connection between charger and bat- tery and make sure they are not short circuiting. • Check that the crocodile clips haven't fallen off the battery. • Check that the crocodile clips / ring terminals are connected to the correct polarity.
No Charging Cur- rent?	Fault RED LED is Flashing.	• Battery is severely sulphated. • Battery has a damaged cell. • Overheat protection mode.	• Check the Battery condition, age etc. • Battery may need replacement. • Move battery & Charger to cooler environment.
Long charging time, Full light does not come on?	Fault RED LED is Flashing.	• Battery capacity too large . • Battery is defective.	• Check the charger specification matches the battery capacity. • Battery cannot be charged and must be replaced.

MAINTENANCE

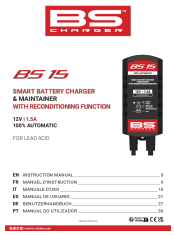
The charger is maintenance free. If the power cord is damaged, the charger must be left to the reseller for

maintenance. The case should be cleaned occasionally. The charger should be disconnected from the power while cleaning.

Customer Support

www.bs-battery.com

Documents / Resources

	BS CHARGER BS15 Smart Battery Charger and Maintainer with Reconditioning Function [pdf] Instruction Manual BS15 Smart Battery Charger and Maintainer with Reconditioning Function, BS15, Smart Battery Charger and Maintainer with Reconditioning Function, Maintainer with Reconditioning Function, Reconditioning Function

References

- BS BATTERY – The Power you need