RMBC64-24D/DC HAWK
3 STAGE DC BATTERY CHARGER
OPERATORS MANUAL

2009

RMBC64-24D/DC ELECTRONIC BATTERY CHARGER

Overview.

The RMBC64-24D/DC has been designed for charging two HAWK batteries.

Designed to provide all the intelligence to safely, consistently and efficiently fast charge the HAWK battery.

Functional Description.

At switch on from the mains the two top row banks of green LEDs will give two flashes to confirm that the charging circuits are operating correctly and that there is no malfunction with the charger.

The unit is fitted with a selectable buzzer and a flashing green LED per channel to inform the operator when the battery or batteries are fully charged and has reverted to trickle charge.

Two seconds after the flashes have finished, the charger is ready for use.

Once either of the red start buttons have been pressed the charging process for that bank begins.

Both the second, third, fourth and fifth row of red LEDs will be on, with the top row of green LEDs flashing. This indicates that all the charging circuits are operating correctly within the bank.

When the charge cycle is complete, the red LEDs within that bank will be off and the top row of green LEDs will all be constant, together with the red trickle charge LED flashing, and if the audio alert is switched on the buzzer will be sounding.

If the buzzer is switched in, it will sound when the last flashing green LED is constant informing the operator that the battery or batteries are fully charged and the charger has reverted to trickle charge.

The charger has an automatic heat sensing shut down system as well as negative delta peak sensing to provide an added safeguard.

The primary charging system is change of temperature over change of time with a max timer cut out.

Validation checks confirm if the temperature range of the battery is either in or outside limits, or its end voltage (Edv) is too low, at which point the charger enters its pending stage until such time as these validation parameters come within limits.

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Functional Description (part 2).

After the validation phase, a sense resistor connected between battery negative and the charger zero volts, (Vss) provides the necessary signal to the servo control loop which regulates the charging current.

The charger unit consists of two banks of sixteen individual chargers, each delivering 0.3C at full charge (700mA) to each internal pack.

Should one or more of the charging cards fail, the unit will still be able to charge which gives the RMBC64-24D/DC a large redundancy capability.

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The RMBC64-24D/DC battery charger has been designed to charge two "*HAWK*" batteries together.

Various combinations of battery charge can be selected which include:-

A/ **Single battery on full charge.**

B/ **Two batteries on full charge**

C/ **One battery on full charge and second battery on trickle charge**.

D/ **Single battery on trickle charge.**

E/ **Two batteries on trickle charge**.

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(1) Charge Indicators

The charge indicators (green LEDS) inform the operator that the charger is (A) operating correctly. (B) charging the cells and (C) the cells have completed a full charge cycle.

Each bank of four green LEDS above the charger sockets represents that charging circuit.

When the power is first on, both the banks of charge indicator LED's will flash twice. This informs the operator that the charger circuits have been internally checked and they are operating correctly.

After the charge procedure has been initialized the charge indicators will start to flash and continue to flash until the battery is fully charged.

When the battery or batteries are fully charged, the green charge indicators will turn to a constant light, indicating that the battery or batteries are fully charged.

As the cells become fully charged, individual LED lamps within the bank will turn from flashing to constant. When all the green LEDS are constant within the bank, and only then, will the battery or batteries be fully charged.

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(2) Battery Status Indicators

The battery status indicators (red LEDS) inform the operator that all the individual sixteen 4Ah cell packs are being charged in that particular bank, representing either battery one or two.

After the start button linked to either one or two battery has been pressed, the complete bank of status indicators representing the selected battery will illuminate and remain constant for as long as it takes to charge the appropriate cells.

When the cells are fully charged, the appropriate status indicators will extinguish within that bank and the charger will automatically place that cell or cells on trickle charge.

Note When all the red status LED lamps are extinguished within the selected bank and the green charge indicators are constant, the HAWK has completed its charge cycle and the charger has reverted to trickle charge.

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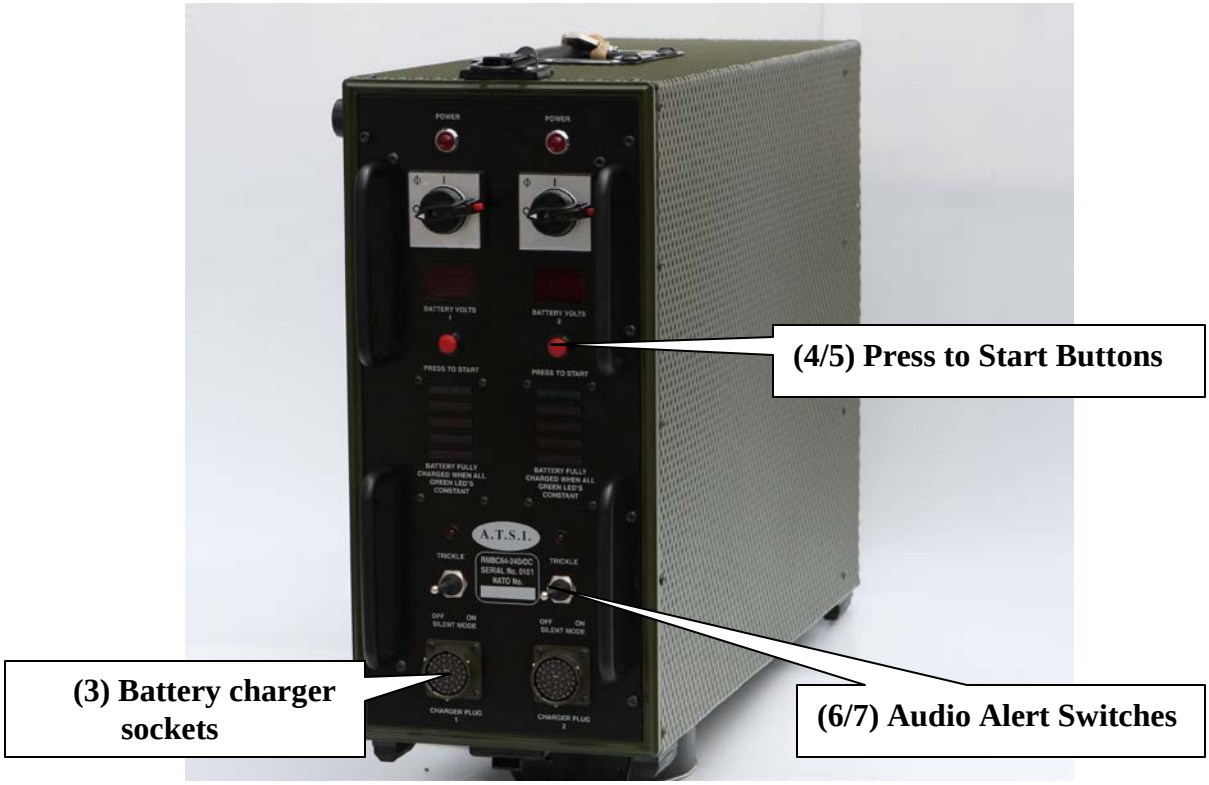

(3) BATT 1 /BATT 2 Charger Socket

These sockets are used in conjunction with the appropriate charger lead to charge the "*HAWK*" batteries. The respective indicators are directly above each socket.

(4/5) Press to Start Buttons

The press to start buttons, allow the operator to start the main charge procedure on each battery.

(6/7) Audio Alert Switches

The audio alert switches, when placed in the on position, inform the operator when the trickle charge system is in operation by emitting an audible intermittent bleep.

This alert can also be used to remind the operator when the batteries have completed a full charge cycle. (When used in the battery charge mode, the alert will only commence once all the cells have been fully charged.)

If the operator switches the alert off, it will not interfere with the trickle or full charge.

Note:- The audio alert switches are a locking type switch and must be pulled out before switching to either On or Off.

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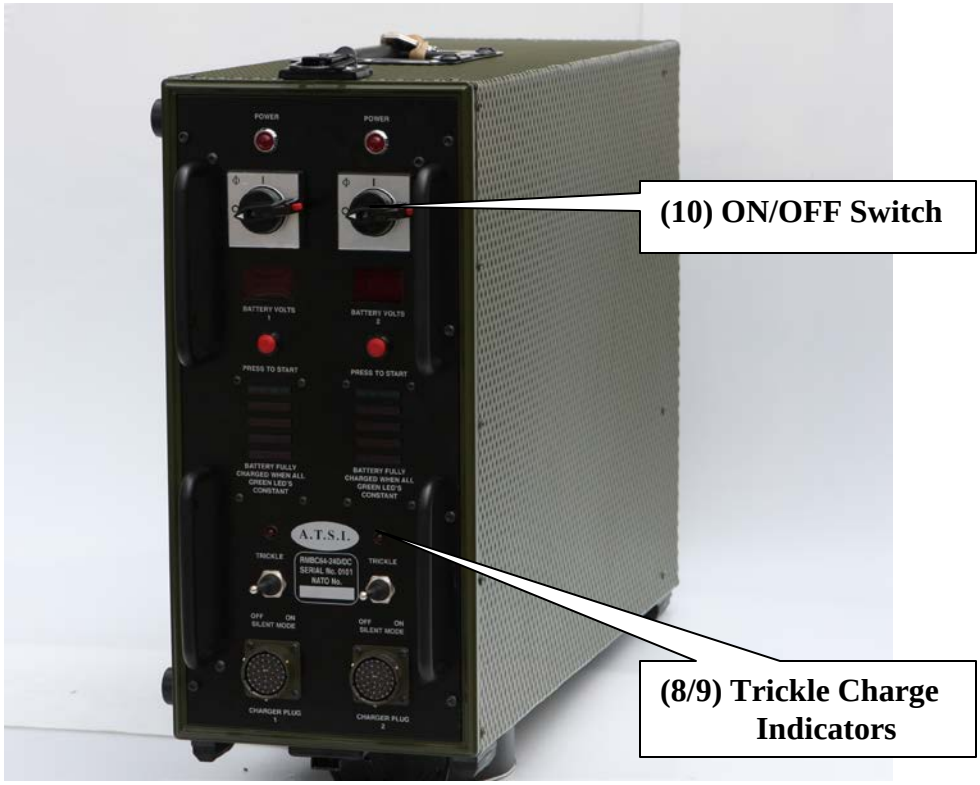

(8/9) Trickle Charge Indicators (TCI)

The trickle charge indicators inform the operator by their flashing red LED that the battery or batteries are being trickle charged.

This process automatically starts when the battery charger is initially switched on.

When the operator starts the charging procedure, the LED will go out, informing him/her that the trickle procedure has stopped.

After the "*HAWK*" battery has been fully charged, the main charging system turns off and the trickle charge commences again.

Note The battery or batteries can be left on trickle charge for several days without damage to the battery or batteries, ensuring they are kept fully charged.

(10) ON/OFF Switch

The ON/OFF switch supplies DC power (20v < 36v DC) to the charger when in the ON position.

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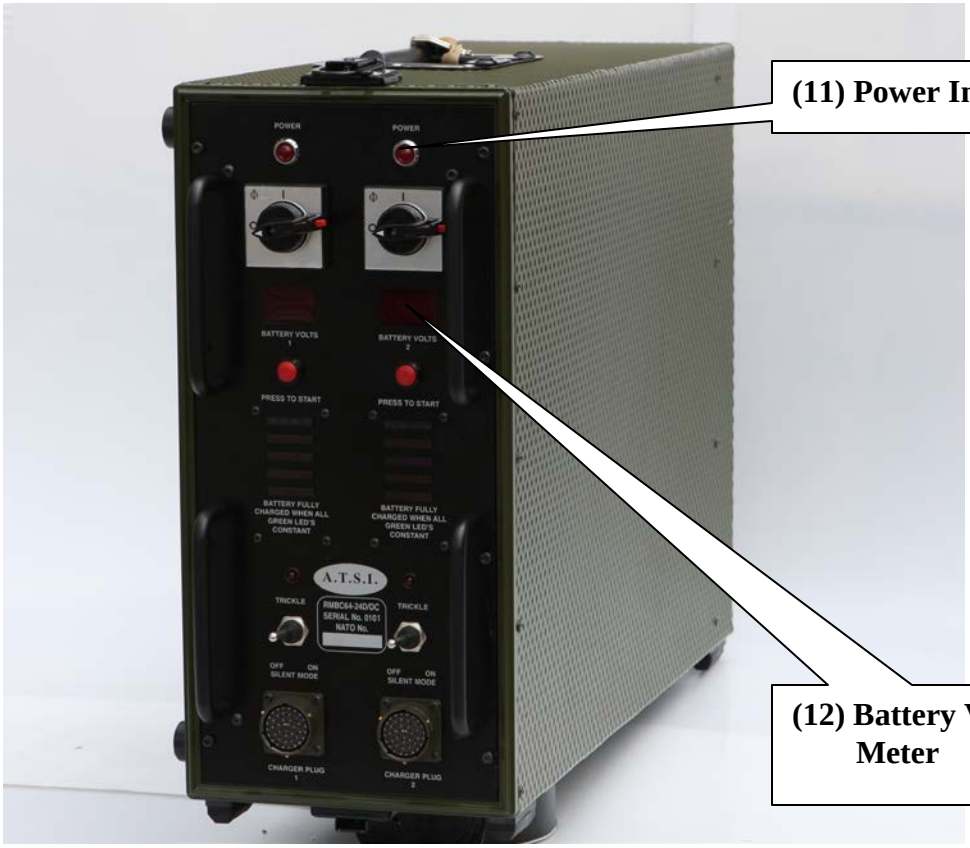

(11) Power Indicator

The power indicator lamp informs the operator, when illuminated, that mains power is being supplied to the charger.

(12) Battery Voltage Meter

This meter informs the operator as to the state of charge indicated by the level of voltage shown on the meter. The higher the voltage, the higher the charge retained by the battery.

Depending on the state of charge when the battery was connected to the charger, a reversal of voltage could be shown as the battery is nearing full charge, indicating that the battery has reached –ve delta V.(Full charge). This is quite normal and does not mean that the battery is faulty.

As the battery ages with time and use, the voltage shown at full charge will slowly reduce to a lower level than when first connected as a new battery.

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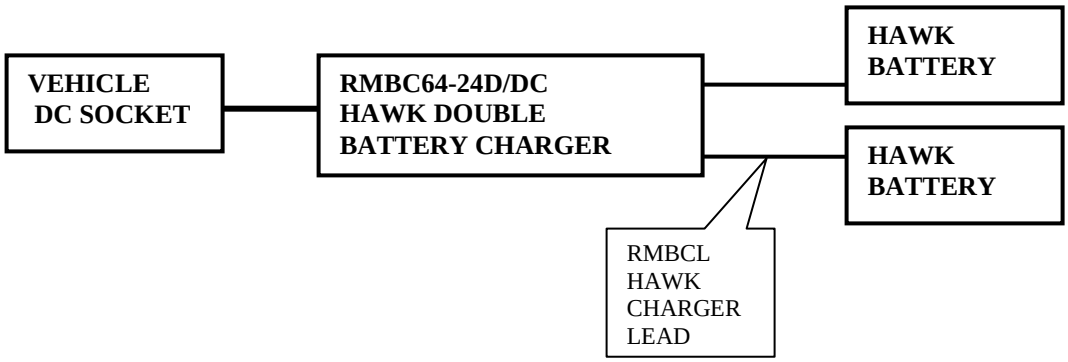
Trouble Shooting.



Problem	Possible Cause	Possible Remedy
Charger no power. DC neon light not illuminated	No DC power	Check DC from DC Vehicle plug.
Charger green LEDS flashing but red LEDS will not illuminate when start button is pressed.	RMBC24 lead not connected	Check both ends are connected correctly and the rings are locked on the Amphenol plug and socket.
Charger green LEDS Flashing but red LED will not illuminate when button is pressed.	HAWK battery fully charged.	Allow battery to cool for 1 hour Note:- It is not recommended to use full charge again when battery is fully charged.

**** Note*** The RMBC64-24D/DC is designed to warn the operator that power is **ON** by the DC neon light being illuminated.