



AUTOMATISMOS Y REGULADORES
para generadores y grupos electrógenos

SCBQ

AUTOMATIC BATTERY CHARGERS

OPERATOR'S MANUAL



MANUAL SCBQ 02-02
[09-2011]

SVE SCBQ battery chargers are designed for the charging and maintenance of LEAD-ACID, NICKEL-CADMIUM and GEL batteries used for start-up of electrical generator sets, motorized pumps, fire-pump sets etc, to maintain such batteries permanently at maximum capacity. SVE SCBQ chargers offer important technological advances, such as a three-phase charging process with current limiting, reduced surface temperature, and compact size.

KEY FEATURES

- Automatic regulation of battery voltage and charging current (DIN 41773)
- Eco-Power, energy efficient trickle-charge system
- Forced charge (boost) for battery maintenance (desulfarization).
- Input for charge inhibition – terminates charging process.
- LED signals on dial:
 - Charger status
 - Battery status
 - Charger in operation
- Output terminals:
 - Charger status
 - Battery status
- Protection against reverse polarity, overload and shortcircuit.
- Protective fuse in charger AC current supply

TECHNICAL SPECIFICATIONS

- Power supply (single phase):
 - Voltage: 230 V +-10%
 - Frequency: 50/60 Hz
- Battery voltage: 12 or 24 Vcc.
- Minimum battery voltage required for charging: 7 Vcc or 17 Vcc respectively.
- End-point voltage: 13.5 Vcc. or 27.5 Vcc
- Boost (Deep cycle): 14.6 Vcc or 29.4 Vcc
- Low battery voltage monitoring: 10 or 20.5 Vcc respectively, in accordance with UNE 23500 and CEPREVEN regulations
- Low battery voltage alarm delay: 60s
- Max. ambient temperature: 45° C

The following document refers to the family of SCBQ battery chargers. We advise you to read it carefully before installation.

The mounting instructions and product descriptions refer only to standard SCBQ battery chargers. As such, the different variants that may be developed in response to the specific requirements of different installations or maintenance operations are not mentioned.

This product must be installed and handled by personnel with adequate training (in accordance with EN 50-110-1 regulations)

Declaration of CE conformance

SVE S.L. hereby declares that SCBQ battery chargers conform to the following directives:

- **CE Directive regarding electromagnetic compatibility: 89/336/CEE appendix I**
- **CE Directive regarding low-voltage outfits: 73/23/CEE appendix III B**

Specific regulations applied:

EN 50 081-1, EN 50 081-2, EN 50 082-1, EN 50 082-2
EN 60 439-1, EN 60 204-1

Mondragón 01-09-2011
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Director, SVE S.L.



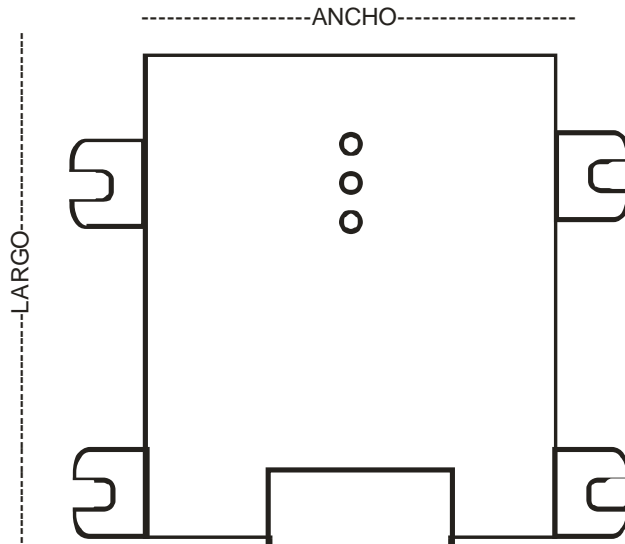
Avda. Guipuzcoa nº6
20500 Mondragón
España

2-DIMENSIONS AND INSTALLATION

SCBQ

2.1 DIMENSIONS

The external dimensions of the chargers are given below, in order to facilitate sizing of the electrical panels in which they are installed.



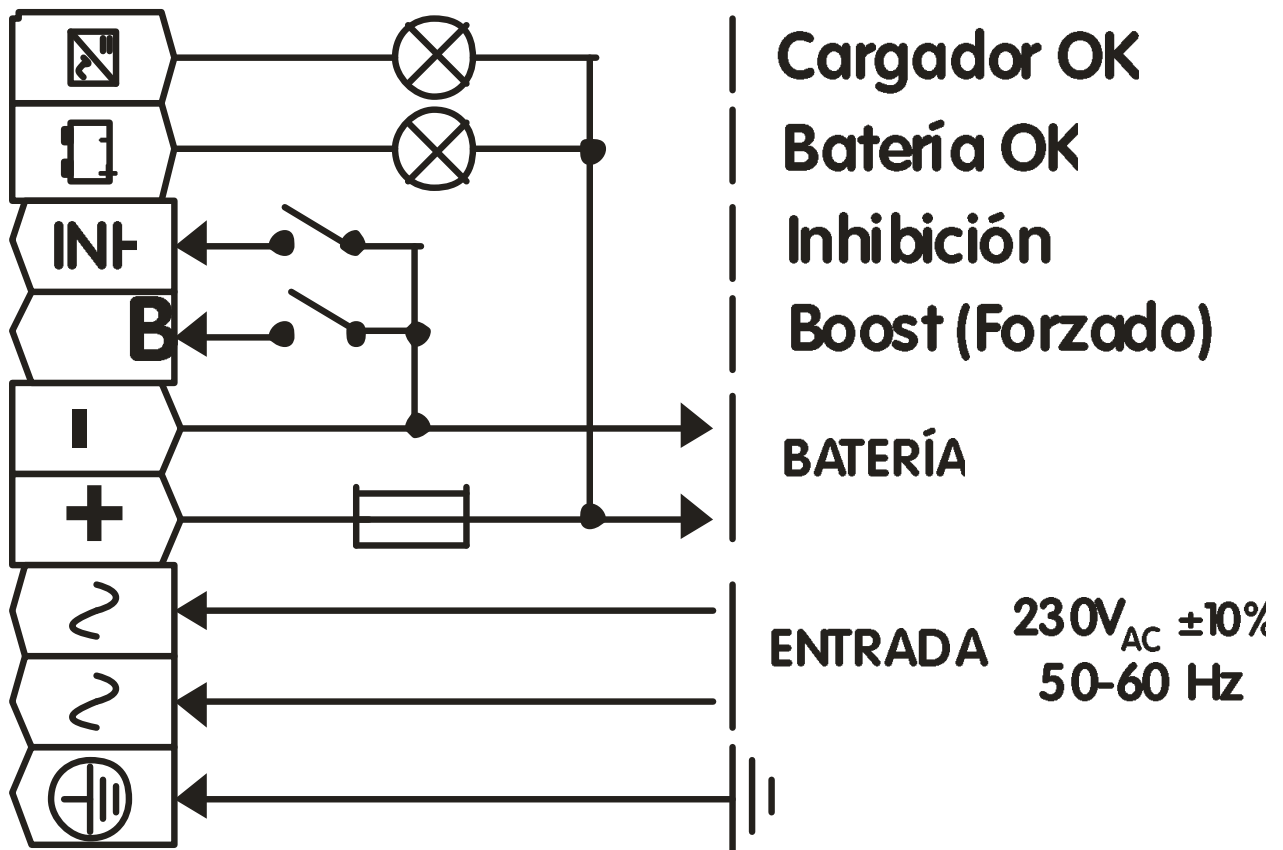
	MODEL	Length (mm)	Width (mm)	Heigth (mm)	Weigth (g)
01	SCBQ1205	100l	85	110	2.000
02	SCBQ1210	120	110	127	3.800
03	SCBQ2405	120	110	127	3.800
04	SCBQ2410	130	125	138	5.700

2.2 INSTALLATION AND WIRING

The following installation and wiring instructions must be followed to ensure that the charger offers maximal and long-lasting performance.

- The SCBQ charger must be mounted in an electrical panel with a door or cover.
- To promote heat dissipation, the charger must be mounted vertically, leaving a gap of at least 5cm for airflow.
- Connect the charger to earth via the appropriate terminal.
- The charger is equipped with a protective fuse in the AC current supply. A second fuse must be installed in the positive pole output.
- Use cables of minimum cross-section 2.5mm² for the connection between the battery and the charger.
- Place the charger close to the battery

The wiring diagram is shown below:



3-OPERATION

SCBQ

3.1 CHARGING PROCESS PHASES

Charging time for lead-acid batteries is 5 times greater than their discharge time by use.

If the starting voltage is greater than 7 Vcc or 17 Vcc for nominal battery values of 12 Vcc and 24 Vcc respectively, charging will occur in the following phases:

PHASE 1: CONSTANT CURRENT CHARGING

Constant current charging will take place such that battery voltage increases up to a predetermined voltage of 2.25V per cell. This phase lasts up to a maximum of 4 hours and achieves a charge level of approximately 70%.

PHASE 2: CONSTANT VOLTAGE CHARGING

Once the predetermined voltage has been established, the current gradually falls as the cells become saturated

The duration of phase 2 may also be 4 hours.

The completion of this phase is essential for maintaining the total charge capacity of the batteries. Early disconnection of the charger will lead to a progressive reduction of the battery's capacity for 100% charging.

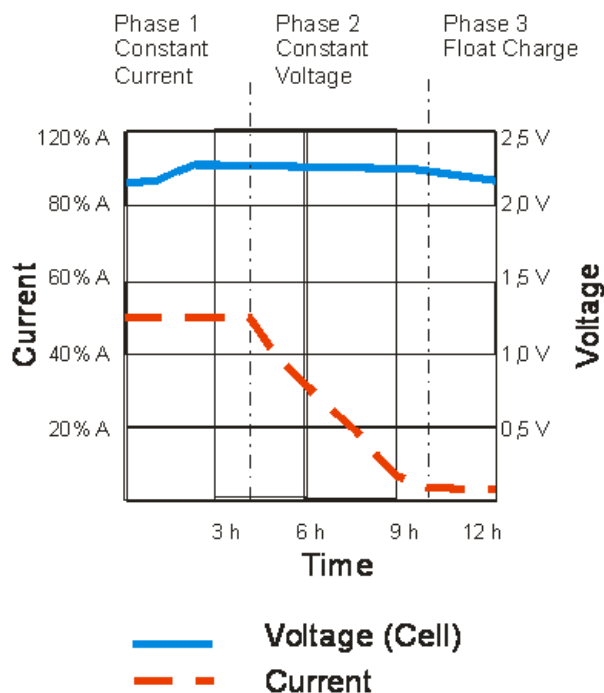
PHASE 3 ECO-POWER FLOATING CHARGING

Charging is complete when the charger current has fallen to 3% of its nominal value.

At this point, the charger produces a second charging curve for battery maintenance, in order to complement energy consumption as efficiently as possible, and increase energy savings.

The corresponding diagram is given below:

CHARGE STAGES SCBQ



3.2 DEEP CYCLE (BOOST)

Upon connection of negative (-) to the corresponding input the charger produces an increase in battery voltage up to 14.6 Vcc in batteries of 12 Vcc nominal voltage, and 29.4 Vcc in batteries of 24 Vcc nominal voltage.

This function is used for battery maintenance, and acts to desulfarize the battery electrodes. We advise you to read the battery's operational manual and complete this operation for the prescribed duration as often as recommended.

3.3 CHARGE INHIBITION

Upon connection of negative (-) to the corresponding input, the charger will interrupt the charging process. This function can be employed to achieve a better measurement of battery voltage level using an external device other than the charger, since battery voltage will not be affected by charger operation at this point.

4-LED SIGNALS AND OUTPUTS

SCBQ

At all times, the three LEDs on the dial and the output signals indicate the general status of the battery-charger system.

The meaning of each LED is as follows:



CHARGER OK



The LED and output indicate that the charger is correctly supplied by the AC power supply, and that the internal fuse is intact.



BATTERY OK



The LED and output indicate that the battery is connected to the charger with the correct polarity, and that battery voltage is greater than 10 Vcc for 12 Vcc batteries, or 20.5 Vcc for 24 Vcc batteries.

This LED is turned off and the output deactivated when battery tension falls below the established limits for at least 1 minute. Disconnection of the battery from the charger causes it to turn off immediately.



CHARGING

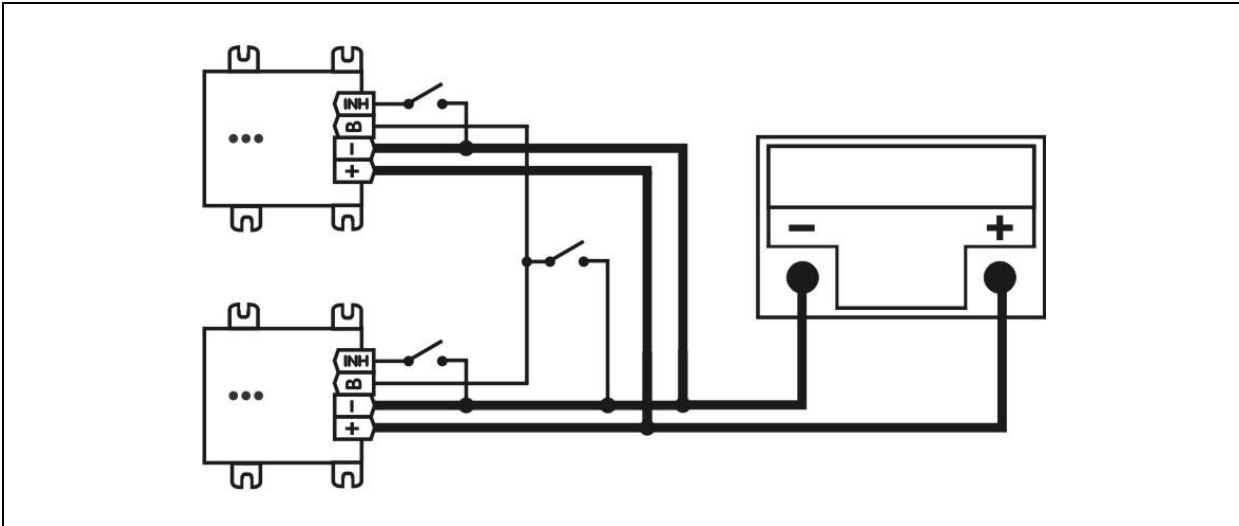
This indicates that the charger is supplying the batter with current. It will turn off when current intensity falls below 2% of the nominal intensity of the charger.

5- CONNECTIONS IN SERIES AND IN PARALLEL

SCBQ

SCBQ series chargers can be connected together in series or in parallel to improve their performance. They can also be used to supply batteries connected in series or in parallel, as described below.

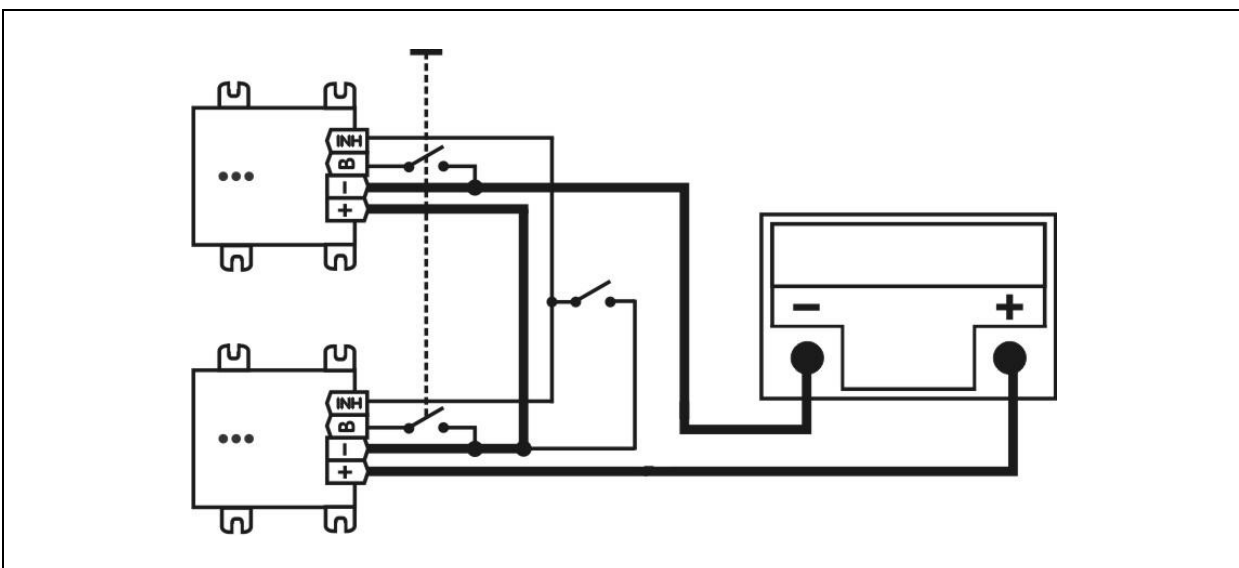
5.1 SCBQ CHARGERS IN PARALLEL



Connecting two SCBQ chargers in parallel increases the total current.
 SCBQ 5A + SCBQ 5A = 10A
 SCBQ 5A + SCBQ 10A = 15A
 SCBQ 10A + SCBQ 10A = 20A

The forced charge terminals of both chargers should be connected and therefore activated at the same time. The inhibition terminals can work independently.

5.2 SCBQ CHARGERS IN SERIES



When two SCBQ chargers are connected in series, they can be used to charge a battery of higher-voltage.

SCBQ 12v + SCBQ 12v = 24v

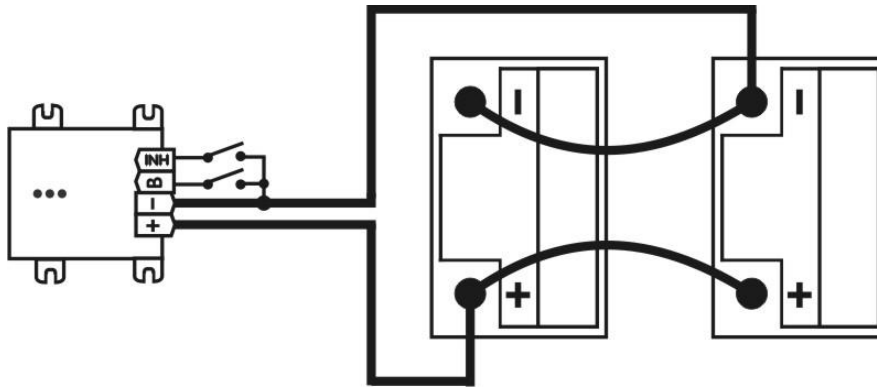
SCBQ 24v + SCBQ 24v = 48v

It is not possible to connect SCBQ 12v + SCBQ 24v

The forced charge terminals of both chargers must be activated simultaneously but are not electrically linked.

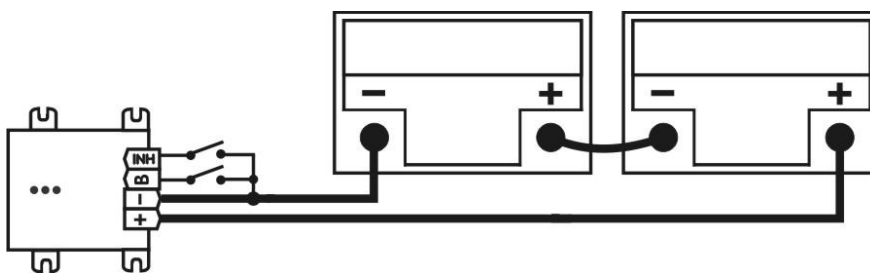
The charge inhibition terminals of both chargers must be linked.

5.3 BATTERIES IN PARELLEL



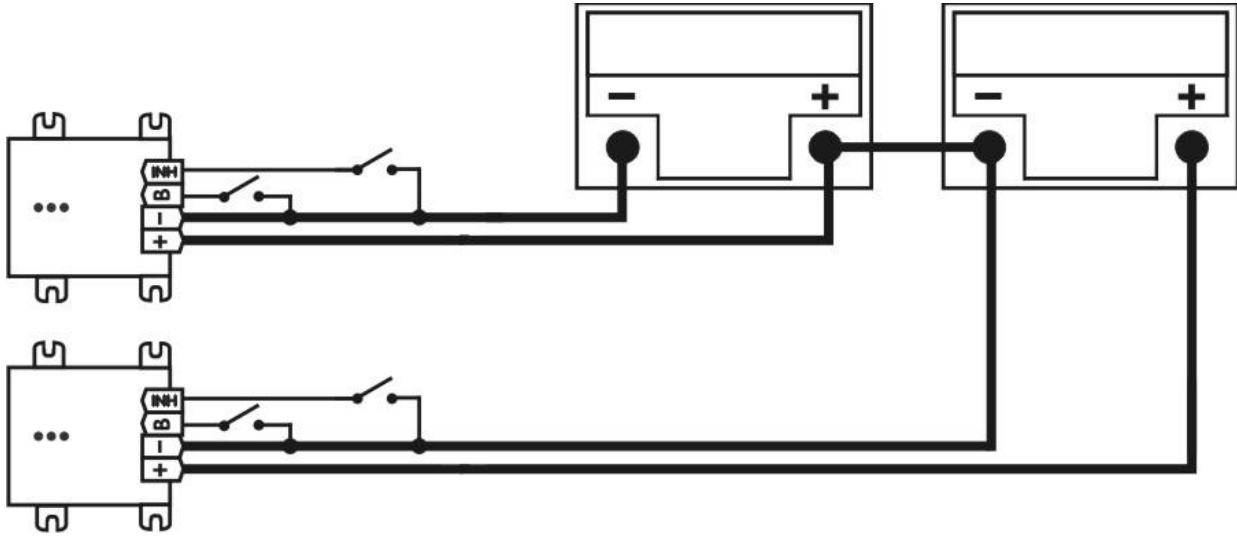
The wiring diagram for an SCBQ charger connected to 2 batteries in parallel is given above. Note that the negative cable of the charger is connected to the second battery. In this way the voltage drop of each battery and cable is balanced. This is not critical for low currents, but can be significant for currents of 10A and above.

5.4 BATTERIES IN SERIES PLUS ONE CHARGER



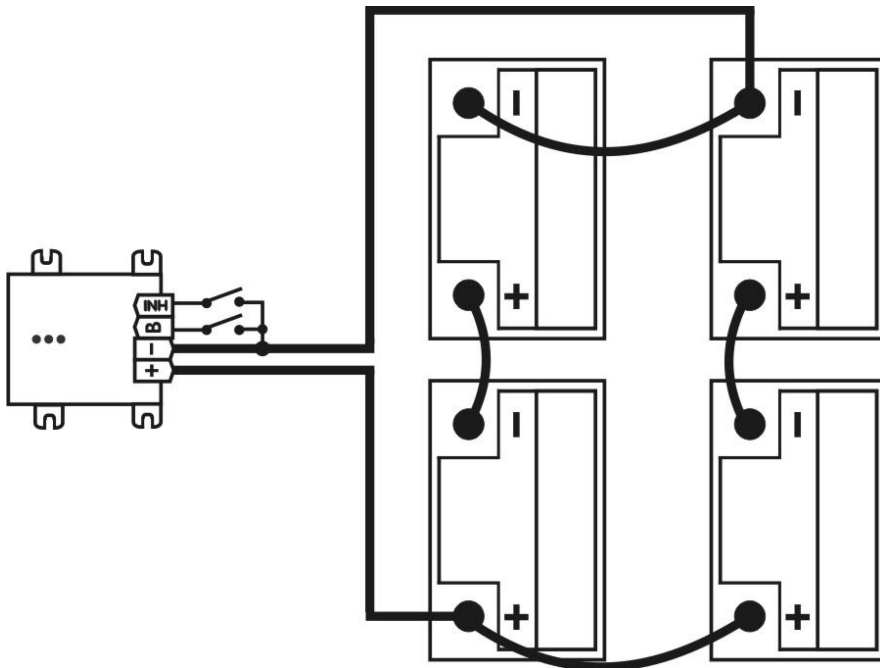
Example: 24V battery set composed of 2 x 12V batteries, with 1 x 24V SCBQ charger

5.5 BATTERIES IN SERIES PLUS TWO CHARGERS



This is the best way to guarantee that each battery is completely charged to maximum capacity.
 Example: 24V battery set composed of 2 x 12V batteries. A 12V SCBQ charger charges each battery.

5.6 BATTERIES IN PARALLEL SERIES AND ONE CHARGER

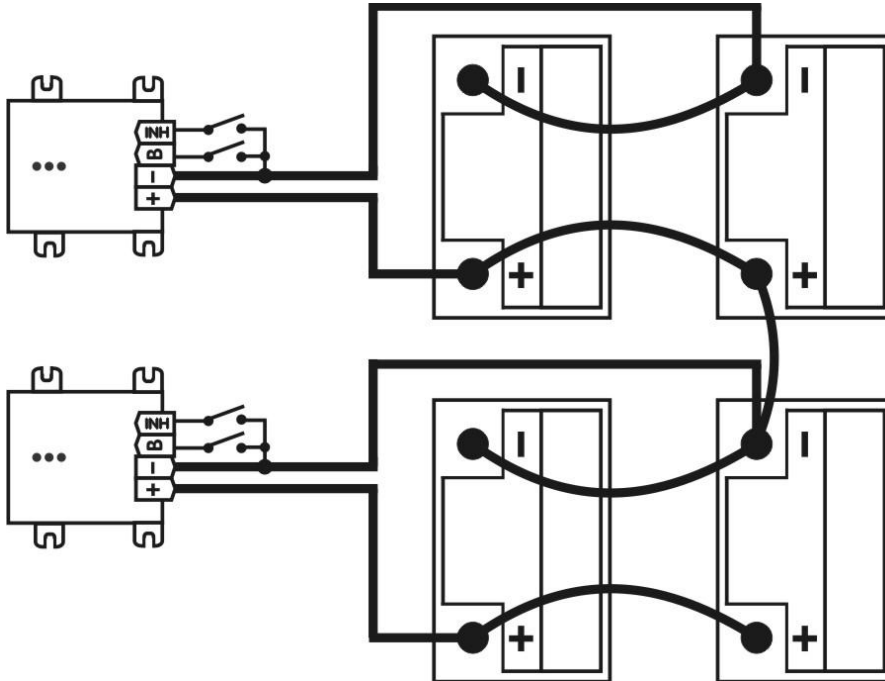


Wiring diagram for a 24V SCBQ charger and 24V battery set composed of 12V batteries.

Connecting the negative charger cable to the battery diagonally opposite the positive avoids voltage-drop imbalances.

It would not be possible to use 2 x 12V SCQB chargers with this wiring, since the more distant batteries charge less than those connected to the chargers.

5.7 BATTERIES IN PARALLEL SERIES WITH TWO CHARGERS



Note again the wiring to avoid voltage drops that unbalance the charge. With this wiring it is possible to charge a 24V battery set using 2 x 12V SCBQ chargers. The charge will be shared between the 4 batteries.

6-MODELS

SCBQ

The SCBQ battery charger series consists of the following standard models. Other voltages and powers can be requested by special order.

	MODEL	VOLTAGE	CURRENT	BATTERY CAPACITY
01	SCBQ1205	12 Vcc	5 Acc	60 Ah
02	SCBQ1210	12 Vcc	10 Acc	120 Ah
03	SCBQ2405	24 Vcc	5 Acc	60 Ah
04	SCBQ2410	24 Vcc	10 Acc	120 Ah



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