

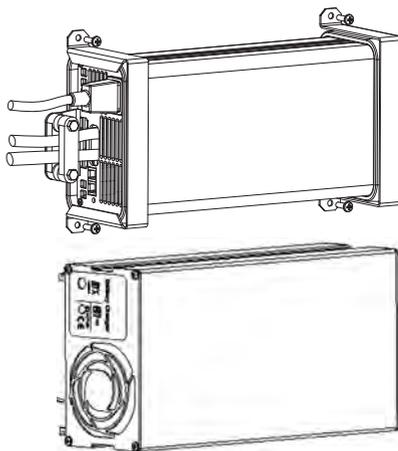
General

SHF 600, 800 and 1600 are regulated battery chargers. SHF exists in different versions either for charging vented or valve regulated lead/acid batteries. They can also be equipped with a charging curve for Ni-Cd batteries or similar.

The battery charger is supplied with a pre-set charging curve adapted to the type of battery specified during ordering. Information about the charging curve that is set can be read on the outside of the battery charger.

The built-in microprocessor controls current and voltage during the charging process. The charging process is displayed with an LED on the panel of the battery charger. Charging time and temperature in the battery charger are monitored and charging is limited in the event of cell defects or during insufficient cooling etc. During the entire charging process, the battery charger gathers in data and carries out calculations in order to fully recharge the battery with respect to amount of discharge, temperature, age and more. The battery charger is cooled by means of a temperature-regulated fan.

Read through these operating instructions carefully before you begin using the battery charger. Store the operating instructions so that they are always available for the person using the battery charger.



SAFETY PRECAUTIONS

The battery charger is only intended for indoor use. Follow the instructions for handling batteries provided by the battery manufacturer. Only use spare parts recommended by the supplier.

	<ul style="list-style-type: none"> The battery charger may only be used for the types of batteries specified. 		<ul style="list-style-type: none"> Do not use the battery charger if it is damaged. Do not touch damaged components. Turn off the mains voltage immediately and send for service personnel.
	<ul style="list-style-type: none"> The battery charger is supplied with a pre-set charging curve adapted to the type of battery specified during ordering. When changing the type of battery, you should contact the supplier for possible reprogramming of the battery charger. The battery will be damaged if the setting of the battery charger is incorrect. 		<ul style="list-style-type: none"> The battery charger has a voltage that can cause personal injury. Thus, the metal casing may only be opened by authorised service personnel. Disconnect the battery and power supply before carrying out maintenance or cleaning the battery charger. The battery charger must only be connected to an earthed wall socket.
	<ul style="list-style-type: none"> Hydrogen gas is generated when charging batteries, which can cause an explosion. 		<ul style="list-style-type: none"> Batteries should only be charged in well-ventilated premises.
	<ul style="list-style-type: none"> During charging, batteries may not be placed in the vicinity of an open fire or sparks. 		

Installation

Only an authorised installation engineer may carry out the installation.



The battery charger should be installed indoors in a low humid area.

Locate the battery charger so that there is free circulation of air through the battery charger's ventilating openings.

If several battery charges are to be mounted next to each other, they may not be located so that cooling air from one battery charger blows into the air intake of another battery charger.

Mount the battery charger as per figure. Dimensions for free space around the battery charger shouldn't fall below those specified.

Install the battery charger so that the gasses from the charging do not get sucked in by the charger's fans.

The battery charger can be used horizontally on a table, suspended on a wall with an accompanying bracket.

For installation on a wall or for internal mounting, the battery charger should be placed horizontally to prevent penetration of moisture and dirt.

For on-board applications it is strongly recommended that shock absorbers are used when installing the chargers. Kits are available for SHF 600, 800 and 1600. Other options such as external LED, drive interlock and helical (curly) mains cable are available upon request.

Mounting of SHF 600, SHF 800

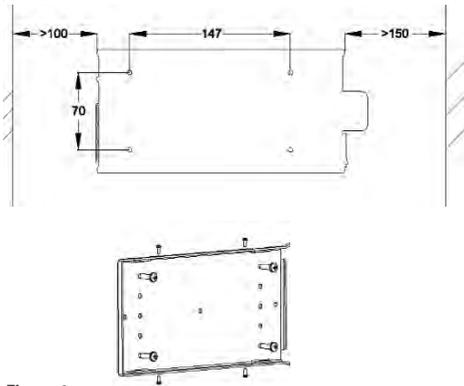


Figure 1

Mounting of SHF 1600

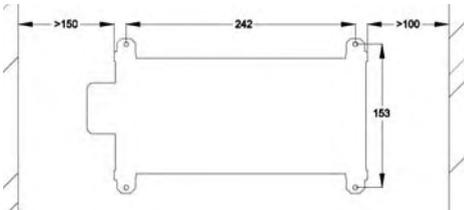


Figure 2

The battery charger is produced in different mains voltage variations. Check that the power supply at the site of the installation complies with the rated voltage according to the information on the battery charger's rating plate. The recommended mains fuse is specified on the battery charger's rating plate.

The battery charger is connected to the mains voltage via a cable with a plug to an earthed wall socket. Connect the battery charger as per figure 3. The red cable is connected to the battery's positive pole and the black or blue cable is connected to the battery's negative pole. Carefully check the marking on the battery.

Upon request, the battery can be permanently connected or detachable.

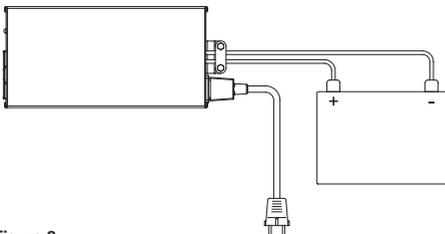


Figure 3

Operation

Cable connections and control panel

SHF 600, 800

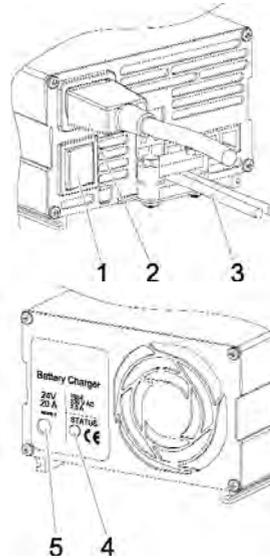


Figure 4

1. Mains switch
2. Mains cable
3. Battery cables

4. LED
5. Program switch

SHF 1600

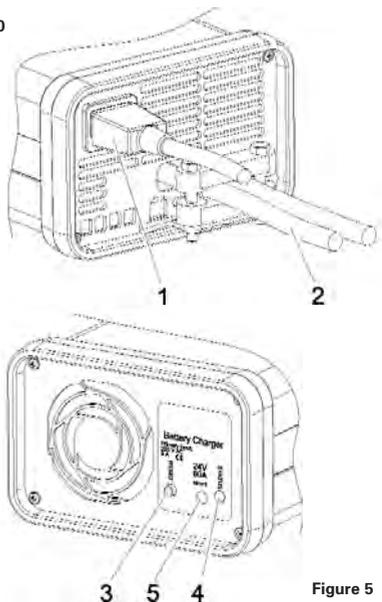


Figure 5

1. Mains cable
2. Battery cables
3. Reset button

4. LED
5. Program switch

Charging



In the case of danger, disconnect the mains voltage by pulling out the plug from the wall socket.

Connecting a battery

1. Check that the battery charger is turned off. The switch on the panel should be in the 0-position (applies to SHF 600, 800). Battery charger SHF 1600 can be continuously to the mains.
2. Check the wiring and adapter to ensure that there is no visible damage.
3. Connect the battery to the battery charger.
4. Start the battery charger by setting the switch on the panel to the 1-position (applies to SHF 600, 800). Battery charger SHF 1600 automatically starts charging when the battery is connected. Yellow LED lights. Charging time will vary depending on the type of battery and the degree of discharge.
5. Green LED is displayed when the battery is fully charged. The battery charger change to maintenance charging.

Note!

The green LED will not light immediately if a fully charged battery is connected. This time can vary between 0 and 2 hours.

Disconnecting a battery



The battery charger should be turned off when disconnecting the battery. If the battery is disconnected during an ongoing charge, the contacts in the charging connector will be damaged and spark formation can occur causing a hydrogen explosion.

1. Turn off the battery charger. Set the switch on the panel to the 0-position (applies to SHF 600, 800). Press the Reset button (applies to SHF 1600).
2. Disconnect the battery from the battery charger (applies to SHF 600, 800). Disconnect the battery immediately after the reset button is pressed. Charging is resumed after 10 seconds if the battery is still connected (applies to SHF 1600).

Maintenance

May only be performed by qualified personnel.

Troubleshooting

May only be performed by qualified personnel.

Safety shut-off

Charging is terminated if:

- The recharged number of ampere-hours exceeds the value of the input programme.
- The charging time for any of the charging phases exceeds a preset value.
- Voltage and current exceed an approved mean value.
- The battery is disconnected without the charger being turned off.

Charging is temporarily interrupted or reduced when:

- The temperature exceeds permitted values.

Checking error messages

When the battery charger's built-in self-testing function detects a fault, this is indicated via the LEDs. Red flashing LED indicates a charging fault. Red fixed light indicates a fault in the charger.

Please make a note of any faults and send for authorised service personnel.

Checks

1. Check that the battery is free from defects, in good condition and is the correct type for the battery charger.
2. Check that the battery is correctly connected and that the battery fuse, if any, is whole.
3. Check that the mains voltage is correct and that all fuses are whole.
4. Check the wiring and adapter to ensure that there is no visible damage.

Recycling

The battery charger shall be recycled as metal and electronic scrap.