Operating Instruction

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Battery Charger
Type: E230 G 24/35 B45-FPO
Hako-order no.: 92003284

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Controlled battery charger for lead batteries with liquid and solid electrolyte in SNT technology

controlled backup charging – reverse battery protection – protection against short circuit – constant conservation of charge – low AC-current

General information

The housing of the battery charger is made of enclosed sheet metal steel.
The mains connection is made via a special mains connection cable.
Mains fuse (F1): Micro fuse 5x20 mm. Back-up only through value resembles T 6,3 AH 250V.
The battery charger is protected against short circuits and equipped with a reverse battery protection.
The operating status can be indicated with an external/separate LCD-display and LEDs.
The battery charger should only be opened by qualified personnel.
The charger is especially designed for cleaning machines of the type Scrubmaster B120R and has to be used only in combination with these machines.
Attention: Non-rechargeable batteries can not be charged with this battery charger.

Initial operation

At first it has to be checked, if the pre-set battery type is appropriate to the used battery (customer service).
The mains connection (120-230V AC, 50-60Hz) has to be implemented with a delay-action fuse.
The charger is connected to the mains with the mains plug.
To charge the battery, follow the instructions of the battery manufacturer!

Important note:

Before using a battery for the first time, there has to be done an initial operation charge (please see also battery manual). This is accomplished by doing a regular charge process. Only after the charging-cycle has been fully completed with “end of charge”-indication, the machine can be used. For maintenance-free PzV-batteries an additional 15h compensator-charge is recommended.

Sequence of connection:

The charger has to be disconnected form the mains supply before connecting/disconnecting the charging plug/cables to the battery.
The battery charger complies with the protection regulations of the low voltage guideline 2006/95/EEC and the guideline for electromagnetic compatibility 2004/108/EC.

CE

EN 60 335-1
EN 60 335-2-29

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Functional description and monitoring of charging process

The battery charger begins to charge automatically, if the mains power and the battery connection have been properly connected.
With begin of the charging the battery connection is checked and all LED's light up briefly. During the main charge the 1st and 2nd charge icon light up successively. When the pre-stored gassing voltage has been reached, this voltage will be stabilized and the current drops slowly ($U_{constant}$). After the current has reached a constant phase, the charger switches over to backup-charging and the 3rd charge icon lights up, too. After the backup-charge has been completed, the charging electronic switch device changes to end of charging/constant conservation of charge. All four charge icons light up.
Do not interrupt the charging procedure until battery is adequately charged. An interruption may cause a loss of capacity and premature failure of the battery. The driving-off protection is a potential-free contact preventing the use of the vehicle during the charging process.
To pause the charging, press the push-button short. In this charge state the charge plug can be disconnected. The 2nd and the 4th icon are blinking alternating with the 3rd charge icon. To continue the charging, press the push button short or wait 1 minute.

"**Battery not connected" is indicated by the blinking icon and is detected immediately when switching on the battery charger during operation and during the latest 60 sec. after disconnecting the battery.**
Please make sure that there is no reverse connection of the battery during this time!
When the battery is connected again, the charging set switches itself on.

Indication of operating status by the external display and LEDs

operating status	LCD-/LED-indicator					
Main charge V_{bat} < 2V/C	X					
Main charge		X				
Backup charge			X			
Conservation charge				X		
operating status during malfunction*						malfunction number
Battery malfunction	X					**1**
Battery voltage too high		X				**2**
Time malfunction			X			**3..4**
Control malfunction				X		**11..13**
Temperature malfunction					X	**6**

*** If there is a malfunction, the frame and lower icon/under LED flashes once a second.**

Safety function of the electronic charging switch device according to the malfunction number

1. battery missing, reverse connection or V_{bat} < 0,2 V/C
2. during start-up the battery voltage is > 2,4 V/C (under 2.40 V/C the charger switches on automatically)
3. battery voltage < 1,5 V/C for longer than 40 minutes
4. constant current phase too long
6. temperature in the charger is too high
11-13. control malfunction