56025017

Sonnenschein Traktion Batterie EPzV and EPzV-BS Operating Instructions Maintenance free lead acid batteries with positive tubular plates

Nominal Data

• Battery type	: see type plate
• Nominal voltage U_N	: 2.0 V x number of cells
• Nominal capacity $C_N = C_5$	: 5h discharge (see type plate and technical data in these instructions)
• Nominal discharge current $I_N = I_5$	: C_N / 5h
• Final discharge current U_f	: see technical data in these instructions
• Nominal temperature T_N	: 30° C

- Respect the operation instruction and display it close to the battery.
- Work on batteries have to be carried out by skilled personnel only!

- Use protective glasses and clothes when working on batteries.
- Obey to the accident prevention rules as well as DIN EN 50272-3, DIN EN 50110-1!

- No smoking!
- Do not expose batteries to naked flames, glowing embers or sparks, there is the risk that the battery explodes.

- Acid splashes into the eyes or on the skin must be washed immediately with an abundance of clear water. In case of accident consult a doctor immediately!
- Clothing contaminated by acid should be washed in water.

- Risk of explosion and fire, avoid short circuits!

- Electrolyte is highly corrosive.
- In the normal operation of this batteries a contact with acid isn't possible. If the cell containers are damaged, the immobilised electrolyte (gelled sulphuric acid) is corrosive like the liquid electrolyte.

- Batteries and cells are heavy.
- Ensure secure installation! Use only suitable handling equipment e.g. lifting gear inaccordance with VDI 3616.

- Dangerous electrical voltage!
- Caution: Metal parts of the battery are always live – avoid contact and short circuits.
- Do not place tools or other metal objects on the battery!

Non-compliance with operating instructions, installations or repairs made with other than original accessories and spare parts or with accessories and spare parts not recommended by the battery manufacturer or repairs made without authorization (e.g. opening of valves) render the warranty void.

For batteries in classes Ex I and Ex II the instructions for maintaining the appropriate protection class during operation must be complied with (see relevant certificate).

Spent batteries have to be collected and recycled separately from normal household wastes (EWC 160601). The handling of spent batteries is described in the EU Battery Directive (2006/66/EC) and their national transitions (UK: HS Regulation 1994 No. 232, Ireland: Statory Instrument No. 73/2000). Contact your supplier to agree upon the recollection and recycling of your spent Batteries or contact a local and authorized Waste Management Company.

EPzV batteries are valve-regulated batteries with an immobilised electrolyte and where a water refilling isn't permitted during the whole battery life.
Instead of a vent plug there are valves used, who will be destroyed when they are opened. When operating valve-regulated lead-acid batteries the same safety requirements as for vented cells apply to protect against hazards from electric current, from explosion of electrolytic gas and in case of the cell container is damaged, from the corrosive electrolyte.

1. Commissioning

The battery should be inspected to ensure it is in perfect physical condition.
The battery end cables must have a good contact to terminals, check that the polarity is correct. Otherwise battery, vehicle or charger could be destroyed.
The battery has to be charged according to item 2.2.
The specified torque loading for the pole screws of the end cables and connectors are:

	Steel
M 10	23 ± 1 Nm

2. Operation

DIN EN 50272-3 »Traction batteries for industrial trucks« is the standard which applies to the operation traction batteries in industrial trucks.

2.1 Discharging

Ventilation openings must not be sealed or covered.
Electrical connections (e.g. plugs) must only be made or broken in the open circuit condition.
To achieve the optimum life for the battery, operating discharges of more than 60% of the rated capacity should be avoided (deep discharge). They reduce the battery life considerable. To measure the state of discharge use only the battery manufacturer recommended discharge indicators. Discharged batteries must be recharged immediately and must not be left discharged. This also applies to partially discharged batteries.

2.2 Charging

Only direct current must be used for charging. Charging procedures according to DIN 41773 and DIN 41774 must only be applied in the manufacturer approved modifications. Therefore only battery manufacturer approved chargers must be used. Only connect the battery assigned to a charger, suitable for the size of battery, in order to avoid overloading of the electric cables and contacts and unacceptable gassing of the cells.
EPzV batteries have a low gas emission.
When charging, proper provision must be made for venting of the charging gases. Battery container lids and the covers of battery compartments must be opened or removed.
With the charger switched off connect up the battery, ensuring that the polarity is correct (positive to positive, negative to negative). Now switch on the charger. When charging the temperature of the battery rises by about 10°C, so charging should only begin if the battery temperature is below 35°C.
The battery temperature should be at least +15°C before charging otherwise a full charge will not be achieved. Are the temperatures a longer time higher than +40°C or lower than +15°C, so the chargers need a temperatures regulated voltage.
The correction factor is, in accordance with DIN EN 50272-1 (Draft), -0,005 V/c and Kelvin.

Special instructions for the Operation of batteries in hazardous areas.

This concerns batteries which are used in accordance with EN 50 014, DIN VDE 0170 / 0171 Ex I (in areas with a firedamp hazard) or Ex II

(in potentially explosive areas). The attention pictograms has to be respected.

2.3 Equalising charge
Equalising charges are used to safeguard the life of the battery and to maintain its capacity. Equalising charges are carried out following normal charging.
They are necessary after deep discharges and repeated incomplete recharges. For the equalising charges has to be used only the battery manufacturer prescribed chargers.

Temperatur beachten!

2.4 Temperature
A battery temperature of 30°C is specified as the rated temperature. Higher temperatures shorten the life of the battery, lower temperatures reduce the available capacity.
45°C is the upper temperature limit and is not acceptable as an operating temperature.

2.5 Electrolyte
The electrolyte is immobilised in a gel.
The density of the electrolyte can not be measured.

3. Maintenance
Don't refill water!

3.1 Daily
Charge the battery immediately after every discharge.

3.2 Weekly
Visual inspection after recharging for signs of dirt and mechanical damage.

3.3 Quarterly
After the end of the charge and a rest time of 5 h following should be measured and recorded:

- the voltages of the battery
- the voltages of every cell

If significant changes from earlier measurements or differences between the cells or bloc batteries are found, further testing and maintenance by the service department should be requested.

3.4 Annually
In accordance with DIN EN 1175-1 at least once per year, the insulation resistance of the truck and the battery must be checked by an electrical specialist.
The tests an the insulation resistance of the battery must be conducted in accordance with DIN EN 1987-1.
The insulation resistance of the battery thus determined must not be below a value of 50 Ω per Volt of nominal voltage, in compliance with DIN EN 50272-3.
For batteries up to 20 V nominal voltage the minimum value is 1000 Ω.

4. Care of the battery
The battery should always be kept clean and dry to prevent creeping currents. Cleaning must be done in accordance with the ZVEI code of practice number 6e «The Cleaning of Vehicle Traction batteries», (download www.zvei.org/indes.php?id=163)

Any liquid in the battery tray must be extracted and disposed of in the prescribed manner. Damage to the insulation of the tray should be repaired after cleaning, to ensure that the insulation value complies with DIN EN 50272-3 and to prevent tray corrosion. If it is necessary to remove cells it is best to call our service department for this.

5. Storage
If batteries are taken out of service for a lengthy period they should be stored in the fully charged condition in a dry, frost-free room. To ensure the battery is always ready for use a choice of charging methods can be made:

1. a quarterly full charging like charge as in point 2.2. If any consumer is connected with, e.g. measure or controlling systems, it can be, that this charging is necessary every 14 days.
2. float charging at a charging voltage of 2.30 V x the number of cells.

The storage time should be taken into account when considering the life of the battery.

6. Malfunctions
If malfunctions are found an the battery or the charger our service department should be called without delay. The measurements taken in point 3.3 will facilitate fault finding and their elimination.
A service contract with us will make it easier to detect and correct faults in good time.

MXSVDOE10000909 · Druckhaus Bechstein · Printed in Germany · Änderungen vorbehalten
56025017 1,0 IX.09

Exide Technologies GmbH
Im Thiergarten
63654 Büdingen – Germany

Tel.: +49 (0) 60 42 / 81 454
Fax: +49 (0) 60 42 / 81 398

www.industrialenergy.exide.com

EXIDE TECHNOLOGIES
INDUSTRIAL ENERGY