

Commissioning Instructions and Report

Dry pre-charged traction batteries PzSL*, PzSE (PzB) and GiS

* Also applies to train lighting batteries to DIN 43579 and batteries to DIN 43582



Pay attention to the commissioning instruction. Work on batteries have to be carried out by skilled personnel only.



Use protective glasses and clothes when working on batteries. Pay attention to the accident prevention rules as well as DIN VDE 0510 and VDE 0105 part 1.



No smoking. Do not expose batteries to naked flames, glowing embers or sparks, as it may cause the battery to explode.



Acid splashes in the eyes or on the skin must be washed with water. In case of accident consult a doctor immediately. Clothing contaminated by acid should be washed out in water.



Risk of explosion and fire, avoid short circuits. Caution: Metal parts of the battery are always live. Do not place tools or other metal objects on the battery.



Electrolyte is highly corrosive.



Batteries and cells are heavy. Ensure secure installation! Use only suitable transport equipment e.g. lifting gear in accordance with VDI 3616.



Dangerous voltage

Ignoring the operation instructions, repair with non-original parts or using additives for the electrolyte will 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).

The completed commissioning reports should be sent back to the battery manufacturer!

1. Checking

The battery installation and the charging equipment should be inspected to ensure they are in perfect mechanical condition.

All cables must be connected to ensure a good contact, taking care that the polarity is correct. All threaded connectors in the circuit must be tightened in accordance with the „Instructions for Use“, to ensure a reliable contact. A check must be made to ensure the charger equipment is ready for operation. Ensure that the polarity is correct. Before filling the cells care should be taken to ensure that the specifications of DIN VDE 0510 part 3 with regard to the installation and ventilation have been complied with.

2. Filling the cells

The filling acid with a specific gravity (S. G.) in accordance with Table 1 must comply with the purity regulations in DIN 43530 part 2. If concentrated sulphuric acid is supplied the „Mixing Instructions“ must be complied with. The temperature of the acid used for filling should be between 15° and 30°C. The temperature must be measured and recorded before filling. After removing the transport plugs or opening the vent caps, the cells should be filled to the surge baffle or to the top edge of the separator. Acid resistant filling equipment should be used for this. Transport plugs are not permissible for use when operating the battery. They must be replaced by vent plugs.

Table 1

Cell range	Filling S. G.		Nominal S. G. [kg/l]
	30°C	15°C	
PzSL PzSE	1,28	1,29	1,29
GiS	1,25	1,26	1,26
Train lighting batteries (DIN43579, DIN 43582)	1,23	1,24	1,24

Higher temperatures reduce the specific gravity of the electrolyte, lower temperatures increase it. The temperature correction factor for the specific gravity is -0.0007 kg/l per K. Example: A specific gravity of the electrolyte of 1.28 kg/l at 45°C corresponds to an S.G. of 1.29 kg/l at 30°C.

3. Rest period

After filling the cells the filled battery should stand for a period of 2 hours. Next, depending on the number of cells, the temperature and the specific gravity of the electrolyte should be measured and recorded on at least 2 to 4 cells (pilot cells) (see point 6). If after the resting period the temperature rise is less than 10 K or the specific gravity of the electrolyte has fallen no more than 0.02 kg/l below the specific gravity of the filling acid, - with reference to a temperature of 30°C - then the battery is ready for operation. To achieve a better performance capability right from the start however the commissioning should be carried out by recharging as per 4.1. If one of the deviations is greater, commissioning charge in accordance with 4.2 will be necessary.

4. Commissioning

The vent plugs remain open in order to be able to observe whether all the cells are gassing equally towards the end of the charge. It is important that the first charge be carried out fully and as far as possible without interruption. The temperature of the electrolyte however must not exceed 55° C during commissioning and if it does the charge must be discontinued. After commissioning is completed the voltage, the specific gravity of the electrolyte and the temperature of all cells and/or bloc batteries should be measured and recorded with details of date and time (see point 6). Complete charging has been achieved when the specific gravity of the electrolyte and the cell / bloc battery voltages have not risen in two hours.

4.1 Commissioning by recharging

The recharging is carried out on the appropriate charger. At the end of the recharging the nominal specific gravity of the electrolyte in Table 1 should be achieved with a deviation of ± 0.01 kg/l. If a uniform specific gravity of the electrolyte is achieved and all cells are gassing evenly without the voltage in individual cells or bloc batteries still rising (with IU chargers no further fall off in the charging current), then the battery is ready for operation.

4.2 Commissioning with an equalising charge

The equalising charge is carried out on the appropriate charger (see „Instructions for Use“).

Table 2
Maximum permissible charging currents per 100 Ah C₅

charging characteristic	charging current
I- Characteristic	5A
Wa/WoWa-characteristic at 2,4 V/cell at 2,65 V/cell	8 A, decreasing to 4 A

At the end of the equalising charge the nominal specific gravity of the electrolyte in Table 1 should be achieved with a deviation of ± 0.01 kg/l. If a uniform specific gravity of the electrolyte is achieved and all cells are gassing evenly without the voltage in individual cells or bloc batteries still rising then the battery is ready for operation.

4.3 Adjusting the level of the electrolyte

During the charging process the surface of the electrolyte will rise. If this exceeds the maximum filling level electrolyte must be sucked out as necessary.

4.4 Adjusting the specific gravity of the electrolyte

If the specific gravity of the electrolyte is too high at the end of commissioning then part of the electrolyte must be replaced with purified water according to DIN 43530 part 4.

5. Notes

Acid which escapes or spills must be carefully removed or neutralised. This can be done with a soda solution (1 kg of soda to 10 litres of water) or other neutralisation agents. Neutralisation agents must not get into the cells. Liquid in the battery tray should be sucked out and disposed in accordance with the regulations. The surface of the battery should then be cleaned, see the ZVEI Code of Practice: "Cleaning of batteries". ZVEI Code of Practice: "Precautionary measures when using electrolytes for lead acid batteries" should be complied with.

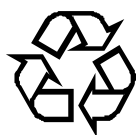
The operating instructions for the battery apply when using the battery.

The battery will reach its rated capacity after the 10th cycle at the latest.

Cell / bloc voltage, temperature and specific gravity of electrolyte for all cells at the end of the commissioning charge.

No. 1)	Voltage [V]	S. G. [kg/l]	Temperature [°C]	No.	Voltage [V]	S. G. [kg/l]	Temperature [°C]	No.	Voltage [V]	S. G. [kg/l]	Temperature [°C]
1				26				51			
2				27				52			
3				28				53			
4				29				54			
5				23				55			
6				31				56			
7				32				57			
8				33				58			
9				34				59			
10				35				60			
11				36				61			
12				37				62			
13				38				63			
14				39				64			
15				40				65			
16				41				66			
17				42				67			
18				43				68			
19				44				69			
20				45				70			
21				46				71			
22				47				72			
23				48				73			
24				49				74			
25				50				75			

- 1) Cell or bloc no. beginning at the positive terminal of the battery.
For bloc batteries the specific gravity of the electrolyte of the cell next to the positive pole must be measured in each case.



Back to the manufacturer!

Batteries with this sign must be recycled.

Batteries which are not returned for the recycling process must be disposed of as hazardous waste!



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