

Energy station of .....  
 ..... Battery of ..... element - Type ..... Capacity .....  
 Manufacturer: ..... References ..... Manufacturer:.....

## A- GENERAL GUIDELINES

### DEFINITION OF "FLOATING BATTERY" REGIME

It is a storage battery at the terminals of which is applied a stabilized DC voltage of a value sufficient to maintain it in a state close to full charge.

The charging device supplies at all times the current drawn by the operating circuit and the current necessary to compensate for the internal losses of the battery.

Under these circumstances, the charger must be a regulated device delivering a stabilized voltage to the nearest 0.01 V.

### OPERABILITY OF BATTERY ON FLOAT

The good functioning of battery on float is characterized by the homogeneity of the densities and the voltages of each of the cells of the same battery. For illustrative purposes, the tension (UF) of a battery operated in "floating regime" for three months should be, per each cell, within the following limits :

- 2.23 volts for an average temperature between 5 and 15 °C
- 2.21 volts for an average temperature between 16 and 25 °C
- 2.19 volts for an average temperature between 26 and 35 °C

During permanent operation under the conditions below, periodic checkups must not reveal non-homogenous or non-proportional voltage and density values.

A component is considered to be faulty if, three months after a full charge and before addition of water, it presents, compared to the average elementary voltages and densities recorded throughout the battery, deviations which are greater than the following values :

- Voltage : +/- 0.03 volts
- Density : +/- 0.025 g / m<sup>2</sup>

### WARRANTY CONDITIONS

The battery is guaranteed subject to its use at the voltage recommended above with a tolerance of (+/- 1%). Throughout the duration of the warranty, all the cells which present amp-hours or poor performance in the floating battery mode (abnormal voltage) are repaired or replaced free of charge unless the fault is attributable to the user.

## B- OPERATING INSTRUCTIONS

### FLOATING BATTERY OPERATION

For a battery of n cells, the voltage is set to (UF X n) volts.

● If the voltage is too high, this may cause a continuous overload, leading to a drop of lead peroxide, and may accelerate the wear of the positive plates.

● An insufficient voltage leads to a progressive drop in density, therefore a slow discharge of the battery and, possibly, irreversible sulphurization.

### EQUALIZATION CHARGE

The equalization charges result in mixing electrolyte and homogenizing the elements' state-of-charge. They are provided for in the following cases :

1. After a deep discharge
2. After an inadequate discharge.
3. If the voltages are non-homogeneous with the deviations which are greater than 0.03 V.
4. If the voltage and density are not proportional. (See table)

Density at 20°C-g/cm <sup>3</sup>	1.215	1.240	1.150 to 1.265
Electrolyte level	Max	Medium	Min
Floating 20°-25°C	2.19-2.21	2.22-2.24	2.24-2.26

Depending on the installation options, the equalization charges are carried out at a constant current (low rate) or at a constant voltage. They are extended for the time required to equalize the voltages to the prescribed values.

Note :

If the temperature reaches 45 °C, it is necessary to lower the rate or terminate the charging process.

## C- MAINTENANCE INSTRUCTIONS

### MONTHLY MAINTENANCE

● Measure and note on the battery book, the voltage and density of each cell in a battery on float.

### QUARTERLY MAINTENANCE

● It is possible to restore the electrolyte level between the "min" and "max" indications, by adding distilled or demineralized water.

● Never add acid or acidulated water.

● If necessary, perform an equalization charge whilst monitoring the temperature of the cells. Read and register the charge data in the battery book.

Note :

The relative density depends on the level of the electrolyte and its temperature.

### ANNUAL MAINTENANCE

Perform a partial discharge corresponding to at least 50% of the nominal capacity by proceeding as follows :

1- Stop the rectifiers and note the total voltage and the operating current every 15 minutes.

2- Calculate the discharge rate by adding the ampere-hours supplied to each integrating period.

● Before terminating the discharge, note the voltages and densities on each cell. This partial discharge makes it possible to assess the battery's run life and to identify deficiencies and signs of the battery ageing (In order to proceed to the replacement of the equipment, without delay).

### GENERAL MAINTENANCE

● Keep the cases, lids, bases (or carts) and the battery room in a perfect clean condition.

● Remove salts and traces of acid with a water-soaked sponge. Remove traces of moisture using a dry cloth.

● Clean the flameproof plugs and wash them under running water.

