

# BASIC OPERATING AND MAINTENANCE INSTRUCTIONS FOR ABSOLYTE® AGPS BATTERIES IN RAILROAD SIGNAL SERVICE



- Absorbed Glass Mat (AGM)
- Float Service (20 Year Design Life)\*
- Solar Service
- 1200 Cycles to 80% D.O.D.\*
- No Electrolyte Maintenance
- Constant Voltage Charger Required

\* At an operating temperature of 77° F and operation per the I&O manual.

**Absolyte recommended float voltages for Temperature Compensated Chargers**

Temperature sensor should be physically attached to the battery. Do not use ambient temperature. Use 77°F if Temperature Compensation is not used. See Section 2.0 on reverse side.

| # Cells | BATTERY TEMPERATURE (°F) |       |       |       |       |       |       |              |       |       |       |       | VTolerance |
|---------|--------------------------|-------|-------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|------------|
|         | <=46°                    | 47°   | 52°   | 57°   | 62°   | 67°   | 72°   | 77°          | 82°   | 87°   | 92°   | >=93° |            |
| 1       | 2.35                     | 2.34  | 2.33  | 2.31  | 2.30  | 2.28  | 2.27  | <b>2.25</b>  | 2.24  | 2.22  | 2.21  | 2.20  | +/- 0.02   |
| 5       | 11.75                    | 11.70 | 11.65 | 11.55 | 11.50 | 11.40 | 11.35 | <b>11.25</b> | 11.20 | 11.10 | 11.05 | 11.00 | +/- 0.10   |
| 6       | 14.10                    | 14.04 | 13.98 | 13.86 | 13.80 | 13.68 | 13.62 | <b>13.50</b> | 13.44 | 13.32 | 13.26 | 13.20 | +/- 0.12   |
| 7       | 16.45                    | 16.38 | 16.31 | 16.17 | 16.10 | 15.96 | 15.89 | <b>15.75</b> | 15.68 | 15.54 | 15.47 | 15.40 | +/- 0.14   |
| 12      | 28.20                    | 28.08 | 27.96 | 27.72 | 27.60 | 27.36 | 27.24 | <b>27.00</b> | 26.88 | 26.64 | 26.52 | 26.40 | +/- 0.24   |
| 14      | 32.90                    | 32.76 | 32.62 | 32.34 | 32.20 | 31.92 | 31.78 | <b>31.50</b> | 31.36 | 31.08 | 30.94 | 30.80 | +/- 0.28   |

RECOMMENDED FLOAT VOLTAGES

**1.0 Safety Precautions**

**1.1** Batteries contain sulfuric acid which can cause burns and other serious injury. In the event of contact with sulfuric acid, flush immediately and thoroughly with water. The use of safety goggles, rubber apron, and rubber gloves is recommended.

**1.2** Batteries can generate explosive gases, which when released, can explode and cause blindness and other serious injury. Keep sparks, flames, and smoking materials away from the battery area.

**1.3** Multi-cell systems attain high voltages, therefore, extreme caution must be exercised during installation of a battery system. Interrupt the AC and DC circuits before working on batteries or charging equipment.

**2.0 Storage**

**2.1** It is recommended that Absolyte batteries be stored indoors in a cool (<25°C) dry location.

**2.2** The storage interval shall not exceed six (6) months unless the battery receives an equalize charge at the end of six (6) months and every six (6) months thereafter as long as it remains in storage. Elevated temperatures (>25°C) will result in higher rates of self-discharge.

**3.0 Charging (Constant Voltage Only)**

**3.1** Initial and Equalize Charge. See the table below for equalize charge voltage and times.

| <u>EQUALIZE CHARGE VPC</u> | <u>TIME - HRS</u> |
|----------------------------|-------------------|
| 2.30                       | 24                |
| 2.35                       | 12                |

When charging current has tapered and stabilized (no further reduction for three hours), charge for the number of hours

in the table to the left or until the lowest cell voltage ceases to rise. To determine the lowest cell, monitoring should be performed during the final 10% of the charge time.

**3.2** Perform an equalize charge:

- For batteries in storage. Refer to 1.2 above.
- At time of equipment installation.
- When the float voltage of any cell is less than 2.18 VPC or when the float voltage of any individual cell is more than 0.05 volts from average. It may also be used to recharge a battery in a minimum amount of time following an emergency discharge.

**3.3 Float Charge.** The recommended float voltage is **2.25 ± 0.02 VPC** when using a non-temperature correcting charger. If a temperature compensating charger is used, the minimum float voltage allowed is 2.20 VPC and the maximum float voltage is 2.35 VPC. Operating beyond these limits will reduce the design life of the Absolyte product. The standard temperature correcting value is 0.003 VPC for each degree variation from 77°F. This value is added to the recommended float voltage at 77°F for temperatures below 77°F and subtracted for temperatures above 77°F.

**4.0 Connection Torque** - Torque all terminal and intercell connections to 100 inch-lbs at least once per year.

**5.0 Inspection / Records**

**5.1** An initial battery maintenance record should be generated at the time of installation. This should include battery make, model and serial numbers, date of installation, initial cell voltages, charger type and settings. A digital voltmeter may be required.

**5.2** Quarterly records should be maintained thereafter including cell voltages, temperature, charger settings and date of measurements. Cell voltages should be taken while the battery is on float in a fully charged condition.