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Technical Bulletin

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Affected Products: Solar Boost 2000

Purpose: Obtaining equalization voltage with Solar Boost 2000

Liquid electrolyte lead-acid batteries can benefit from an occasional controlled overcharge which is commonly referred to as “equalization”. To conduct equalization, a high charge voltage of approximately 15.3V is applied to a fully charged battery for approximately two hours. The equalization process restores all cells to the proper specific gravity, drives residual sulfate off the plates and back into the electrolyte, and eliminates electrolyte stratification. These instructions identify how to use Solar Boost 2000 to obtain the desired equalization voltage.

WARNING!
IMPORTANT SAFETY INSTRUCTIONS

These instructions do not address all safety and procedural concerns relating to equalization. These instructions only describe how to obtain the higher charge voltage typically required to conduct equalization using Solar Boost 2000. Not all batteries can be safely equalized. Conduct equalization only in accordance with the battery manufacturer’s detailed procedural and safety instructions pertaining to equalization.

Solar Boost 2000 can provide temperature compensation of charge voltage. By replacing the SensorLug™ battery temperature sensor with a fixed resistor, the charge voltage setpoint voltage can be adjusted to any desired value. The figure below shows how a switch can be used to select between normal temperature compensation, and equalization voltage. Note that if the SensorLug is not used it must be replaced in the figure below with a fixed resistor of 1020Ω, which simulates 80°F. Also, temperature compensation must be enabled as described in the manual. The figure below shows an equalization resistor R_{EQ} value of 768Ω, which will increase the setpoint voltage by ≈1.3V producing an equalization voltage of ≈15.3V with Solar Boost 2000 set for the factory default charge voltage of 14.0V. Different levels of voltage setpoint increase can be obtained using the equation below. Use 1/4W 1% metal film resistors. Resistors and switches can be obtained from Mouser Electronics; www.mouser.com.

$$R_{EQ} = \frac{3 - (\Delta V/3)}{\{[3 + (\Delta V/3)]/1000\} - 0.0000566}$$

Where: ΔV = Desired voltage increase over setpoint

R_{EQ} = Value of Resistor placed on temperature sensor terminals to raise setpoint voltage by ΔV