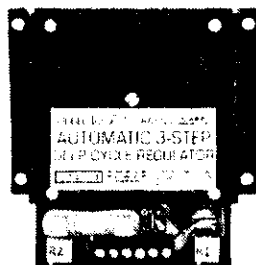




3-Step Deep Cycle Regulator

A fast, full charge as easy as 1, 2, 3-Step



With your alternator, or one of our high output alternators, the Automatic 3-Step Regulator gives you a fast, full charge and extended battery life. *Your savings in engine hours and fuel consumption will quickly recover the low cost of the system.* You get a bonus with longer battery life at full capacity. Even if you do nothing else to your system but install a 3-Step Regulator you'll be astonished at the additional battery capacity recovered.

- Completely Automatic Operation ... no user interaction required.
- Provides Charge, Absorption and Float Cycles for a Correct, Full Charge.
- Automatically Compensates for Battery Temperature.
- Senses Volts and Temperature for Multiple Batteries, at the Batteries.
- Two internal Timers and Sense Circuits for Correct and Safe Charging.
- Regulates Alternators, Solar Panels or Battery Chargers.
- Models are available in Normal or Heavy Duty Versions.
- Over Voltage Protected, and Low/High Temperature Rated.
- Precision Laser Trimmed Reference for Long Term Stability.
- Conformal Coating for Years of Trouble Free Service.

- Operates with Isolators to Conveniently Charge Multiple Batteries.

The 3-Step Deep Cycle Regulator has been designed to charge deep cycle batteries the way they should be charged. It provides the bulk charge cycle, followed by the absorption cycle and finally the float cycle. The regulator operates completely automatically, with no need of user interface, making it ideal for RV owners and charter boats. (Absorption and float voltage can be adjusted at the regulator.)

Battery voltage and temperature for multiple batteries is sensed by Battery Sensors and the 3-Step Deep Cycle Regulator automatically adjusts. Should the battery sensing wires open circuit, the regulator automatically shuts off. Two internal timers operating with sensor circuits protect from overcharging batteries which are already fully charged.

Use as many Battery Sensors as necessary to sense all the batteries being charged. All regulators include one Battery Sensor. Additional sensors may be purchased separately for multiple battery sensing. Battery sensors are potted in epoxy and connect to the positive battery post.

If you rely on an alternator to charge batteries, you will be amazed at the fast full charges that this regulator delivers. Don't limp along another day with your automotive regulator. Even if you are presently using a field controller, you'll find the 3-Step charges faster, fuller, and does it completely automatically!

#1018 Battery Sensor: Volts and Temperature.

#1019 For P Type Alternators to 130 Amps.

Boat Electric Co., Inc.
2834 N.W. Market Street
Seattle, WA 98107
(206) 784-5908

**BOAT
ELECTRIC**

Application Note 102:

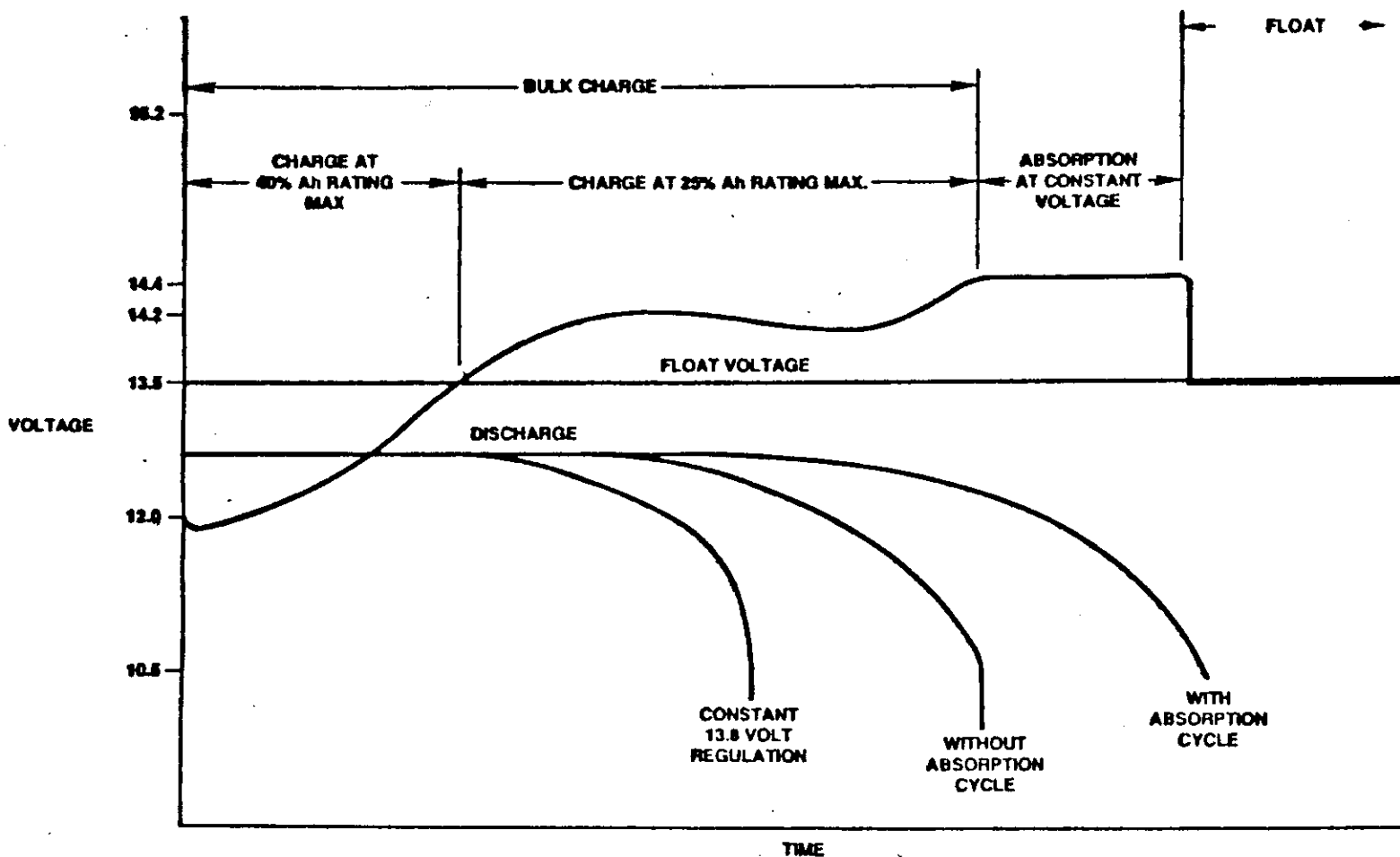
Cycles required to Charge a Battery.

A performance charging system treats the battery to at least three distinct cycles. In technical parlance, the three are known as bulk charge, absorption, and float.

cycles are shown in Figure 102. As shown, bulk charge cycle covers initial charging until the battery voltage reaches the vigorous gassing point at about 14.4 Volts. The voltage should then be held constant at 14.4 until the charge current through the battery declines to about 5% of the Amp-Hour Rating of the battery. This portion of the cycle is called the absorption cycle.

Following the absorption cycle, the battery is usually placed on a maintenance 'float' voltage. This is a voltage high enough to keep the battery charged, but low enough to prevent continuous charge current. A typical float voltage falls in the range of 13.5 to 13.65 Volts.

All the voltage values given are for liquid electrolyte, lead-acid batteries at 77 degrees Fahrenheit. Immobilized electrolyte batteries charge at different voltages, and do not require equalization. For a full description of proper charging and temperature correction, refer to our book 'Living on 12 Volts with Ample Power.'



3-Step Deep Cycle Regulator: