

	JFM Engineering, Inc.		<i>27 September 2002</i>
	Product Technical Bulletin		PB0202A
Products Affected			
Product	Model	SN	NOTES
Superseder	IIA-V & up	All	Operation clarification
Supercharger	60	All	Operation clarification
Mastercharger	All	All	Operation clarification
24-400 series	A, D, L and T	All	Operation clarification
Minicharger	All	All	Operation clarification
BCA-1210	All	All	Operation clarification
AMBAC II	All	All	Operation clarification
BCA-4310	All	All	Operation clarification
Constant Voltage Alternate Calibration and Verification			

1.0 Introduction

Most Charger-Analyzers manufactured by JFM Engineering are capable of Constant Voltage and Peak Voltage charging in addition to the standard Constant Current. Calibration/verification of the Peak Voltage mode (charge termination at a peak voltage) is relatively straight forward whereas Constant Voltage mode calibration/verification is somewhat more involved, although it is adequately covered in the respective manuals.

2.0 Theory of operation

Verification of Performance in the Constant Voltage mode requires that the current be monitored and to observe that as the battery reaches the expected float voltage that the current will begin to diminish.

In theory, if the battery voltage reaches the set point, the charge current should be zero but in reality, the current will settle at a level required to maintain the set voltage. This is not a limitation of the instrument but a characteristic of the electrochemistry of the battery. It will vary with the type, size and condition of the battery and also with the ambient temperature.

3.0 Alternate Calibration/Verification method

This method calls for using a battery to calibrate/verify the Constant Voltage performance as opposed to the external instrument method detailed in the respective manuals.

Note: Peak Voltage calibration must be performed first.

Select a battery size in A-Hr consistent with the output capability of the Charger-Analyzer (e.g. 5 to 7 A-Hr for the 24-400's and at least 20 A-Hr for the Superseders).

Set the float voltage consistent with the battery voltage (e.g. 13.8V for a 12V battery and 27.6V for a 24V battery).

Note: The battery must not be fully charged. If it is, the charge current will start at less than the maximum, or there may be no current at all.

Set the charge current to the maximum value recommended by the battery manufacturer and start the Charger-Analyzer in the Constant Voltage mode.

As the battery voltage approaches the set float voltage, observe that the current will start to diminish and will continue to do so as the battery gets closer to the final voltage.

The above referenced products have a sharp Constant Current/Constant Voltage knee, meaning that the transition from Constant Current to Constant Voltage occurs over the very narrow voltage range of about 0.5V (e.g. if the float voltage is 27.6V, the current will remain constant until the battery voltage reaches about 27.1V and will start to drop thereafter). It is very important, then, to carefully monitor this transition point.