

Verification Of Performance

MFC-10 / MFC-25

V1.1 – 15 May 2018

*The information presented in this document is intended for internal use by JFM
Engineering Personnel or authorized Distributors and Maintenance Facilities
Personnel only*



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1. PRELIMINARY

- 1.1 This Test Procedure is applicable to the MFC-10 and MFC-25. Any differences between the two models are noted.**
- 1.2 If this Test Procedure is not passed due to the unit being out of calibration (does not produce correct current or display the correct voltage), the unit will need to be calibrated as in the manual. Any other type of failure will require repair.**

2. INITIAL TESTS

- 2.1 Make sure the unit is disconnected from both the power cord and battery**
- 2.2 Verify that the power switch in the Power Entry Block is off**
- 2.3 Inspect all internal connections. Verify that all cables are properly secured.**
- 2.4 Verify that all internal hardware is of the proper type and properly secured.**
- 2.5 Replace cover and tighten down hardware.**
- 2.6 Verify that the charge fuse is of the proper type and value**
- 2.7 Verify that Line fuses are of proper type and value.**
- 2.8 Connect line cord and plug unit into power.**

3. POWER-UP TESTS

- 3.1 Turn Power ON and wait for the processor to complete its cycle.**
- 3.2 Verify the cycling of information in the LCD display:**
 - 3.2.1. Initial Screen
 - 3.2.1.1. Verify and record the Software Revision and date
 - 3.2.2. Main Menu Screen
 - 3.2.2.1. Verify that the main menu is properly presented.
- 3.3 Repeat process for both 115V and 230V mains connection.**
- 3.4 Verify that the voltage reads 0.0V (when not connected to a battery)**
- 3.5 Connect the battery cable**

4. KEYPAD and DISPLAY TESTING

- 4.1 Main Menu**
 - 4.1.1. Scroll up and down in the main menu to confirm display and program are working correctly.
- 4.2 Setup Menu**
 - 4.2.1. Select the Setup Menu the Up/Down arrows and pressing the OK button when on the Setup entry

- 4.2.2. Program the **Mode** to **Dual Rate** by using the Right Arrow and then the Up/Down arrows and using the OK button to save the mode.
- 4.2.3. Program **Time 1** to equal 00:02 (2 minutes) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value.
- 4.2.4. Program **Curr 1** to equal 2.0 (2 amps) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value.
- 4.2.5. Program **Volt 1** to equal 38.0 (38 volts) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value. Note that the value increments quickly when the up or down button is held down.
- 4.2.6. Program **Time 2** to equal 00:02 (2 minutes) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value.
- 4.2.7. Program **Curr 2** to equal 1.0 (1 amp) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value.
- 4.2.8. Program **Volt 2** to equal 38.0 (38 volts) by using the Right Arrow and then the Up/Down arrows and using the OK button to save the value. Note that the value increments quickly when the up or down button is held down.
- 4.2.9. Review all values for correctness and then use the X button to return to the main menu.

4.3 Profiles Menu

- 4.3.1. Select the Profiles Menu using the Up/Down arrows and pressing the OK button when on the Profiles entry
- 4.3.2. Go to the 'Save Profile' Menu item and save the current profile into profile '01'
- 4.3.3. Go to the 'View Profile' Menu item and View profile '01'
- 4.3.4. Make sure that the profile shown by the view profile function matches the settings from the previous step (4.2).
- 4.3.5. Go to the 'Load Profile' Menu item and Load profile '01'
- 4.3.6. Use the 'X' button to leave the Profiles Menu

4.4 Options Menu

- 4.4.1. Select the Options Menu using the Up/Down arrows and pressing the OK button when on the Options entry
- 4.4.2. Go to the 'Back Light' Menu item and change the option to 'off', press 'OK' and note that the back light on the LCD goes off
- 4.4.3. Now change the 'Back Light' Menu item option to 'on', press 'OK' and note that the back light on the LCD is turned on
- 4.4.4. Go to the 'Comm Mode' Menu item and make sure it is set to BTAS
- 4.4.5. Go to the 'CID' Menu item and make sure it is set to 1
- 4.4.6. Go to the 'Show Volt' Menu item and make sure it is set to 'True'
- 4.4.7. Use the 'X' button to leave the Options Menu

5. POWER TESTS

5.1 Voltage:

5.1.1. Voltage Reading

- 5.1.1.1. Make sure the voltage display option is set to True (as in step 4.4.6)
- 5.1.1.2. Connect to an external voltage source (VCM100) with able to output 0 to 38V
- 5.1.1.3. Adjust voltage source up and down and note that the displayed value matches the applied voltage (+/- 0.1 Volts).

5.1.2. Overvoltage

- 5.1.2.1. Increase the voltage towards 38.00V
- 5.1.2.2. Verify that an Absolute Overvoltage indication takes place at 38V; Remove applied voltage to clear.

5.1.3. Reverse Polarity

- 5.1.3.1. Decrease the voltage to zero
- 5.1.3.2. Reverse the polarity and Increase the voltage towards -0.25V
- 5.1.3.3. Verify that a Reverse Polarity indication takes place between -0.10V and -0.25V; Remove applied voltage to clear.

5.2 Current

- 5.2.1. Connect to a load (battery) through a reference Ammeter
- 5.2.2. Set charger to run in 'Sing Rate' mode, with 'Time' set to '00:10', 'Curr' set to 1.0 and 'Volt' set to an appropriate value in the Setup menu.
- 5.2.3. Run charger and confirm produced current is within cal (+/- 0.1 Amps).
- 5.2.4. Change 'Curr' to 5.0
- 5.2.5. Run charger and confirm produced current is within cal.
- 5.2.6. Change 'Curr' to 10.0
- 5.2.7. Run charger and confirm current is within cal(+/- 0.1 Amps).
- 5.2.8. **MFC-25 Only:** Change 'Curr' to 15.0
- 5.2.9. **MFC-25 Only:** Run charger and confirm current is within cal(+/- 0.1 Amps).
- 5.2.10. **MFC-25 Only:** Change 'Curr' to 20.0
- 5.2.11. **MFC-25 Only:** Run charger and confirm current is within cal(+/- 0.1 Amps).
- 5.2.12. **MFC-25 Only:** Change 'Curr' to 25.0
- 5.2.13. **MFC-25 Only:** Run charger and confirm current is within cal(+/- 0.1 Amps).
- 5.2.14. Short Circuit
 - 5.2.14.1. Disconnect the battery
 - 5.2.14.2. Short the output leads;
 - 5.2.14.3. Set 'Curr' to 1.0
 - 5.2.14.4. Run the charger and verify that the current remains at the originally set value (+/- 0.1 Amps).
 - 5.2.14.5. Return to main menu
- 5.2.15. Open Circuit
 - 5.2.15.1. Disconnect from the battery and verify a voltage reading of 0.0V
 - 5.2.15.2. Run the charger
 - 5.2.15.3. Verify that a AOV or current limiter fault is generated
- 5.2.16. CV Charge
 - 5.2.16.1. Connect to a battery
 - 5.2.16.2. Set charger 'Mode' to 'Const V' and set 'Curr' to 10.0 and voltage to 1 V above the resting battery voltage.
 - 5.2.16.3. Run charger. After a suitable amount of time, observe that the charger limits the voltage to the programmed voltage and the current is limited below the set limit.

5.2.17. Power Fail and Recover

- 5.2.17.1. Insure that a backup battery is installed in the unit
- 5.2.17.2. Run same test as last step
- 5.2.17.3. Turn mains switch to off during the test. Note that LCD back light turns off and Unit displays VSF (Voltage Supply Fault).
- 5.2.17.4. Turns main switch back on and observe that test restarts

6. BTAS TESTS (If applicable to your battery shop)

6.1 Test that the unit is working properly when connected to a BTAS computer

- 6.1.1. Connect MFC to BTAS computer through USB cable or BTAS Network Adapter. USB cable attaches to I/O port and BTAS Network Adapter connects to HUB port.
- 6.1.2. Make sure Comm Mode is set to BTAS in the Options menu
- 6.1.3. Return to menu and enter Computer Controlled Mode
- 6.1.4. Run test using BTAS software.

7. TIMER TESTS

7.1 Single Rate Test

- 7.1.1. In Setup menu, set charger to run in single rate mode for 1 minute (00:01)
- 7.1.2. Set Curr to 0.0
- 7.1.3. Return to main menu and Run the charger
- 7.1.4. Using a stop watch for comparison, START and verify that the unit stops in one minute.
- 7.1.5. Return to main menu

7.2 Dual Rate Test

- 7.2.1. In Setup menu, set 'Mode' to Dual Rate
- 7.2.2. Set 'Time 1' to 1 minute (00:01)
- 7.2.3. Set 'Curr 1' to 2.0
- 7.2.4. Set 'Time 2' to 1 minute (00:01)
- 7.2.5. Set 'Curr 2' to 1.0
- 7.2.6. Return to main menu and Run the charger
- 7.2.7. Using a stop watch for comparison, verify that the unit transfers in one minute and stops in two minutes.
- 7.2.8. Return to main menu

7.3 Dual Rate w/Peak Test

- 7.3.1. In Setup menu, set 'Mode' to Dual w Pk
- 7.3.2. Set 'Time 1' to 1 minute (00:01)
- 7.3.3. Set 'Curr 1' to 0.0
- 7.3.4. Set 'Volt 1' to 26.0
- 7.3.5. Set 'Time 2' to 1 minute (00:01)
- 7.3.6. Set 'Curr 2' to 0.0
- 7.3.7. Connect charger to Calibrator.
- 7.3.8. Return to main menu and Run the charger
- 7.3.9. Change the voltage of the calibrator from below 26.0 volts to above.
- 7.3.10. Note that the charger transfers from Rate 1 to 2
- 7.3.11. Note the time of transfer. Charge operation will run from the time of transfer for an additional minute (based on Time 1)
- 7.3.12. Repeat while keeping the calibrator voltage below 26.0V. Confirm that charger runs for full 2 minutes.
- 7.3.13. Return to main menu

8. REVISION INDEX

Table 1 - Index of Revisions

REVISION	DATE	NOTES
1.0	22 March 2018	Preliminary
1.1	15 May 2018	Updated to cover both MFC-10 and MFC-25