

# ***BC-8000***

***BATTERY CAPACITY and DISCHARGE TESTER  
BATTERY CHARGER and DC POWER SUPPLY***

## ***Operations Manual***

***COFKO ELECTRONICS LLC.***

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## Unpacking

As you unpack your new BC-8000, inspect the BC-8000 for signs of shipping damage. If shipping damage is present, stop and contact the shipping company for damage claims information. The BC-8000 box should contain the following items:

|                                |   |
|--------------------------------|---|
| One (1) each-Part no. 4168,    | BC-8000 Battery Capacity/Discharge Tester/Battery Charger/DC Power Supply |
| One (1) each-Part no. 4161-10, | AC Power Cord Assembly (IEC60320 C19 to NEMA 5-15P) <sup>1</sup>          |
| One (1) each-Part no. 4168-20, | BC-8000 Operations Manual   |
| One (1) each-Part no. 4161-30, | BC Report Application (Media Type -USB Flash Drive)                       |
| One (1) each-Part no. 4161-40, | USB Cable   |
| One (1) each-Part no. 4161-50, | DC Output Cord  |
| One (1) each-Part no. 4161-60, | Battery Adaptor Cable with 5/16 (7.9mm) Ring Terminal connectors          |
| One (1) each-Part no. 4161-70, | Battery Adaptor Cable, Quick Disconnect Assembly <sup>2</sup>             |

**<sup>1</sup> Note: Removing the AC cord NEMA 5-15P plug to reconfigure to local plug style will not void BC-8000 warranty. All AC cord plug modifications must be performed by a qualified electrician and meet BC-8000 AC input specifications.**

**<sup>2</sup> Note: 4161-70 Assembly consist of Part no. 4161-60 and MS3349-2 connector.**

**IMPORTANT:** Save the shipping box and packaging material. They should be used to repack the tester if it needs to be shipped back for warranty or service.



**P/N 4168**



**P/N 4161-10**



**P/N 4161-20**



**P/N 4161-30**



**P/N 4161-40**



**P/N 4161-50**



**P/N 4161-60**



**P/N 4161-70**

## **Introduction**

Congratulations and thank you for purchasing your BC-8000 battery capacity tester and charger. The BC-8000 has been designed to provide the operator with accurate battery testing and charging with ease of operation.

### **BC-8000 Features:**

- Universal AC power input 100~264 VAC 1PH (47 to 63Hz)
- 4 Line LCD display.
- Over temperature protection.
- Audio warning when capacity test is complete or malfunction of the unit.
- USB 2.0 port for PC connection.
- O.S. Win 10 compatible BC Report software for test data hardcopy print out.
- Real time internal clock with battery backup.
- 1-year warranty.
- CE Approval EN61326-1:2012 EN55011 Class A Group; IEC 61010-1/EN61010-1

### **BC-8000 Capacity Tester:**

- 12 and 24-volt battery C1 capacity testing.
- Adjustable constant current load in 0.1-Ampere increments from 0.5 to 55 Amperes.
- Adjustable End Point Voltage (EPV).
- BC Report application will download, save, and print capacity test data from the BC-8000.

### **BC-8000 Discharge Tester:**

- Adjustable constant current load in 0.1-Ampere increments from 0.5 to 55 Amperes.
- 10mv voltage resolution.
- Discharge down to 0.1V
- Discharge times from 1 minute to 999 hours.
- BC Report application will download, save, and print discharge test data from the BC-8000.

### **BC-8000 Charger:**

- Adjustable output voltage from 3.0 to 40.0 volts DC.
- Adjustable output amperes from 0.05 to 25 amps DC. Note: (Maximum charge current reduced to 22.0Adc from 36.1Vdc to 40Vdc).
- Constant voltage or constant current charge.
- Adjustable charge time from 1 to 999 minutes.
- Single or two step charge routine.
- 10mv voltage resolution.

### **BC-8000 DC Power Supply:**

- Adjustable output voltage from 6.0 to 40.0 volts DC.
- Adjustable output amperage from 3.0 to 25 amps DC. (Maximum power supply output current reduced to 22.0Adc from 36.1Vdc to 40Vdc).
- Output short circuit current limit.

Before operating your new BC-8000, familiarize yourself with this instruction manual and the BC-8000.

For questions or product support:

Call: (909) 705-6267 Mon.-Fri.8:00 A.M. to 5:00 P.M. PST or Email : [support@cofko.com](mailto:support@cofko.com)

Thank you,

COFKO Electronics LLC

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## Revision History

| Revision | Effective Date | Description of Change  | Approval by |
|----------|----------------|--|-------------|
| A        | 11/11/2011     | Initial Issue.   | M.C.        |
| B        | 10/23/2012     | Increase Maximum Operation Altitude to 6500' page 16.  | M.C.        |
| B        | 10/23/2012     | Change Description of Box Contents page 2.   | M.C.        |
| C        | 04/05/2013     | Minimum, Maximum Charger Operation Temperature page 16   | M.C.        |
| D        | 12/22/2013     | Power Supply Operation page 10   | G.K.        |
| E        | 03/12/2014     | Expand Amperage Steps from 15 to 55A to 0.1A Steps from 1A Steps, page 16.   | G.K.        |
| F        | 05/22/2014     | CE Approval page 1.  | M.C.        |
| G        | 08/03/2014     | Box Content Part Number List page 1.<br>CE Declaration of Conformity pages 21,22<br>Certification of Conformance page 23 | M.C.        |
| H        | 04/17/2015     | BC Report C/D changed to USB Flash Drive pages 6 and 7   | M.C.        |
| I        | 02/11/2016     | Deep Discharge Recovery Mode added page 11.  | M.C.        |
| J        | 02/11/2016     | Deep Discharge Recovery Data Download page 11.   | M.C.        |
| K        | 02/11/2016     | BC-8000 Configuration added page 8.  | M.C.        |
| L        | 11/06/2017     | Update Certificate of Conformance (Vendor Info. Included).   | M.C.        |
| M        | 01/11/2018     | Update Box Content List page 1. P/N 4161-10 AC Cord  | M.C.        |
| N        | 01/11/2018     | Update Note 1 on page 1. Warranty and AC Cord plug change.   | M.C.        |
| O        | 03/15/2020     | Rev. O Release   | M.C.        |
| P        | 05/20/2020     | 40-volt Charger and Power Supply Output Firmware Release v. 4.01   | M.C.        |
| Q        | 07/30/2020     | Display "HOME" Button Addition and Firmware Release v. 4.01  | M.C.        |
|          |                |  |             |
|          |                |  |             |
|          |                |  |             |
|          |                |  |             |

## Battery Handling and BC-8000 Precautions

Your new BC-8000 battery capacity tester/charger/power supply has been designed with operator safety as a function of its design, construction, and operation. Understanding how to safely operate the BC-8000 is important. Failure to follow the operation and safety guidelines when using the BC-8000 can result in **personal injury to the operator and damage to the BC-8000**. Always review the battery manufacturer's battery charging and capacity testing guidelines before charging or testing batteries.



**Look for this symbol to identify Safety and Danger precautions. Be Alert- Your safety is involved! Personal injury or equipment damage can occur if guidelines are not followed.**

### PRECAUTIONS:

1. **CAUTION:** Aircraft batteries are certified to have a certain minimum capacity for emergency operations in the event of an electrical generator system failure. Never “jump start” an aircraft that has a discharged or “dead” battery.
2. **WARNING: ELECTRIC SHOCK HAZARD.** Do not touch un-insulated portions of the connector or the battery terminals. A possibility of serious electrical shock exists. Do not lay tools or other metal objects on the battery as arcing or explosion can occur. Remove conductive jewelry before working around battery, charger, or test equipment.
3. **CAUTION: ELECTRIC BURN HAZARD.** Do not wear conductive rings, belt buckles, or other jewelry when working with batteries, chargers, or test equipment. Do not lay tools or other metal objects on the battery as arcing and severe burns could occur.
4. **WARNING:** Batteries on charge or discharge produce hydrogen gas, which can explode if ignited. Do not smoke, use an open flame, or cause sparking near a battery. Charge, service or test a battery only in a well-ventilated area. The use of exhaust fans may reduce the risk of explosion.
5. **WARNING:** Batteries contain sulfuric acid which will cause burns. **DO NOT TOUCH EYES AFTER TOUCHING BATTERY.** Do not get acid in your eyes, or on your skin, or clothing. In the event of acid in the eyes, flush thoroughly with clean cool water for several minutes. Get professional medical attention. Refer to battery MSDS for additional information.
6. **WARNING:** Wear proper eye, face and hand protection always when working with batteries. Know the location and use of emergency eyewash and shower nearest the battery charging area.
7. **CAUTION:** To prevent damage to the connector, arc burns, or explosion, batteries should never be connected or disconnected while being charged or discharged. Batteries must be connected or disconnected only when the circuit is open. Ensure the aircraft battery switch, external power source, or the charger/analyzer is in the “OFF” position before connecting or disconnecting the battery. Battery terminal protectors should be installed whenever the battery is not connected in the aircraft or to the test equipment.
8. **CAUTION:** Batteries contain hazardous materials. Know the location and proper use of emergency response materials. Refer to battery Material Safety Data Sheet (MSDS) for additional information.
9. **WARNING:** Before charging or capacity testing a battery, always **REMOVE** the battery from the equipment. **REVIEW, UNDERSTAND, and FOLLOW all fire and safety codes for your location. Always REVIEW, UNDERSTAND, and FOLLOW the battery manufacturer's battery charging and testing guidelines.** If the battery

is installed in equipment that is sensitive to over voltage conditions, (i.e. Aircraft) NEVER charge using a constant current (CI) method. Only charge using a constant voltage (CV) method. There can be a serious risk of injury and or damage to equipment (i.e. Aircraft) due to high voltage and generation of explosive gases when charging constant current (CI).

10. **DANGER:** Never connect or disconnect BC-8000 main dc power connector with dc current applied. Connecting or disconnecting the BC-8000 tester with charging or discharge current applied can cause a spark and possible battery explosion.
11. **DANGER:** Never charge or capacity test batteries without first inspecting all battery wires and connections for condition and tightness. Replace all defective wires and bad connections before charging or capacity testing batteries. Defective wiring and bad connections can cause overheating during charging or capacity testing batteries.
12. **DANGER:** never connect the BC-8000 to batteries with voltage or capacity currents outside the ratings of the tester. The BC-8000 is designed for 12- and 24-volt batteries. Connecting the BC-8000 to a battery or batteries with improper voltages can permanently damage the BC-8000 and endanger the operator. Any questions about a battery or the BC-8000 ratings, please call (909)705-6267 or E-mail [support@cofko.com](mailto:support@cofko.com)
13. **DANGER:** never obstruct the BC-8000 air intake or hot air exhaust openings. Obstructing either opening can cause the BC-8000 to overheat.

## REMEMBER SAFETY FIRST!

### ***BC Report Application***

BC Report application provides a battery capacity test report using data generated from the BC-8000. BC Report organizes the test result into a report that presents critical test data such as:

- Battery test date and time
- Battery Model Number
- Battery Serial Number
- BC-8000 serial number
- Battery voltage
- C1 test amps
- Test run time
- C1 percent
- C1 test Pass or Fail percent
- Battery test voltage graph
- Hard copy printing is available, and all capacity test's results are stored on the host computer running BC Report for future review. See Battery Capacity Test Report example below.

# BC-8000 Report

Report Date: XX/XX/XXXX

Battery Capacity Test

Test Date: XX/XX/XXXX

Battery Model : XX-XXXX

Test Time: 16:30

Battery S/N: XXXXXXXXXX

Performed by: \_\_\_\_\_

Test Volts: 24V

BC-8000 S/N: XXXXXXXXX

Test Amps: 38.0A

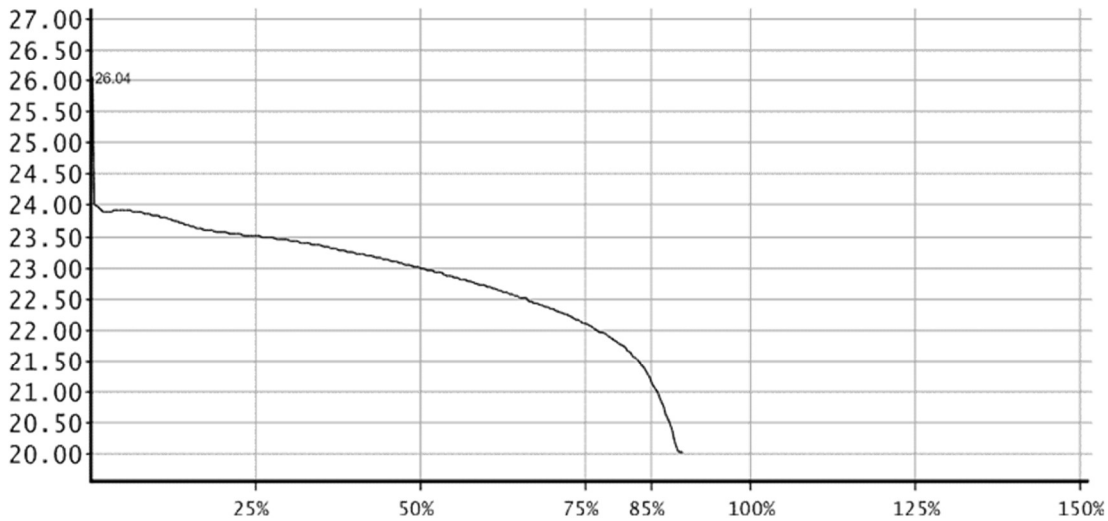
EPV: 20.00V

C1: 88.8 % Run time: 53.3 Minutes

Result: PASSED C1 85%

Battery Voltage Discharge Data:

0.50V/div



Comments:



## BC Report Instillation



**NOTE:** The *BC Report* application **MUST** be installed on the host computer used to connect to the BC-8000.

1. Plug the USB flash drive (4161-30) containing the BC Report files into the host computer USB port.  
Start\Run\FIash drive letter:\setup.exe
2. The O.S. application Security Warning dialog box may prompt you about installing the BC Report. To continue installing the BC Report, click on the *INSTALL* button. The instillation may take some time as O.S. installs all the necessary software.
3. When prompted to install the Silicon Labs CP210x USB to UART bridge driver, click the *INSTALL* button to install all needed drivers. (C:\Program Files\Silabs\MCU\CP210x\). Note: The CP210x drivers are on the *BC Report* USB flash drive.
4. After the BC Report installation is complete, remove the BC Report USB flash drive from the host computer.  
**Restart the host computer.**
5. The O.S. desktop should now contain the BC Report icon. Set the BC-8000 power switch to the ON position, and then plug the USB cable (4161-40) supplied with the BC-8000 into a USB port of the host computer. Now plug the remaining USB cable end into the USB port located on the right-side rear of the BC-8000. The computer may respond with an audio sound confirming a USB port has been opened.
6. To run the BC Report, place the pointer device arrow on the BC Report icon and double click on the icon. This will start the BC Report and open the BC Report window.
7. Place the pointing device arrow on the Connect button and click. Observe the dialog box in the lower left corner of the BC Report window. When the connection between the host computer and the BC-8000 is successful, the message **Found It** will appear. Battery test data can now be downloaded from the BC-8000 into BC Report.
8. Before updating the BC-8000 internal date and clock, check the host computers date and time. This is the date and time that BC Report will use.
9. To set the BC-8000 Date & Time, place the computer pointing device pointer on the Set Date & Time button and click. The status bar located in the lower left corner, will display a series of messages showing the communications activity between the BC-8000 and the computer. The first message displayed is **searching for BC-8000**. Second message is **Setting Date and Time**. And the final message will be **done**. With the date and time set, the BC-8000 is now ready to test batteries and print test result reports.
10. If any difficulties are experienced with communications between the BC-8000 and the host computer, check cable connections and review BC Report installation.

## BC-8000 Operation



**NOTE:** Before capacity, discharging testing or charging a battery, review all procedures in the battery manufacturer's Component Maintenance Manual (CMM).



**DANGER:** Never attempt to connect the BC-8000 to a battery or device using anything but the proper connector. Doing so can damage the BC-8000 or injure the operator.



**CAUTION:** Always check with your local fire safety codes and restrictions before testing or charging batteries.

## BC-8000 Configuration

1. Place the BC-8000 on a stable surface and connect the AC power cord (4161-10) C19 female connector into C20 power entry module receptacle located in the rear of the BC-8000.
2. Plug the male end of the AC power cord into the AC power source.
3. Set the POWER switch to the ON position.
4. The BC-8000 LCD display will flash a message that contains the COFKO web site URL, machine model, and the firmware version. The final message is the MODE? and located below is the current mode selected. See Figure 1.

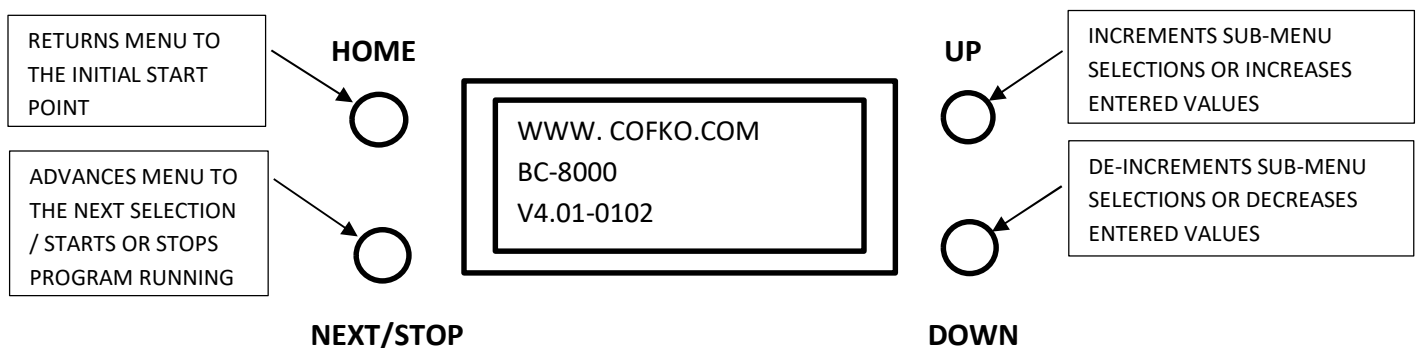


Fig.1

BC-8000 Display and Control Buttons

5. Pressing the **UP** or **DOWN** button, change the current mode selected to the CONFIGURE mode.
6. Press the **NEXT** button

7. The BC-8000 display will now display a message End Beep? Y. This option allows the disabling of the continuous end of test beeping. To disable the beeper, press the **NEXT** button then press the **UP** or **DOWN** buttons to change the default Y to N. To accept the change, press the **NEXT** button.
8. Press the **UP** button to change the CONFIGURE selection to CAPACITY %. This selection allows the operator to change the minimum percentage of batteries C1 capacity that defines a capacity test failure.
9. Press the **NEXT** button to select the mode.
10. The default 85% is displayed. To change the percent value, push the **UP** or **DOWN** buttons to select a new value.
11. Press the **NEXT** button to enter in the new percent value (80%,85%, or 100%).
12. To exit the CONFIGURE mode, press the **UP** or **DOWN** button until the EXIT option is displayed.
13. Press the **NEXT** button to select the EXIT option.
14. The BC-8000 will beep twice signifying exit of the CONFIGURE mode.
15. Now press the **UP** or **DOWN** button to change the MODE? options.



**NOTE** The minimum percentage of battery capacity for the battery application is defined by the battery manufacturer or the application governing body. The BC-8000 offers three minimum percentage of battery capacity settings. The settings are 80%,85%, and 100%. If the battery capacity test results fall below the selected minimum percentage, the capacity test results will be defined as a failure.



**CAUTION** Always review the battery manufacturer's and the application's governing bodies specifications for minimum application battery capacity. These can be found in the battery manufacturer's component maintenance manual (CMM) or the governing bodies battery application specifications. Failure to follow these guidelines or rules can lead to failure or damage to battery or the equipment powered by the battery.



**DANGER:** The BC-8000 battery charger is a fully adjustable battery charger. **The BC-8000 will follow the operator settings during the battery charge cycle!** Always consult the battery manufacturer's battery charging guidelines before starting a charge cycle. ***If the battery being charged is subjected to improper settings, serious damage or injury can occur to the operator, equipment, and the BC-8000.*** Critical settings such as maximum charge voltage, maximum charge amperes, and charge time must follow the battery manufacturer's guidelines. Always remove the battery from the equipment before starting a charge cycle.



**WARNING: Before using the BC-8000 to charge Lithium Ion batteries, please contact the Cofko Electronics LLC support line for instructions.** PH: 909-705-6267 Email: [support@cofko.com](mailto:support@cofko.com)

## Battery Charging

1. Set the BC-8000 on a stable surface. Connect the AC power cord (4161-10) to the power source. Connect the DC cord (4161-50) to the battery. Set the AC power switch to the ON position.
2. With MODE? CHARGE selected, press the **NEXT** button to advance the display menu.
3. Using the **UP** or **DOWN** buttons, select charge steps. The BC-8000 will charge the battery using a single step or two step charge mode. Single step charging is typically used to charge lead-acid batteries and lithium ion batteries using constant potential charging. Two step charging is used in constant current charging of nickel cadmium batteries and conditioning charge procedures for lead acid AGM batteries. Press the **NEXT** button to advance the display menu.
  - a. If single step was selected above, enter the battery recharge time using the **UP** or **Down** buttons to increase or decrease charge time. Charge time is in minutes with 60 minutes equaling 1-hour charge time. Always consult your battery manufacturer's manual for proper charge time settings.  
*Tip: Holding down the UP or DOWN buttons will rapidly advance the number selection. Press the NEXT button to advance the display menu.*
  - b. The BC-8000 display will now ask for a CHARGE VOLTS? selection. Single step charging requires only one charge voltage selection. Recharge voltage can be adjusted from 3.0 to 40.0 volts. Use the **UP** or **DOWN** buttons to set the charge voltage. This voltage is the maximum voltage the BC-8000 will output to the battery. Consult with the battery manufacturer for proper recharge voltage settings.  
*Note: The charge voltage selection must always be greater than the battery voltage.*  
Press the **NEXT** button to advance the display menu.
  - c. The BC-8000 will now ask for CHARGE AMPS? selection. The BC-8000 charge current can be adjusted from 0.05 to 25 amperes with a charge voltage of 3.0 to 36Vdc. Maximum charge current is reduced to 22.0Adc with a charge voltage setting of 36.1 to 40.0Vdc. Consult the battery manufacturer's recharge guidelines for proper settings. Press the **NEXT** button to advance the display menu.
  - d. The BC-8000 will display the message START CHARGING? Press **NEXT**. Pressing the next button will start the battery charging cycle. With the charger running the BC-8000 display will show all the entered settings under the CHARGING heading on the left side of the display. The arrow displayed will point to the setting that is active at that moment of the charge cycle. On the right side of the display all the current charging readings are displayed under the ACTUAL heading. Upon completion of the charge cycle the audio buzzer will beep signaling the charge is done.  
*Note: The charge cycle can be stopped at any time by pressing the NEXT button.*
4. For two step charging, enter the first step charge time using the **UP** or **DOWN** buttons. The time can be adjusted from 1 minute to 999 minutes. Press the **NEXT** button to advance the display menu.
  - a. The BC-8000 will display CHARGE Step 1 Volts? Use the **UP** or **DOWN** button to adjust the value from 3.0 to 40.0 volts. Press the **NEXT** button to advance the display menu.
  - b. Now enter the first step charge current setting using the **UP** or **DOWN** button. The charge current can be adjusted from 0.05 to 25 amperes from 3.0-volts to 36-volts. From 36.1-volts to 40.0-volts charge current is adjustable from 0.05 to 22.0 Adc. Press the **NEXT** button to advance the display menu.
  - c. The BC-8000 will display CHARGE Step 2 Time? Use the **UP** or **DOWN** button to adjust the charge time value from 1 minute to 999 minutes. Press the **NEXT** button to advance the display menu.
  - d. The BC-8000 will display CHARGE Step 2 Voltage? Using the **UP** or **DOWN** buttons the step 2 voltage can be adjusted from 3.0 to 36.0 volts. Press the **NEXT** button to advance the display menu.

- e. Now enter the second step charge current setting using the **UP** or **DOWN** button. The charge current can be adjusted from 0.05 to 25 amperes. Press the **NEXT** button to advance the display menu.
- f. The BC-8000 will display the message START CHARGING? Press **NEXT**. Pressing the next button will start the battery charging cycle. With the charger running the BC-8000 display will show all the entered settings under the flashing CHARGING/Step 1 heading on the left side of the display. The arrow displayed will point to the setting that is active at that moment of the charge cycle. On the right side of the display all the current charging readings are displayed under the ACTUAL heading. Upon completion of the charge cycle the BC-8000 will turn off the charge and turn on the audio beeper to signal the charge cycle is done. Note: The charge cycle can be stopped at any time by pressing the **NEXT/STOP** button.

## **AGM Battery Deep Discharge Recovery (D.D.R.) Mode**



### **Never use Deep Discharge Recovery on Nickel Cadmium or Lithium Ion Batteries**

Deep Discharge Recovery (D.D.R) mode is specifically for Concorde® sealed AGM lead acid batteries that have lost capacity due to a possible sulfated condition. Severe sulfation can occur if the battery is accidentally completely discharged. D.D.R. mode provides the battery technician with a charge routine that attempts to reverse the sulfated condition. The DDR charge routine utilizing three charge phases over a maximum 1440-minute (24-hours) time period.

- Phase one consist of a 4-hr constant current pre-charge. The maximum charge voltage is 36 volts for a 24-volt battery and 18-volts for a 12-volt battery. The charge current is limited to 1/10<sup>th</sup> the batteries C1 Amp hour rating. A C1 rated battery of 40-Ahr yields a constant current 4-amp charge rate.
  - Phase two consist of an on-charge battery voltage assessment. After the 4-hour pre-charge is completed, the DDR program will check the on-charge battery voltage. If the battery voltage rises to the prescribed set point: 24-volt battery = 31 volts. 12-volt battery = 15.5 volts phase three is started.
  - Phase three will load the charger timer with 240 minutes (4-hours) and terminate the charge.
  - Always consult your battery manufacturer's component maintenance manual (CMM) before using the DDR charge mode.
1. Set the BC-8000 on a stable surface.
  2. Connect the AC power cord (4161-10) to the AC power source. Connect the DC cord (4161-50) to the BC-8000 and the battery.
  3. Set the AC power switch to the ON position.
  4. Press the **UP** or **DOWN** buttons to select the Mode? to DEEP DIS. RECOVER.
  5. Press the **NEXT** button to select the DEEP DIS. RECOVER option.
  6. Press the **UP** or **DOWN** buttons to select the battery voltage. 12 or 24 volts.
  7. Press the **NEXT** button to enter the value.
  8. Now select the C1 AMPS ? Use the **UP** or **DOWN** buttons to select the C1 Ahr battery rating. This value can be found in the battery manufacturer's model specifications.

9. Press the **NEXT** button to select the entered value.
10. Press the **NEXT** button to start the DEEP DIS. RECOVER mode.
11. To stop the DDR charge, routine press the **NEXT** button.
12. At the completion of the DDR charge, the BC-8000 LCD display will provide a summary of the charge results.

## ***DDR Charge Data Downloading***

During the DDR charge mode, the BC-8000 records data of the charge cycle. Battery voltage, charge current, and run time are recorded. Upon completion of the DDR charge cycle, you can create a CSV file of the DDR data using BC REPORT. This file can be imported into a spreadsheet and the data used to generate reports or graphs of the data.

1. To access the DDR charge data, connect the USB cable (4161-40) to an open USB port on a PC that has BC REPORT installed. Set the BC-8000 AC power switch to the ON position.
2. Plug the USB cable into the BC-8000 USB port located in the rear of the machine.
3. Start BC REPORT by clicking on the program on the desktop icon.
4. Enter the battery serial number in the dialog box.
5. Using the mouse pointer click on the **CONNECT** dialog box.
6. Using the mouse pointer, activate the **Create DDR CSV file** by clicking on the small square box.
7. Click on the **LOAD DATA** dialog box.
8. Upon completion of the data download from the BC-8000, the DDR CSV file can be found on the PC at location **Local disk (C:) > Concorde > BC-8000 > DDR**
9. To import DDR data into a spreadsheet, run the spreadsheet program and open the DDR CSV file.

## ***DC Power Supply***



**Danger:** Never leave the BC-8000 unattended while operating in the power supply mode.

The BC-8000 Power Supply Mode can be used to supply DC power to batteries that have built in battery chargers and or isolation diodes. Consult the battery manufacturer for proper connections and voltage settings. Always use the correct mating connectors. For any questions on setup or operation of the BC-8000 Power Supply contact: [support@cofko.com](mailto:support@cofko.com)



When the BC-8000 is operating in the power supply mode, the BC-8000 DC output cord gray connector will have voltage on the output terminals regardless if connected to anything.

1. Place the BC-8000 on a stable surface and connect the AC power cord (4161-10) to AC power outlet. Connect the DC output cord (4161-50) to the BC-8000 and the equipment to be powered.



**Warning:** If an extension cord is used to connect the BC-8000 to the AC power source, make sure the

cord is properly sized for the AC current draw. Long power cords of insufficient wire gauge size can cause excessive voltage drops. Always consult your local electric codes for guidance in proper sizing of the extension cord.



**Danger:** Never use an extension cord or power source that does not have a proper AC grounding connection. Review your local AC power codes for proper grounding configurations.

2. Set the BC-8000 AC power switch to the ON position.
3. Using the **UP** or **DOWN** button, set the display to the PWR SUPPLY option. Then press **NEXT**.
4. Using the **UP** or **DOWN** button, adjust the output DC voltage to the proper level for the equipment being powered. Press **NEXT**.



**Warning:** Always review the equipment manufacturer's maximum input voltage level for safe operation. Never exceed these settings.

5. Using the **UP** or **DOWN** button, set the maximum DC output amperage value. This setting should meet the maximum DC amperage requirements for the equipment being powered. Then press **NEXT**.

Note: If the maximum DC amperage value entered is exceeded, the BC-8000 will enter a current limiting mode and reduce the DC output voltage level to reduce the output current.

6. With the proper settings for DC output voltage and current entered, connect the BC-8000 DC output cord (4161-50) using an appropriate cable adaptor to the equipment being powered. Press the **NEXT** button. This will turn on the BC-8000 DC output.
7. To turn the BC-8000 DC output off, push the **NEXT** button.

## **Battery Discharge Testing**

1. Set the BC-8000 on a stable surface. Connect the AC power cord (4161-10) to the AC power source. Connect the DC cord (4161-50) to the battery. Set the AC power switch to the ON position.
2. With the BC-8000 displaying MODE? Press the **UP** or **DOWN** button to select DISCHARGE. Press the **NEXT** button to advance the display menu.
3. With the BC-8000 now displaying DISCHARGE Volts? Select the battery voltage 12 or 24 using the **UP** or **DOWN** buttons. Press the **NEXT** button to advance the display menu.
4. Now select the End Point Voltage (EPV) voltage. When the selected EPV voltage is reached, the BC-8000 will terminate the discharge test. Press the **NEXT** button to advance the display menu.
5. The BC-8000 will display DISCHARGE MAX. AMPS? Press the **UP** or **DOWN** button to set the discharge current. Press the **NEXT** button to advance the display menu.
6. Now enter the maximum discharge run time. Use the **UP** or **DOWN** buttons to select max discharge from 1 minute to 999 hours. The maximum run time value will be used to scale the time axis in the BC Report.
7. This is the time in hours the discharge test will run if the EPV voltage is not reached. Press the **NEXT** button to advance the display menu.

- With the BC-8000 displaying PRESS NEXT TO START, press the **NEXT** button to start the discharge test.  
Note: The discharge test can be stopped at any time by pressing the **NEXT** button.



**NOTE:** *If the cooling fan fails to start and no cooling air is felt at the rear of the tester, stop the discharge by repressing the NEXT button. The BC-8000 must be serviced before operating again.*



**NOTE:** If incorrect battery voltage is selected the BC-8000 display will inform the operator.

## ***C1 Battery Testing***

- Set the BC-8000 on a stable surface. Connect the AC power cord (4161-10) to the power source. Connect the DC cord (4161-50) to the battery. Set the AC power switch to the ON position.
- Check the battery manufacturer's component maintenance manual (CMM) for the minimum percent capacity setting. The minimum percent battery capacity test settings are 80%, 85%, and 100% in the BC-8000. The setting can be changed in the CONFIGURE menu. A capacity test that falls below the minimum percent selected will be identified as a failed capacity test.
- With MODE? Displayed on the BC-8000 display, select CAPACITY ? by pressing the **UP** or **DOWN** button. Press the **NEXT** button to advance the display menu.
- Now select the battery voltage 12 or 24 volts by pressing the UP or DOWN button. Press the **NEXT** button to advance the display menu.
- Push the **NEXT** button. Select the End Point Voltage (EPV) cutoff. The default EPV is 20 volts for 24V battery and 10 volts for a 12V battery. The BC-8000 allows for EPV adjustment from the default values. For a 24V battery the EPV can be lowered to 18 volts. For 12-volt batteries the EPV can be lowered to 9 volts. Check with your battery manufacturer for specified EPV points. Press the **NEXT** button to advance the display menu.
- With CAPACITY C1 AMPS? Displayed, select the battery manufacturer's C1 (one hour) battery discharge amperage rate by pressing the **UP** or **DOWN** buttons. Press the **NEXT** button to advance the display menu.
- The BC-8000 will display CAPACITY START TEST? To start the test, press the **NEXT** button again. If you wish to stop the test before the End Point Voltage (EPV) is reached, press the **NEXT** button and the BC-8000 will stop testing. ***If testing is stopped before EPV is reached the battery must be recharged following the battery manufacturer's recharge procedures*** before retesting.
- After pressing the **NEXT** button to start the test, the BC-8000 cooling fan motor will start and the LCD display will show the C1% reading, battery voltage, flash *Testing / EPV voltage setting*, and test amperage. *Note: While the BC-8000 is testing or at the conclusion of the test, pressing the **UP** button will display the test run time in minutes. The LCD will display **TM: 60.2'** (The symbol ' indicates minutes)*
- Upon reaching the EPV the BC-8000 capacity test will stop. The cooling fan motor will stop, and the audio beeper will beep if enabled. The display will show the C1 battery capacity percentage. Test amperage and Pass or Failed is displayed.





If the **BC-8000 COOLING FAN MOTOR FAILS TO START** press the **NEXT** button stopping the test. Place the **OFF/ON** switch to the **OFF** position and return the BC-8000 for service.

“Passing” is the battery manufacturer’s minimum percentage of the batteries one-hour capacity rating.

“Failing” is a battery that falls below the manufacturer’s minimum percentage of the one-hour capacity rating.



**Never** return a battery to service following capacity testing without recharging the battery follow the battery manufacturer’s recharging procedure.

## **BC-8000 Report Output**

1. **Disconnect the BC-8000 from the test battery.** Place the BC-8000 power switch to the **ON** position. Start the PC with BC Report installed. Connect the USB cable (4161-40) from the PC to the BC-8000 USB port located in the rear of the tester. Run the BC Report application by double clicking on the desktop BC Report icon.
2. With the BC Report active on the desktop, type the battery serial number into the Battery Serial Number box. Make sure the data source selected is the BC-8000 by high lighting the indicator circle. Connect to the BC-8000 by clicking on the **CONNECT** button.
3. Place the mouse cursor on the **Load Data** button and press the left mouse button. The status bar in the lower left corner of the BC Report window will display program activity and status messages as data is transferred.
4. To print the report, place the mouse cursor on the **Print Report** button and press the left mouse button. The Windows™ print preview window will appear showing the report available to print. Place the mouse cursor on the printer icon and press the left mouse button.
5. To print a BC-8000 battery test report that has been already downloaded, use the **From Disc** function to print the report. The data file uses the file extension tdf. The file name is a combination of battery serial number, date, and time and can be found in the Concorde file located at **(C:) > Concorde > BC-8000**. Place the mouse cursor on the **Load Data** button and press the left mouse button. The Open test data file window will open on the desktop. Choose the data file that is to be printed by selecting the file with the left mouse button. Click **Open** at the bottom of the window. Place the mouse cursor on the **Print Report** button and press the left mouse button. The Print Preview window will become active on the disk top. To print report, left mouse click the printer icon.



**TIP:** A paperless report copy can be obtained by using a print driver that will create a PDF file. These drivers are available for sale or freeware and install in the Windows™ printer devices. This report format allows BC-8000 test reports to be sent by means of e-mail attachments.



**TIP:** At the completion of a capacity test or discharge test, BC REPORT generates a CSV file that is stored on the computers Local disk (C:) > Concorde > BC-8000. The CSV file can be imported into a spread sheet program for viewing or generating custom reports if needed.

## **BC-8000 CARE**

Your BC-8000 battery charger and capacity tester should be treated as precision test equipment. Misuse will shorten its ability to perform accurate battery testing. Some simple guidelines of care will insure years of trouble-free operation.

1. Do not drop the BC-8000 or expose it to rough handling.
2. Do not expose the BC-8000 to water or fluids of any kind.
3. Do not operate the BC-8000 in a closed-up area.
4. Do not connect the BC-8000 to batteries of improper voltage ratings.
5. Do not operate the BC-8000 with the air intake or exhaust outlet blocked or restricted.
6. Do not carry the BC-8000 by the main power cable.
7. Do not operate the BC-8000 near flammable materials.
8. Do not expose the BC-8000 to direct sunlight during operation.
9. Do not expose the BC- 8000 to any other heat sources.
10. Always contact the technical support for questions on BC-8000 safety and operation. support@cofko.com

## **REMEMBER SAFETY FIRST!**

### **BC-8000 Field Calibration**

With a CF-1 Field Calibration Fixture (P/N 4170) available from the distributor (Advanced Power Products) and the BC-8000 calibration procedure, the BC-8000 can be calibrated in the field.

### **General Specifications**

#### **BC-8000 SPECIFICATIONS:**

##### GENERAL SPECIFICATIONS

|                    |                     |
|--------------------|---------------------|
| AC Input Voltage   | 100~264V AC 1 Phase |
| AC Input Current   | 15A Max.            |
| AC Input Frequency | 47-63 Hz            |
| Case Length        | 12 in (30.5cm)      |
| Case Width         | 9 in (22.9cm)       |
| Case Height        | 16 in (40.6cm)      |
| Weight             | 19 lbs. (8.62kg)    |

## CAPACITY TESTER

|  |   |
|--|---|
| Minimum Battery Input Voltage                    | 9.0V DC   |
| Maximum Battery Input Voltage                    | 28.0V DC  |
| Maximum Operating Altitude <sup>1</sup>          | 6500ft (1981.2m)  |
| 12V Battery End Point Voltage (EPV) <sup>2</sup> | 10V DC  |
| 24V Battery End Point Voltage (EPV) <sup>2</sup> | 20V DC  |
| Constant Current Load                            | 0.5A DC to 15A DC 0.1A steps (+ / - 1.5%)<br>15A DC to 55A DC 0.1A steps (+ / - 1%) |
| PC Communication Port                            | USB 2.0   |
| BC REPORT Utility Software                       | OS Windows™ XP or Higher  |
| Operation Temperature Range                      | -20 to 50 Deg. C  |

## DISCHARGE TESTER

|  |   |
|--|---|
| Battery End Point Voltage (EPV) <sup>2</sup> | 0.1V DC to 28VDC  |
| Amperage                                     | 0.5ADC to 55ADC   |
| Maximum Operating Altitude <sup>1</sup>      | 6500ft (1981.2m)  |
| Constant Current Load                        | 0.5A DC to 15ADC 0.1A steps (+ / - 1.5%)<br>15A DC to 55ADC 0.1A steps (+ / - 1%) |
| Discharge Time                               | 1 minute to 999 hours   |
| Battery Operational Temperature <sup>3</sup> | 59°F or higher  |
| PC Communication Port                        | USB 2.0   |
| BC REPORT Utility Software                   | OS Windows™ XP or Higher  |
| Operation Temperature Range                  | -20 to 50 Deg. C  |

## BATTERY CHARGER

|                           |         |
|---------------------------|---------|
| DC Output Voltage Minimum | 3.0VDC  |
| DC Output Voltage Maximum | 40.0VDC |
| DC Output Current Minimum | 0.05ADC |
| DC Output Current Maximum | 25ADC   |

## DC POWER SUPPLY

|                               |   |
|-------------------------------|---|
| Adjustable DC Output Voltage  | 6V-40V (0.1V steps)   |
| Adjustable DC Output Amperage | 3A-25A (0.1A steps) Note: Maximum amperage output reduced to 22Adc from 36.1V to 40Vdc) |

1. Consult factory for testing above maximum altitude rating.
2. Consult battery manufacturer for End Point Voltage (EPV) settings.

## ***BC-8000 Limited Warranty***

### ***STATEMENT OF WARRANTY***

COFKO ELECTRONICS LLC warrants to the original purchaser (end user) of the BC-8000 that it will be free of defects in workmanship and materials. This warranty is void if COFKO ELECTRONICS LLC finds that the BC-8000 has been subjected to improper care, abnormal operation, or modification.

### ***WARRANTY PERIOD:***

The warranty period covers the original purchaser (end user) from the "Date of First Use".

1 Year: Covers each BC-8000 for workmanship, material, and labor.

### ***TO OBTAIN WARRANTY COVERAGE:***

You are required to notify COFKO ELECTRONICS LLC, of any defects within the warranty period. Written notification is recommended.

### ***WARRANTY REPAIRS:***

If upon inspection COFKO ELECTRONICS LLC confirms the existence of a defect covered by this warranty, the defect will be corrected by repair or replacement at COFKO ELECTRONICS LLC option.

### ***WARRANTY COST:***

The purchaser must bear the cost of shipping the BC-8000 to COFKO ELECTRONICS LLC as well as the return shipping cost.

### ***IMPORTANT WARRANTY LIMITATIONS:***

1. COFKO ELECTRONICS LLC will not accept responsibility for repairs made without authorization.
2. COFKO ELECTRONICS LLC shall not be liable for consequential damages (such as lost business, etc.) caused by a defect or reasonable delay in correcting a defect to the BC-8000.
3. COFKO ELECTRONICS LLC liability under this warranty shall not exceed the cost of correcting the defective BC-8000.

This written warranty is the only expressed warranty covering the BC-8000. All warranties implied by law such as Warranty of Merchantability are limited to the duration of this limited warranty of the BC-8000. Check your local legal rights for further rights you may have.

**BC-8000 NOTES**

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