

# ***BC-7000***

## ***BATTERY CAPACITY TESTER***

### ***OPERATIONS MANUAL***

***REV.D***

## Unpacking

As you unpack your new BC-7000 battery capacity tester, inspect the BC-7000 for signs of shipping damage. If shipping damage is present, stop and contact the shipping company for damage claims information. The box should contain the following items:

One (1) each-Part no. 4167 BC-7000 Capacity Tester.

One (1) each-Part no. 4167-20, BC-7000 Instruction Manual.

One (1) each-Part no. 4161-09, BC-7000 AC power cord.

One (1) each-Part no. 4161-40, USB Cable.

One (1) each-Part no. 4161-30, BC Report USB Flash Drive.

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.

Note: 4161-70 Assembly consists of Part no. 4161-60 and MS3349-2 connector.

**IMPORTANT:** Save the shipping box and packaging material. They should be used to repack the BC-7000 if it needs to be shipped.



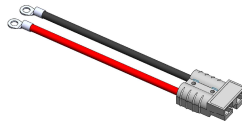
P/N 4161-09



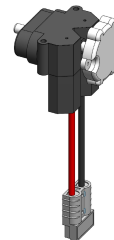
P/N 4161-40



P/N 4161-30



P/N 4161-60



P/N 4161-70

## **BC-7000 Introduction**

Congratulations on acquiring your new BC-7000 battery capacity tester. The BC-7000 battery capacity tester has been designed to provide the operator with accurate battery capacity testing and ease of operation.

The features of the BC-7000 are:

- Adjustable constant current load in 0.1 Ampere increments from 0.5 Ampere to 14.9 Ampere.
- Adjustable constant current load in 1.0 Ampere increments from 15 Ampere to 55 Ampere.
- Universal AC power input 100~240VAC 1PH 47 to 63Hz.
- 16x2 Character LCD display.
- 10mv voltage resolution.
- Over temperature protection.
- Audio warning when capacity test is complete or malfunction of the unit.
- USB 2.0 port for PC connection.
- Win 10 O.S. compatible BC Report application for battery capacity test data print out.
- Real time internal clock with battery backup.
- 1-year warranty.

Before operating your new BC-7000 battery capacity tester, familiarize yourself with the operator's manual and the BC-7000.

Questions?

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

Thank you,

COFKO

Manual: BC-7000

Revision: D Date: 02/12/2020

## ***Table of Contents***

## ***PAGE***

• Unpacking	1
• BC-7000 Introduction	2
• Table of Contents	3
• History of Revisions	4
• Battery Handling and BC-7000 Testing Precautions	5,6
• BC Report Application	6,7
• BC Report Instillation	8
• BC-7000 Operations	9
• C1 Battery Capacity Testing	9
• Battery Discharge Test	10
• Discharge Testing	10
• BC-7000 Report Printing	10,11
• BC-7000 CARE	11
• BC-7000 TECHNICAL DATA	12
• BC-7000 WARRANTY	13
• BC-7000 NOTES	14

### ***History of Revisions***

Revision #	Effective Date	Description of Change	Approval By
A	11/11/2010	Initial issue	M.C.
B	10/23/2012	Increase Maximum Operation Altitude from 6000'to 6500'	M.C.
B	10/23/2012	Change Description of Box Contents	M.C.
C	04/05/2013	Minimum and Maximum Operation Temperature	M.C.
D	02/12/2020	Revision D Release	M.C.

## Battery Handling and BC-7000 Testing Precautions

Your new BC-7000 battery capacity tester has been designed with operator safety as a function of its design, construction, and operation. Understanding how to safely operate the BC-7000 battery capacity tester is important. Failure to follow the operation and safety guidelines when using the BC-7000 can result in **personal injury to the operator and damage to the BC-7000.** Always review the battery manufacturer's battery capacity testing guidelines before 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.**

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 could 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 electrolyte which will cause burns. **DO NOT TOUCH EYES AFTER TOUCHING BATTERY.** Do not get electrolyte in your eyes, or on your skin, or clothing. In the event of electrolyte 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. **Caution / Warning:** Only constant potential charging may be done on the aircraft. DO NOT constant current charge a battery on the aircraft. There could be a serious risk of injury to personnel and / or damage to the aircraft or aircraft systems due to high voltage and generation of explosive gases when charging constant current.
10. **DANGER:** Never connect or disconnect BC-7000 tester main power connector with the switch on. Connecting or disconnecting the BC-7000 test with battery test current applied can cause a spark and possible battery explosion.
11. **DANGER:** Never capacity test batteries without first inspecting all battery wires and connection for condition and tightness. Replace all defective wires and bad connections before capacity testing batteries. Defective wiring and bad connections can cause overheating during a capacity test.
12. **DANGER:** never connect the BC-7000 capacity tester to batteries with voltage or capacity currents outside the ratings of the tester. The BC-7000 tester is designed for 12- and 24-volt batteries. Connecting the tester to batteries with different voltages can permanently damage the tester and endanger the operator. Any questions that arise about the battery or tester ratings, email [support@cofko.com](mailto:support@cofko.com) or PH 909-705-6267
13. **DANGER:** never obstruct the BC-7000 tester air intake or hot air exhaust openings. Obstructing either opening can cause the tester to overheat.

## REMEMBER SAFETY FIRST!

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

BC Report application provides a battery capacity test report using data generated from the BC7000. BC Report organizes the test result into a report that presents critical test data such as:

- Battery test date and time
- BC-7000 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 computer running BC Report for future review. See Battery Capacity Test Report example below.

# BC-7000 Report

Report Date: XX/XX/XXXX

Battery Capacity Test

Test Date: XX/XX/XXXX

Test Time: 16:30

Battery S/N: XXXXX-XXXX

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

Test Volts: 24V

BC-7000 S/N: XXXXXXXX

Test Amps: 38.0A

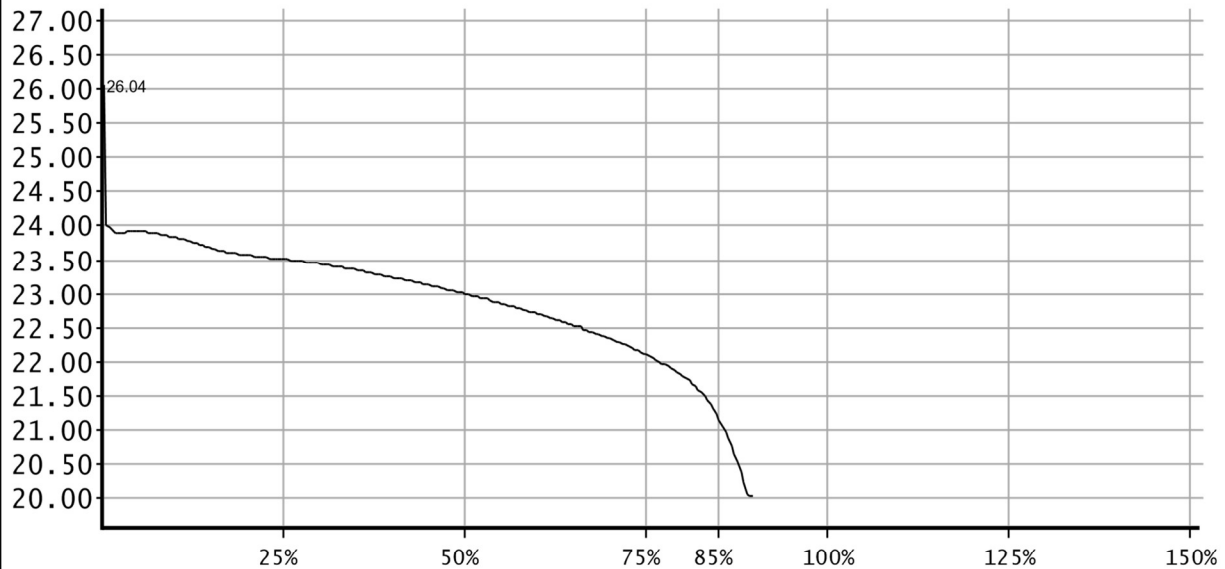
EPV: 20.00V

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 software **MUST** be installed on the host computer used to connect to the BC-7000.

1. Plug the BC Report flash drive (P/N 4161-30) into an open USB port on the host computer. Run the setup.exe file located on the USB flash drive.
2. Windows Application Security Warning dialog box may prompt you about installing *BC Report*. To continue installing BC Report, click on the *INSTALL*.
3. When prompted to install the Silicon Labs CP210x USB to UART bridge driver, click the *INSTALL* button to install driver files.
4. After BC Report installation is completed, a BC Report icon will be on the desktop. **Restart the host PC.**
5. Plug the AC power cord (P/N 4161-09) C13 male plug into the BC-7000 C14 receptacle. Plug the remaining end into the AC power source. Set the BC-7000 power switch to the ON position. The BC-7000 display will flash model and firmware version information.
6. Plug the USB cable (P/N 4161-40) A male end into open USB port on the host computer. Plug the USB B male end into the USB port of the BC-7000. The host computer will respond with an audio sound or icon confirming a USB port has been opened.
7. Place the host computer pointing device arrow on the BC Report desktop icon and double click. This will start BC Report and display the BC Report application window.
8. Place the pointing device arrow on the Connect button and double 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-7000 is successful, the message **Found It** will appear. Battery test data can now be downloaded from the BC-7000 into BC Report.
9. Before updating the BC-7000 internal date and clock, check the computer date and time for proper settings and adjust if needed.
10. To set the BC-7000 Date & Time, place the pointing device arrow on the set Date & Time button and click the left mouse button. The status bar located in the lower left corner will display the message Setting Date and Time. The BC-7000 is now ready to capacity and discharge test batteries and print test result reports.
11. Exit out of BC Report. Unplug the USB cable from the BC 7000 and the host computer. Set the BC-7000 power switch to the OFF position. The BC Report instillation is complete.

## BC-7000 Operation



**NOTE:** Before capacity testing a battery, review Component Maintenance Manual (CMM) for instructions. CMM's are available at the battery manufacturer's web sites.



**NOTE:** Before capacity testing a battery, charge the battery following the batteries CMM.



**DANGER:** Never attempt to connect the BC-7000 capacity tester to a battery using anything but the proper connector. **Doing so can damage the tester, battery, or cause injury to the operator.**

### C1 Battery Capacity Testing

1. Place the BC-7000 on a safe, stable, and suitable work surface. Plug the BC-7000 AC power cord (P/N 4161-09) C13 end into the BC-7000 C14 receptacle. Plug the remaining end into the AC power source. Set the BC-7000 power switch to the ON position.
2. Connect the battery connector (P/N 4161-60 or P/N 4161-70) securely to the battery. Connect the BC-7000 gray DC input connector to the gray battery connector.
3. Use the UP or Down buttons to change the Mode to Capacity ? Press the NEXT button.
4. Use the UP or DOWN buttons to select the test batteries voltage. 12 or 24-volt? Press the NEXT button. *Note: If an incorrect battery voltage is selected, the BC-7000 display will display CHECK BATTERY.*
5. Use the UP or Down buttons to adjust the End Point Voltage (EPV) to the test termination value. Press the NEXT button.
6. Use the UP or DOWN buttons to adjust the C1 test Amps to the test value. Press the NEXT button. *Note: A C1 battery rating of 44Ahr, requires a C1 test Amps setting of 44 amps.*
7. Use the UP or DOWN buttons to adjust the C1% pass or fail value. Press NEXT.
8. Capacity Start Test ? Press NEXT will be displayed. Press NEXT to start the test. Pressing the NEXT button again will stop the test. *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)*
9. When the battery voltage reaches the EPV setting, the capacity test will stop. The finished audio beeper will sound. The displayed data can be recorded by hand or use BC Report to download and print the test data.
10. Set the BC-7000 power switch to the OFF position.
11. Remove the BC-7000 gray DC connector from the gray battery connector.
12. If the battery passes the capacity test, recharge the battery following the batteries CMM charging procedure. If the battery fails the capacity test, follow the batteries failed capacity test CMM procedures for instructions.

13. Proceed to the BC Report instructions for downloading capacity test data and generating a report.



**Danger: The test battery MUST be charged before returning to operational status after a capacity test.**

### ***Battery Discharge Test***

The BC-7000 can perform battery discharge testing and discharging. Unlike C1 battery testing, which is a 1-hour test, discharge testing can run from 1 minute to 12 hours. The BC-7000 discharge mode can be used to discharge a nickel cadmium battery down to 0.5Vdc/cell for cell strap off procedures.



Never use the discharge mode to C1 capacity test a battery.

### ***Discharge Testing***

1. Connect the battery connector (P/N 4161-60 or 4161-70) to the test battery. Set the BC-7000 on a safe, stable, and suitable surface.
2. Plug the BC-7000 AC power cord (P/N 4161-09) into the BC-7000 and into the AC power source. Set the BC-7000 power switch to the ON position.
3. Plug the BC-7000 gray DC connector into the gray battery connector.
4. Push the UP button to select Mode ? Discharge. Press NEXT.
5. Using the UP or DOWN button, select 12 or 24-volt. Press NEXT.
6. Using the UP or DOWN button, adjust the EPV ? to the desired value (0.1 to 28Vdc). Press NEXT
7. Using the UP or DOWN button, adjust the AMPS ? to the desired value. Press NEXT.
8. Using the UP or DOWN buttons, adjust the TIME ? to the desired value. Press NEXT.
9. To start the discharge test, press NEXT. To stop the discharge at anytime press the NEXT button.
10. The discharge test will stop when the EPV voltage point is reached or the discharge Time is reached whichever comes first.
11. Set the BC-7000 AC power switch to the OFF position and disconnect the BC-7000 from the test battery.
12. Discharge test data from the BC-7000 is now available for download using BC Report.

### ***BC-7000 Report Printing***

1. Upon completion of the C1 battery capacity test or discharge test, disconnect the BC-7000 from the test battery. Connect the USB cable to the host computer and to the BC-7000. Run *BC Report*.
2. With the *BC Report* window active on the desktop, enter the battery serial number into the box. Click the Connect box to connect to the BC-7000.
3. Highlight the "From Analyzer" indicator button.

4. Click on the Load Data button. The status bar in the lower left corner of the *BC Report* window will display download activity and status messages as data is transferred. When the data transfer is complete, the Print Report button will become active.
5. To print the report, click on the Print Report button. The print preview window will appear showing the report available to print. Click on the printer icon to print.

### **Printing Saved Battery Tests**

1. To reprint previously battery capacity test's, start BC Report.
2. Click on the From Disc radio button changing from clear to black.
3. Click on the Load Data box.
4. Double click on the file folder BC-6000.
5. Select from the stored test results using the test date needed. Click on the file to select then click the Open box.
6. Click on the Print Report box to generate the report.
7. Exit BC Report.



***TIP: A paperless report copy can be obtained by using a PDF print driver that will create a PDF file. This report format allows BC-7000 test reports to be sent electronically by means of e-mail attachments.***

### **BC-7000 Care**

Your BC-7000 battery 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-7000 or expose it to rough handling.
2. Do not expose the BC-7000 to water or fluids of any kind.
3. Do not operate the BC-7000 in a closed-up area.
4. Do not connect the BC-7000 to batteries with improper voltage ratings.
5. Do not operate the BC-7000 with the air intake or exhaust outlet blocked or restricted.
6. Do not carry the BC-7000 by the main power cable.
7. Do not operate the BC-7000 near flammable materials.
8. Do not expose the BC-7000 to direct sunlight during operation.
9. Do not expose the BC-7000 to any other heat sources.

Contact technical support for questions on BC-7000 safety and operation.

PH: 909 705-6267

E-mail [support@cofko.com](mailto:support@cofko.com)

## **BC-7000 TECHNICAL DATA**

### **BC-7000 SPECIFICATION:**

Maximum Battery Input Voltage	28.0VDC
Minimum Battery Input Voltage	9.0VDC
Maximum Operating Altitude <sup>1</sup>	6500ft (1828.8m)
End Point Voltage (EPV) <sup>2</sup>	
12V Battery EPV	10VDC IEC
24V Battery EPV	20VDC IEC
Constant Current Load	0.5Adc to 14.9Adc 0.1A steps (+ - 1.5%) 15Adc to 55Adc 1A steps (+ - 1%)
Operational Testing Temperature <sup>3</sup>	59°F or higher
Case Length	12 in(304.8mm)
Case Width	9 in (228.6mm)
Case Height	7.5 in (190.5mm)
Weight	10 lbs.(4.5kg)
PC Communication Port	USB 2.0
BC Report O.S.	Windows™ 10

<sup>1</sup> Consult factory for testing above maximum altitude rating.

<sup>2</sup> Consult the battery manufacturer for End Point Voltage (EPV).

<sup>3</sup> Based upon 24-hour battery temperature stabilization in a 59°F or higher environment before testing battery.

## ***BC-7000 Limited Warranty***

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

COFKO LLC warrants to the original purchaser (end user) of the BC-7000 battery capacity tester that it will be free of defects in workmanship and materials. This warranty is void if COFKO LLC finds that the BC-7000 battery capacity tester 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 shipping.

1 Year: Covers each BC-7000 battery capacity tester for workmanship, material, and labor.

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

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

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

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

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

The purchaser must bear the cost of shipping the BC-7000 to COFKO LLC as well as the return shipping cost.

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

COFKO Electronics LLC will not accept responsibility for repairs made without authorization.

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-7000 battery capacity tester.

COFKO Electronics LLC liability under this warranty shall not exceed the cost of correcting the defective BC-7000 battery capacity tester.

This written warranty is the only expressed warranty covering the BC-7000 battery capacity tester. All warranties implied by law such as Warranty of Merchantability are limited to the duration of this limited warranty of the BC-7000 battery capacity tester. Check your local legal rights for further rights you may have.

**BC-7000 Notes**

---

---

---

---

---

---

---

---

---

---

---