

# ***BC-6000***

## ***BATTERY CAPACITY TESTER***

### ***OPERATIONS MANUAL***

***REV.D***

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## Unpacking

As you unpack your new BC-6000 battery capacity tester, inspect the BC-6000 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. 4166 BC-6000 Capacity Tester.
- One (1) each-Part no. 4166-20, BC-6000 Operations Manual.
- One (1) each-Part no. 4161-30, BC Report USB Flash Drive.
- One (1) each-Part no. 4161-40, USB Cable.
- 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-6000 if it needs to be shipped.



**P/N 4166**



**P/N 4166-20**



**P/N 4161-30**



**P/N 4161-40**



**P/N 4161-60**



**P/N 4161-70**

## ***BC-6000 Introduction***

Congratulations and thank you on purchasing your BC-6000 battery capacity tester. The BC-6000 battery capacity tester has been designed to provide the operator with accurate battery capacity testing and ease of operation.

The features of the BC-6000 are:

- Adjustable constant current load in 1 Ampere increments. (12V battery 10-55Adc; 24V battery 10 to 55Adc)
- Powered by the battery on test operation. No AC power required.
- 16x2 LCD character display.
- 50mv voltage resolution.
- Over temperature protection.
- Audio warning when capacity test is complete or malfunction of the unit.
- 1-year warranty.

Before operating your new BC-6000 battery capacity tester, familiarize yourself with this operator's manual and the BC-6000.

Questions?

Email: [support@cofko.com](mailto:support@cofko.com)

Thank you,

COFKO Electronics LLC

Manual: BC-6000 REV.D

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***History of Revisions***

Revision #	Effective Date	Description of Change	Approval By
A	03/09/2009	Initial issue	M.C.
B	05/12/2011	Phone Number Change	M.C.
C	10/23/2012	Increase C1 current from 50Ahr to 55Ahr for 24V battery	M.C.
C	10/23/2012	Increase Maximum Operation Altitude from 6000'to 6500'	M.C.
C	12/23/2012	Change Description of Box Contents	M.C.
D	02/12/2020	Revision D Release	M.C.

## Battery Handling and BC-6000 Testing Precautions

Your new BC-6000 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-6000 battery capacity tester is important. Failure to follow the operation and safety guidelines when using the BC-6000 can result in personal injury to the operator and damage to the BC-6000. Always review the battery manufacturer's battery CMM for 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 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 portion of the connector or the battery terminals. A possibility of serious electrical shock exists.
3. **WARNING: ELECTRIC SHOCK HAZARD.** 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.
4. **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.
5. **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.
6. **WARNING:** Batteries contain sulfuric acid which will cause burns. **DO NOT TOUCH EYES AFTER TOUCHING BATTERY.** Do not get acid in your eyes, 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.
7. **WARNING:** Wear proper eye, face and hand protection always when working with batteries. Know the location and use of emergency eyewash and a shower nearest the battery charging area.
8. **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.
9. **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.
10. **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.

11. **DANGER:** Never connect or disconnect BC-6000 main power connector with the switch on. Connecting or disconnecting the BC-6000 with discharge current applied can cause a spark and possible battery explosion.
12. **DANGER:** Never capacity test batteries without first inspecting all battery wires and connections 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.
13. **DANGER:** never connect the BC-6000 capacity tester to batteries with voltage or capacity currents outside the ratings of the tester. The BC-6000 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 the BC-6000 ratings, Email: [support@cofko.com](mailto:support@cofko.com)
14. **DANGER:** never obstruct the BC-6000 air intake or hot air exhaust openings. Obstructing either opening can cause the BC-6000 to overheat.

## REMEMBER SAFETY FIRST!

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

The BC Report application provides a battery capacity test report using data generated from the BC-6000. BC Report organizes the test result into a report that presents critical test data such as:

- Battery test date and time
- BC-6000 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 BC-6000 Battery Capacity Test Report example below.

# BC-6000 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-6000 S/N: XXXXXXXXX

Test Amps: 38.0A

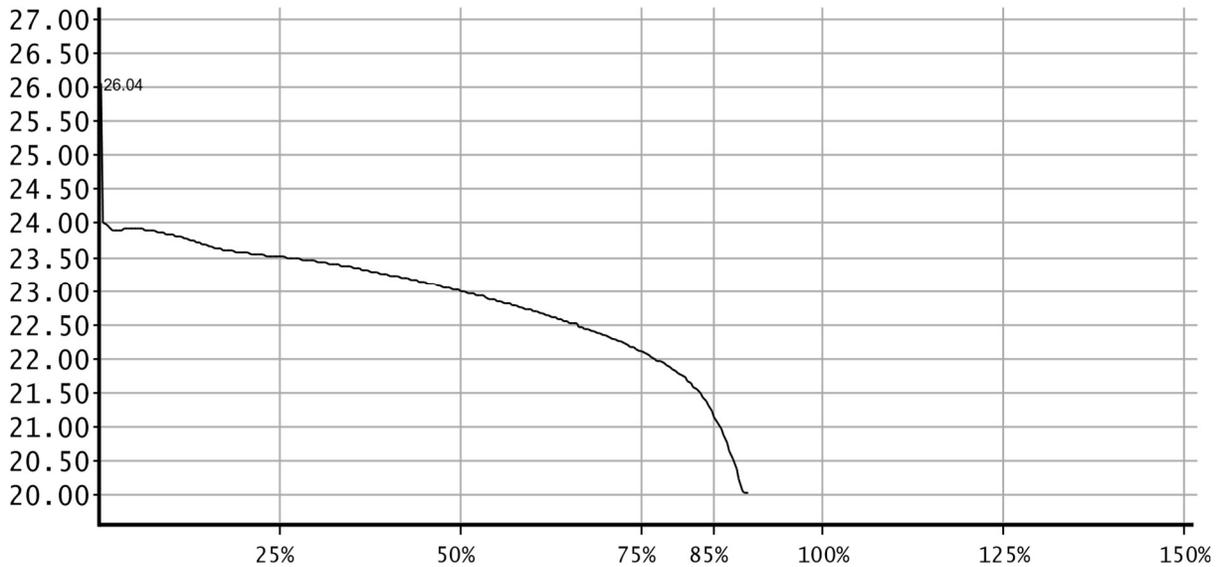
EPV: 20.00V

C1: 88.8% Run time: 53.3 Minutes

Result: PASSED C1 85%

## Battery Voltage Discharge Data:

0.50V/div



Comments:

BC Report uses the USB port of the host computer to transfer the capacity test data from the BC-6000. Test data is stored on the host computer at location (*This PC > Local Disk (C:) > Concorde > BC-6000*) two data file formats are used with extension *.tdf* and *.csv*. The file extension *tdf* is the BC Report native data file extension. Data file extension *.csv* can be imported directly into most spread sheet applications for custom report building.

## **BC Report Installation**

1. Plug the BC Report USB flash drive (P/N 4161-30) into a USB port of the host computer running O.S. Win10. Run the *SETUP.exe* file located on the USB flash drive and follow the instructions as presented.
2. When prompted to install Silicon Labs CP210x USB to UART bridge driver, click on the *install* button for driver installation.
3. When the BC Report installation is complete, ***restart the host computer***. The BC Report icon will now appear on the desktop. To start BC Report, double click on the icon using the pointing device (mouse or pad).
4. Now plug the USB cable (P/N 4161-40) into an open USB port on the host computer. The computer should acknowledge a port has been opened with an audio sound or screen icon. Plug the remaining end of the USB cable into the USB port on the front of the BC-6000. The BC-6000 display will show "USB Active" message. Test data is ready for download from the BC-6000. Disconnect the USB cable from the BC-6000 and the host computer. Remove the BC Report Flash drive from the host computer. Contact [support@cofko.com](mailto:support@cofko.com) for assistance if needed.

## **BC-6000 Operation**



**NOTE:** Before capacity testing a battery, review all capacity testing procedures as required by the battery manufacturer. Failure to do so can result in inaccurate test date.



**NOTE:** Before capacity testing a battery, **CHARGE THE BATTERY FOLLOWING THE MANUFACTURER'S CMM CHARGING GUIDELINES.**



**DANGER:** Never attempt to connect the BC-6000 to a battery using anything but the proper connector. Doing so can damage the tester, battery, or cause injury to the operator. Capacity testing data will be invalid if incorrect connections are made.

1. Make sure the BC-6000 power switch is in the **OFF** position. Connect the 4161-60 or 4161-70 connector to the test battery. Connect the BC-6000 gray connector to the gray mating connector of the 4161-60 or 4161-70.
2. Place the BC-6000 power switch to the **ON** position. The BC-6000 LCD display model and firmware version.
3. Select the correct battery voltage 12 or 24-volts by pressing the **UP** or **DOWN** button located to the right of the

display. Press **NEXT**.

4. Adjust the capacity test EPV voltage specified by the battery manufacturer. The default is 10 volts for a 12-volt battery and 20-volts for a 24-volt battery. Press **NEXT**.
5. Using the **UP** or **DOWN** button, select the battery capacity test C1 amperage. Press **NEXT**.
6. Using the **UP** or **DOWN** button, adjust the C1% to the minimum passing value. Press **NEXT**.
7. To start the test, press **NEXT**. The BC-6000 cooling fan motor will start, and the LCD display will show test data.  
Note: To stop the capacity test before the End Point Voltage (EPV) is reached, press **NEXT**.



If the **BC-6000 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-6000 for service.

8. Upon reaching the EPV, the capacity test will stop. The cooling fan motor will stop, and the audio warning will start beeping. The BC-6000 displays C1% battery capacity, test amperage, and Pass or Failed.
9. Record test data, then place the Power **OFF/ON** switch to the **OFF** position. Disconnect the BC-6000 from the battery. If the battery fails the C1 capacity test, review the batteries CMM for instructions.



**NOTE:** When the **POWER** switch is set to the **OFF** position **all test data will be lost.**

10. Before returning the battery to service, recharge the battery following the batteries CMM charging procedure.

### **BC Report Test Data Download**

1. Remove the BC-6000 from the test battery. Plug the USB cable P/N 4161-40 into an open port of the host computer. Plug the remaining USB cable end into the USB port of the BC-6000.
2. Start the BC Report application by double clicking on the desktop icon.
3. Enter the battery serial number into the Battery serial number box.
4. Click on the Connect button with the pointing device. The dialog box in the lower left corner will indicate the analyzer has been found. The BC-6000 picture will be displayed in the tester picture box.
5. The "From Analyzer" should be selected indicated by a black dot in the circle. This retrieves the test data from the BC-6000.
6. Click on the Load Data box. The dialog box in the lower left corner will indicate the data has been loaded. When complete the Print Report box will become active.
7. To generate the report, click on the Print Report box.
8. To print the report, click on the printer icon in the upper left tool bar. This will send the report to the host computers printing resources and to the connect printing device.
9. Disconnect the USB cable from the BC-6000 and the host computer and Exit BC Report.

## ***Printing Stored Battery Capacity Test Reports***

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.

## ***BC-6000 Care***

Your BC-6000 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-6000 or expose it to rough handling.
2. Do not expose the BC-6000 to water or fluids of any kind.
3. Do not operate the BC-6000 in a closed-up area.
4. Do not connect the BC-6000 to batteries of improper voltage ratings.
5. Do not operate the BC-6000 with the air intake or exhaust outlet blocked or restricted.
6. Do not carry the BC-6000 by the main power cable.
7. Do not operate the BC-6000 near flammable materials.
8. Do not expose the BC-6000 to direct sunlight during operation.
9. Do not expose the BC- 6000 to any other heat sources.
10. Always call the technical support line for questions on BC-6000 safety and operation.

## ***Technical Data***

### ***BC-6000 Specifications:***

Maximum Battery Input Voltage	28.0VDC
Minimum Battery Input Voltage	9.0VDC
Maximum Operating Altitude <sup>1</sup>	6500ft (1981.2m)
End Point Voltage (EPV) <sup>2</sup>	
12V Battery EPV (default)	10VDC IEC
24V Battery EPV (default)	20VDC IEC
Constant Current Load	12 Volt Battery 10 to 55Adc 1A steps (+/- 0.5ADC) 24 Volt Battery 10 to 55Adc 1A steps (+/- 0.5ADC)
Test Operational Temperature <sup>3</sup>	59°F or higher
Case Length	12 in(304.8mm)

Case Width	9 in(228.6mm)
Case Height	10 in(254mm)
Weight	10 lbs.(4.5kg)
Operation Temperature Range	-20 to 50 Deg. C

1. Consult factory for testing above maximum altitude rating.
2. Consult battery manufacturer for End Point Voltage (EPV).
3. Based upon 24-hour battery temperature stabilization in a 59°F or higher environment before capacity testing battery. Consult battery manufacturer for capacity testing at higher or lower temperatures.

## ***Limited Warranty***

### ***Statement of Warranty***

COFKO ELECTRONICS warrants to the original purchaser (end user) of the BC-6000 battery capacity tester that it will be free of defects in workmanship and materials. This warranty is void if COFKO ELECTRONICS finds that the BC-6000 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 first use.

1 Year: Covers each BC-6000 battery capacity tester for workmanship, material, and labor.

### ***To Obtain Warranty Coverage***

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

### ***Warranty Repairs:***

If upon inspection COFKO ELECTRONICS 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-6000 to COFKO ELECTRONICS LLC as well as the return shipping cost.

### ***Important Warranty Limitations***

1. COFKO ELECTRONICS will not accept responsibility for repairs made without authorization.
2. COFKO ELECTRONICS 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-6000 battery capacity tester.
3. COFKO ELECTRONICS liability under this warranty shall not exceed the cost of correcting the defective BC-6000 battery capacity tester.
4. This written warranty is the only expressed warranty covering the BC-6000 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-6000 battery capacity tester. Check your local legal rights for further rights you may have.

**BC-6000 Notes:**

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