

# ***BC-5000***

## ***BATTERY CAPACITY TESTER***

### ***OPERATIONS MANUAL***

***REV.G***

***COFKO ELECTRONICS LLC***

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## **UNPACKING**

As you unpack your new BC-5000 battery capacity tester, inspect the BC-5000 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. 4163 BC-5000 Capacity Tester.
- One (1) each-Part no. 4163-20 BC-5000 Instruction Manual.
- 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-5000 if it needs to be shipped.



P/N 4161-60



P/N 4161-70

## **INTRODUCTION**

Congratulations on acquiring your new BC-5000 battery capacity tester. The BC-5000 battery capacity tester has been designed to provide the operator with accurate battery capacity testing and ease of operation.

The features of the BC-5000 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 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-5000 battery capacity tester, familiarize yourself with this operator's manual and the BC-5000.

Questions?

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

Thank you,

COFKO ELECTRONICS LLC

Manual: BC-5000 REV.G

Revision Date: 02/12/2020

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## **Battery Handling and BC-5000 Precautions**

Your new BC-5000 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-5000 battery capacity tester is important. Failure to follow the operation and safety guidelines when using the BC-5000 can result in **personal injury to the operator and damage to the BC-5000**. 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.**

### **Precautions:**

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-5000 main power connector with the switch on. Connecting or disconnecting the BC-5000 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-5000 capacity tester to batteries with voltage or capacity currents outside the ratings of the tester. The BC-5000 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-5000 ratings, Email: [support@cofko.com](mailto:support@cofko.com)
14. **DANGER:** never obstruct the BC-5000 air intake or hot air exhaust openings. Obstructing either opening can cause the BC-5000 to overheat.

## **BC-5000 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-5000 capacity tester 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-5000 power switch is in the **OFF** position. Connect the 4161-60 or 4161-70 connector to the test battery. Connect the BC-5000 gray connector to the gray mating connector of the 4161-60 or 4161-70.
2. Place the BC-5000 power switch to the **ON** position. The BC-5000 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-5000 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-5000 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-5000 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-5000 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-5000 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, charge the battery following the batteries CMM charging procedure.

### ***Reserve Capacity Test Mode***

The Reserve Capacity (RC) test mode is used for testing **non-aviation** 12-volt lead acid batteries. The BC-5000 RC test time can be up to 99,999 minutes. (**Note: The BC-5000 must have firmware version 1.16 or higher installed**)

1. Connect the BC-5000 to the 12-volt test battery. Set the **POWER** switch to the **ON** position.
2. Pressing the **UP** or **DOWN** button, set the EPV? test voltage. The EVP voltage can be adjusted from 10 volts to 12 volts in 0.1-volt steps. (Check the battery manual for the EPV voltage Setting) Press **NEXT**.
3. Pressing the **UP** or **DOWN** button, adjust the test amperage to 25-amps. Press **NEXT**.
4. At the C1% ? menu, press the **UP** button until the C1% passes 120% and "RESERVE CAPACITY" is displayed.

Press **NEXT**.

5. Press **NEXT** to start the test. (Note: Pressing the **NEXT** button again will stop the test).
6. The displayed TM: 0.0' is the test time in minutes. From 0.0 to 999.9 the time resolution is 0.1 minute. From 1000 to 99999 the time resolution is 1 minute.

## REMEMBER SAFETY FIRST!

### **BC-5000 CARE**

Your BC-5000 battery capacity tester should be treated as precision test equipment. Misuse will shorten its ability to perform accurate testing.

1. Do not drop the BC-5000 or expose it to rough handling.
2. Do not expose the BC-5000 to water or fluids of any kind.
3. Do not operate the BC-5000 in a closed up area.
4. Do not connect the BC-5000 to batteries of improper voltage ratings.
5. Do not operate the BC-5000 with the air intake or exhaust outlet blocked or restricted.
6. Do not carry the BC-5000 by the main power cable.
7. Do not operate the BC-5000 near flammable materials.
8. Do not expose the BC-5000 to direct sunlight during operation.
9. Do not expose the BC- 5000 to any other heat sources.
10. Always call the technical support line for questions on BC-5000 safety and operation.

### **TECHNICAL DATA**

#### **BC-5000 SPECIFICATION:**

|   |  |
|---|--|
| 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 55A dc 1A steps (+/- 0.5ADC)<br>24 Volt Battery 10 to 55A dc 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 Rating | -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. Consult the battery manufacturer for capacity testing at higher or lower temperatures.

## **LIMITED WARRANTY**

### **STATEMENT OF WARRANTY**

COFKO ELECTRONICS LLC warrants to the original purchaser (end user) of the BC-5000 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-5000 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-5000 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-5000 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-5000 battery capacity tester.
3. COFKO ELECTRONICS liability under this warranty shall not exceed the cost of correcting the defective BC-5000 battery capacity tester.
4. This written warranty is the only expressed warranty covering the BC-5000 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-5000 battery capacity tester. Check your local legal rights for any further rights you may have.

**BC-5000 NOTES:**

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