

BC-5000

BATTERY CAPACITY TESTER

OPERATIONS MANUAL

COFKO LLC.

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UNPACKING

As you unpack your new BC-5000 battery capacity tester, inspect the tester 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 *BC-5000 tester, operators instruction manual, battery disconnect (7017-2), and 2 battery adapter cables.*

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

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 10-50Adc; 24V battery 10 to 55Adc)
- Powered by the battery on test operation. No AC power required.
- 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 operators manual and the unit.

Questions?

Email: Support@cofko.com

Thank you,

COFKO

Manual: BC-5000

Revision: C Date: 12/7/11

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SAFETY NOTES

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 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:



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.
- 2 **WARNING: ELECTRIC SHOCK HAZARD.** 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 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.

- 6 **WARNING:** Wear proper eye, face and hand protection at all times when working with batteries. Know the location and use of emergency eyewash and a 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. Insure 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-5000 tester main power connector with the switch on. Connecting or disconnecting the BC-5000 tester with discharge current applied can cause a spark and possible battery explosion.
- 11 **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.
- 12 **DANGER:** never connect the BC-5000 capacity tester to batteries with voltage or capacity currents outside the ratings of the tester. The BC-5000 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***
- 13 **DANGER:** never obstruct the BC-5000 tester air intake or hot air exhaust openings. Obstructing either opening can cause the tester to overheat.

BC-5000 OPERATION



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



NOTE: Before capacity testing a battery, **RECHARGE THE BATTERY FOLLOWING THE**

MANUFACTURER'S RECHARGING GUIDELINES.

1. Make sure the switch is off before connecting the BC-5000 to the battery to be capacity tested.



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.

2. Place the **OFF/ON** power switch to the **ON** position. The BC-5000 LCD display will flash tester model and software version.
3. Select the correct battery voltage 12 or 24 by pressing the **UP** or **DOWN** button located to the right of the display.

Pressing the **DOWN** button will change battery testing voltage to 12 volts.



NOTE: If incorrect battery voltage is selected the BC-5000 will show the display below.

4. To select the battery manufacturer's C1 (one hour) battery discharge amperage rate, press the **NEXT** button located on the left side of the display.

To adjust the C1 amperage test rate, press the **UP** or **DOWN** buttons.

5. Press the **NEXT** button to display the start test menu.

- 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-5000 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-5000 cooling fan motor will start and the LCD display will show the C1% reading, battery voltage, flash **TESTING**, and test amperage.



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.

- Upon reaching the EPV the BC-5000 test will stop. The cooling fan motor will stop and the audio warning beeper will beep. The display will show C1% battery capacity. Test amperage and Pass or Failed is displayed.

“Passing” is based upon a battery capacity of 85% or greater of its C1 rating.

“Failing” is a battery with less than 85% of its C1 rating.

- Record test data, then place the Power **OFF/ON** switch to the **OFF** position. Disconnect the BC-5000 power connector from the battery.



NOTE: When the **POWER** switch is set to the **OFF** position or the BC-5000 is disconnected from the battery, ***all test data will be lost.***

- Before returning the battery to service follow the battery manufacturer's recharging procedure.

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 battery testing. Some simple guidelines of care will insure years of trouble free operation.

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.

REMEMBER SAFETY FIRST!

TECHNICAL DATA

BC-5000 SPECIFICATION:

Maximum Battery Input Voltage

..... 28.0VDC

Minimum Battery Input Voltage

..... 9.0VDC

Maximum Operating Altitude¹

..... 6500ft(1981.2m)

End Point Voltage (EPV)²

12V Battery EPV

..... 10VDC IEC

24V Battery EPV

..... 20VDC IEC

Constant Current Load

..... 12 Volt Battery 10 to 50Adc 1A steps(+/- 0.5ADC)

..... 24 Volt Battery 10 to 55Adc 1A steps(+/- 0.5ADC)

Test Operational Temperature³

..... 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-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 shipping.

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 option.

WARRANTY COST:

The purchaser must bear the cost of shipping the BC-5000 to COFKO ELECTRONICS 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 further rights you may have.

BC-5000 NOTES:

1. _____
2. _____
3. _____
4. _____
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6. _____
7. _____
8. _____

COFKO ELECTRONICS

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RIVERSIDE, CA. 92509
WWW.COFKO.COM

CERTIFICATION OF FACTORY CALIBRATION

EQUIPMENT: BATTERY CAPACITY TESTER
MODEL#: BC-5000

Application : Automatic battery capacity tester for 12/24 volt Lead-Acid aircraft batteries with C1 test ratings between 10 to 55 ampere-hour.

- Specification: Powered by Test Battery.
- Operation Voltage Range : 9-28Vdc
- Operator Selected Battery Voltage: 12-24Vdc
- Operator Selected C1 amperage level: 10-55Adc(12V battery 10 to 50A ; 24V battery 10 to 55A)
- One Amp Operator Selected Test Amperage Steps.
- (16X2) LCD Information Display.
- Displayed Voltage Resolution 50mv
- Cutoff Voltage 12V Battery 10.00Vdc (IEC 60952-1) +/-100mv
- Cutoff Voltage 24V Battery 20.00Vdc (IEC 60952-1) +/-100mv
- Displayed Battery Capacity (C1) Percent %
- Displayed Pass or Fail Battery Condition

Notes: Calibrated with NIST traceable equipment.

Test Equipment	Manufacturer:	Model:	Serial#	Control#
Volt Meter #1	HP	3456A	2015A01818	12617
Volt Meter #2	HP	3455A	1622A11888	12618
Frequency Counter	HP	5316A	2632A10545	12693
Shunt	Deltec	WB100 100	NA.	12619

Product: Automatic Battery Capacity Tester
Model: BC-5000
Calibration Due: Once A Year
Shipped Condition: Calibrated within Specified Tolerance _____ - Passed
Procedure: CF1_FINALCAL

COFKO ELECTRONICS CERTIFIES THAT THE ABOVE LISTED TEST EQUIPMENT MEETS OR EXCEEDS ALL SPECIFIED TOLERANCES. THE TESTER STATED ABOVE HAS BEEN CALIBRATED WITH NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY(NIST) TRACEABLE EQUIPMENT LISTED ABOVE.

DATE MANUFACTURED: ___/___/___ S/N: _____¹

SIGNATURE: _____

Date of First Use: ___/___/___ Signature: _____

1. BC-5000 serial number location- Bottom of Case.