To buy, sell, rent or trade-in this product please click on the link below:
https://www.avionteq.com/Power-Products-BC-9000-Battery-Charger.aspx

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www.avionteq.com

BC-9000

BATTERY CHARGER

OPERATIONS MANUAL

COFKO ELECTRONICS LLC

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P/N 4169-20

UNPACKING

As you unpack your new BC-9000 battery charger, inspect the BC-9000 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. 4169 BC-9000 Battery Charger/DC Power Supply
One (1) each-Part no. 4169-20, BC-9000 Instruction Manual
One (1) each-Part no. 4169-50, BC-9000 DC Output 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 [1]

[1] ***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-9000 if it needs to be shipped back for warranty or service.

INTRODUCTION

Congratulations on acquiring your new BC-9000 battery charger. The BC-9000 has been designed to provide the operator with accurate battery charging and ease of operation.

The features of the BC-9000 are:

BC-9000 Charger:

- Adjustable output voltage from 3.0 to 36.0 V dc in 0.1 volt steps
- Adjustable output amperes from 0.05 to 25 Adc
- Constant voltage or constant current charge
- Adjustable charge time from 1 to 999 minutes
- Single or two step charge routine
- Universal AC power input 90~264Vac 1 PH (47 to 63Hz)
- LCD display
- 10mv voltage resolution
- Over temperature protection
- DC Power Supply Mode.
- Audio warning when charge is complete
- 1-year warranty

Before operating your new BC-9000 familiarize yourself with this operation manual and the BC-9000.

Questions?

Call: (909) 705-6267 Mon.-Fri.8:00 A.M. to 5:00 P.M. PST or ***support@cofko.com***
Thank you,
COFKO

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History of Revisions

Revision #	Effective Date	Description of Change	Approval by
A	12/20/2011	Initial Issue	M.C.
B	10/23/2012	Increase Maximum Operation Altitude from 6000' to 6500' Page 11	M.C.
B	10/23/2012	Change Description of Box Contents Page 2	M.C.
C	04/05/2013	Minimum and Maximum Charger Operation Temperature Page 11	M.C.
D	01/03/2014	Up Date Safety Information Page 7 Line 9	M.C.
E	04/05/2014	Added Power Supply Mode Page 9	G.K.
F	04/28/2015	Add Box Content Part Numbers Page 2	M.C.
G	02/12/2016	Deep Discharge Recovery Mode Page 9	M.C.
H	02/12/2016	BC-9000 Configuration Page 6	M.C.

SAFETY NOTES

Your new BC-9000 battery charger has been designed with operator safety as a function of its design, construction, and operation. Understanding how to safely operate the BC-9000 is important. Failure to follow the operation and safety guidelines when using the BC-9000 can result in ***personal injury to the operator and damage to the BC-9000.*** Always review the battery manufacturer's battery charging guidelines before recharging 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 at all times 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. Insure the aircraft battery switch, external power source, or the charger 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:** ***Before charging or capacity testing a battery always 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. Always REVIEW, UNDERSTAND, and FOLLOW the equipment 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 to personal 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 disconnect the AC power cord with recharge current applied to the battery. If you wish to terminate a recharge cycle, press the ***NEXT*** button first to stop the battery recharge cycle. Now place the POWER switch to the off position. The AC power cord can now be safely removed from the power source.

-11-**DANGER:** Never recharge batteries without first inspecting all battery wires and connections for condition and tightness. Replace all defective wires and bad connections before charging batteries. Defective wiring and bad connections can cause overheating during charging.

-12-**DANGER:** Never connect the BC-9000 to batteries with voltage or recharge charge currents outside the ratings of the charger. Any questions that arise about the battery or charger ratings, call (909)705-6267.

-13-**DANGER:** Never obstruct the BC-9000 air intake or hot air exhaust openings. Obstructing either opening can cause the BC-9000 to overheat.

BC-9000 OPERATION

 **NOTE:** Before recharging a battery, ***review all recharging procedures as required by the battery manufacturer***. Failure to do so can result in permanent damage to the battery or the BC-9000.

 **DANGER:** Never attempt to connect the BC-9000 charger to a battery using anything but the proper connector. ***Doing so can damage the BC-9000, battery, or cause injury to the operator***.

 **DANGER:** ***Never attempt to recharge Lithium type batteries with the BC-9000.***

CONFIGURATION

1. Set the BC-9000 battery charger on a stable suitable surface. Plug the AC cord located at the rear of the BC-9000 into an AC power outlet (Note: The BC-9000 comes with a NEMA 5 -15 connector). Set the BC-9000 power switch to the ON position.
2. Using the ***UP*** or ***DOWN*** button, select the CONFIGURE mode. Press the ***NEXT*** button.
3. To turn off the end of charge Beeper warning, press the ***NEXT*** button.
4. Using the ***UP*** or ***DOWN*** button, change the End Beep ? Y to N.
5. Press ***NEXT*** button to accept change.
6. Press ***UP*** or ***DOWN*** button to display the EXIT option.
7. Press ***NEXT*** button to exit the configure mode. The BC-9000 will reboot the display and beep signaling the changes.
8. Use the UP or DOWN button the select other modes.

BATTERY CHARGING

 **DANGER: The BC-9000 battery charger is a fully adjustable battery charger. The BC-9000 will follow the operator settings during the battery recharge cycle.** Always consult the battery manufacturer's recharge guidelines before starting a recharge cycle. ***If the battery is subjected to improper recharge settings, serious damage or injury can occur to the operator and the BC-9000.*** Critical settings, such as maximum recharge voltage, recharge amperes, and recharge time must follow the battery manufacturer's guidelines. Always remove the battery

from the aircraft before starting a recharge cycle. SAFETY FIRST!

1. Set the BC-9000 on a stable suitable surface. Plug the AC cord located at the rear of the BC-9000 into an AC power outlet. Connect the DC cord (4169-50) to the BC-9000. (Note*: The BC-9000 comes with a NEMA 5 -15 connector)*
2. Using the ***UP*** or ***DOWN*** button, select charge steps. The BC-9000 will charge the battery using a single step or two step charge mode. Single step charging is typically used to charge lead-acid batteries using constant potential charging. Two step charging is used in constant current charging of nickel cadmium 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. Tip: *Holding down the **UP** or **DOWN** buttons will rapid advance the number selection.* Press the ***NEXT*** button to advance the display menu.
    b. The BC-9000 display will now ask for a CHARGE VOLTS? selection. Single step charging requires only one charge voltage selection. Charging voltage can be adjusted from 3.0 to 36.0 volts. Use the ***UP*** or ***DOWN*** button to set the charging voltage. This voltage is the maximum voltage the BC-9000 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 batteries rated voltage.* Press the ***NEXT*** button to advance the display menu.
    c. The BC-9000 will now ask for CHARGE AMPS? selection. The BC-9000 recharge current can be adjusted from 0.05 to 25 amperes. Consult the battery manufacturer recharge guidelines for proper settings. Never set the recharge amperes to a value outside the battery recharge specifications. Press the ***NEXT*** button to advance the display menu.
    d. The BC-9000 will display the message START CHARGING? Press ***NEXT***. Pressing the next button will start the battery charging cycle. With the charger running, the BC-9000 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 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.*

3. If two step charge was entered above the BC-9000 will display CHARGE Step 1 Time?

    a. Enter the first step charge time using the ***UP*** or ***DOWN*** button. The time can be adjusted from 1 minute to 999 minutes. Press the ***NEXT*** button to advance the display menu.

    b. The BC-9000 will display CHARGE Step 1 Volts? Use the ***UP*** or ***DOWN*** button to adjust the value from 3.0 to 36.0 volts. Press the ***NEXT*** button to advance the display menu.
    c. 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. Press the ***NEXT*** button to advance the display menu.
    d. The BC-9000 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.

e. The BC-9000 will display CHARGE Step 2 Voltage? Using the ***UP*** or ***DOWN*** button the step 2 voltage can be adjusted from 12.5 to 36.0 volts. Press the ***NEXT*** button to advance the display menu.

f. 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.

g. The BC-9000 will display the message START CHARGING? Press ***NEXT***. Pressing the next button will start the battery charging cycle. With the charger running the BC-9000 display will show all the entered settings under the flashing CHARGING/Step 1 heading on the left side of the display. The arrow on the far left points to the limiting item at the moment. TIME, VOLTS, or AMPS. If a charge time limit was met the arrow will point to TIME. If the unit is limiting the current to the user's current limit setting, the arrow will point to AMPS (this is constant current mode). If the unit is limiting the voltage to the user's voltage limit setting, the arrow will point to VOLTS (this is constant potential mode). The arrows will point to only 1 item at a time. If a charge time limit has not been reached the arrow will point to VOLTS or AMPS to indicate constant voltage or constant current charge mode respectively. The operating modes constant potential or constant current are automatically invoked by your VOLTS and AMPS limit settings. 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-9000 will turn off the charge and turn on the audio beeper to signal the charge cycle is done.

*The charge cycle can be stopped at any time by pressing the **NEXT** button.*

POWER SUPPLY MODE

The BC-9000 DC output connector has power applied when the power supply mode is active. ***Never attach a load to the DC output with the output energized.*** Sparks at the DC output connector can occur and damage the BC-9000.

Never use an improper adaptor connector to attach the BC-9000 to the targeted equipment.

1. Set the BC-9000 battery charger on a stable suitable surface. Plug the AC cord located at the rear of the BC-9000 into an AC power outlet (Note: The BC-9000 comes with a NEMA 5 -15 connector). Connect the DC output cord (4169-50) to the BC-9000 DC output (gray) output connector. Connect the remaining DC output cord connector

(gray) to the proper adaptor cable used to interface to the load being powered.

2. Set the BC-9000 power switch to the ON position.

3. With the BC-9000 displaying MODE? Press the ***UP*** or ***DOWN*** button to select PWR SUPPLY. Press the ***NEXT*** button to advance the display menu.

4. With the BC-9000 displaying PWR SUPPLY Volts? Select the voltage using the ***UP*** or ***DOWN*** buttons. Press the ***NEXT*** button to advance the display menu.

5. With the BC-9000 displaying PWR SUPPLY Amps? Select the maximum amperage using the ***UP*** or ***DOWN*** buttons. Press the ***NEXT*** button to advance the display menu.

6. Press ***NEXT*** when you see START POWER? to start the power supply output.

7. To turn off the output press the ***NEXT*** button.

DEEP DISCHARGE RECOVERY (DDR) MODE

Deep discharge recovery mode is applied to sealed AGM lead acid batteries that have lost capacity due to sulfation. Severe sulfation can occur if the battery is accidently discharged completely down. DDR mode provides the battery technician with a charge routine that attempts to reverse battery sulfation. Consult your battery manufacturer's component maintenance manual (CMM) before using the DDR mode.

The BC-9000 DDR mode will charge the battery using a set routine. The maximum battery charging voltage is set to 36V for a 24V battery or 18V for a 12V battery. The charge amperage applied to the battery will be 1/10th the C1 AMPS entered. If the battery C1 rating is 40AHr, the battery will be charged at a constant current four amperage rate. The charge routine timer is set to a maximum 1440 minutes (24Hrs). After an initial 240-minute pre-charge the BC-9000 will begin monitoring the battery on charge voltage. When the on charge battery voltage reaches a defined voltage level (31 volts for a 24V battery or 15.5 volts for a 12V battery), the BC-9000 charge timer is reloaded with a final 240 minutes (4Hrs) of finish charge time.

1. Set the BC-9000 on a stable surface. Connect the AC power cord to the AC power source. Connect the DC cord (4169-50) to the BC-9000 and the battery. Set the AC power switch to the ON position.

2. Press the UP or DOWN buttons to select the Mode? to DEEP DIS. RECOVER.

3. Press the NEXT button to select the DEEP DIS. RECOVER option.

4. Press the UP or DOWN buttons to select the battery voltage. 12 or 24 volts.

5. Press the NEXT button to enter the value.

6. 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.

7. Press the NEXT button to select the entered value.

8. Press the NEXT button to start the DEEP DIS. RECOVER mode.

9. To stop the DDR charge, routine press the NEXT button.

10. At the completion of the DDR charge, the BC-9000 LCD display will provide a summary of the charge results.

BC-9000 CARE

Your BC-9000 battery charger should be treated as precision equipment and misuse will shorten its ability to perform accurate battery charging. Some simple guidelines of care will insure trouble free operation.

1. Do not drop the BC-9000 or expose it to rough handling.
2. Do not expose the BC-9000 to water or fluids of any kind.
3. Do not operate the BC-9000 in a closed up area.
4. Do not connect the BC-9000 to batteries of improper voltage ratings.
5. Do not operate the BC-9000 with the air intake or exhaust outlet blocked or restricted.
6. Do not carry the BC-9000 by the main power cable.
7. Do not operate the BC-9000 near flammable materials.
8. Do not expose the BC-9000 to direct sunlight during operation.
9. Do not expose the BC- 9000 to any other heat sources.
10. Always contact the technical support for questions on BC-9000 safety and operation.

    E-mail support@cofko.com

REMEMBER SAFETY FIRST!

BC-9000 TECHNICAL DATA

AC Input Voltage	90~264VAC 1PH
AC Input Current	15 Amps @ 115VAC / 7.5 Amps @ 230VAC
AC Input Frequency	47-63 Hz
DC Output Voltage Maximum	36VDC
DC Output Voltage Minimum	3.0VDC
DC Output Current Maximum	25ADC
DC Output Current Minimum	0.050ADC
Case Length	14 in. (35.5cm)
Case Width	9.25 in. (23.5cm)
Case Height	8.0 in. (20.3cm)
Weight	14 lbs. (8.1kg)
Operation Temperature Range	-20 to 50 Deg. C
Maximum Operating Altitude[1]	6500ft(1981.2m)

1. Consult factory for operation above maximum altitude rating.

BC-9000 LIMITED WARRANTY

STATEMENT OF WARRANTY

COFKO Electronics LLC warrants to the original purchaser (end user) of the BC-9000 that it will be free of defects in workmanship and materials. This warranty is void if COFKO Electronics LLC finds that the BC-9000 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-9000 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-9000 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-9000.
3. COFKO Electronics LLC liability under this warranty shall not exceed the cost of correcting the defective BC-9000.

This written warranty is the only expressed warranty covering the BC-9000. All warranties implied by law such as Warranty of Merchantability are limited to the duration of this limited warranty of the BC-9000. Check your local legal rights for further rights you may have.

BC-9000 NOTES

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

COFKO LLC.
5517 RIVERVIEW DR.
RIVERSIDE, CA. 92509
(909) 705-6267
support@COFKO.com

CERTIFICATION OF FACTORY CALIBRATION

EQUIPMENT: BATTERY CHARGER
MODEL#: BC-9000

Application: Battery charger for Lead-Acid/ Nickel Cadmium batteries.

Specification:

- Universal AC Powered: 90~264vac (47 to 63Hz)
- Charger Output Voltage: 3.0 to 36VDC (+/- 0.05Vdc)
- Charger Output Current: 0.05 to 2.50ADC (+/- 0.005Adc)
- Charger Output Current: 2.6 to 25ADC (+/- 0.05Adc)
- Maximum Charge Time: 999 minutes
- Single or Two Step Charging
- Constant Voltage (CV) or Constant Current (CI) Charging
- DC Power Supply Output Mode

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	WB 50A/100mv	NA.	19683

Product: Battery Charger
Model: BC-9000
Calibration Due: Once a Year
Shipped Condition: Calibrated within Specified Tolerance _____- Passed
Procedure: CF2_FINALCAL

COFKO Electronics LLC 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-9000 serial number location- ***REAR of CASE.***