

Battery Capacity Analyzer

Owners Manual

Aircraft

Lead Acid

Batteries



ElectrodeltaTM
by **Lamar**
Technologies LLC

P/N BC3000-0003
(ES1020) Rev. C

REMEMBER:

1. LEAD ACID BATTERIES ARE THIRSTY.
Always check electrolyte level using an aircraft quality hydrometer and add demineralized water as required. Recheck the hydrometer reading to assure it meets the specification called out for the particular battery being serviced. *Unless maintenance free (valve regulated sealed battery), aircraft batteries will consume water whether in storage or in use.*
2. LEAD ACID BATTERIES ARE HUNGRY.
Always be sure to keep the battery fully charged. Even if not being used, batteries are slightly resistive and will consume their charge over time. *Letting the battery go low or dead is the quickest way to shorten the service life.*
3. LEAD ACID BATTERIES NEED PROPER CARE.
Always refer to the proper literature and manuals on the best method to care for the specific battery you are servicing. Proper charging rates, specifications, capacities, and expected service life are contained in the information supplied with the battery.

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Before You Start:

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PRECAUTIONS:

Before you start using this equipment, there are several factors you must consider for your safety and others around you. When working with lead acid type batteries, you will be exposed to hydrogen vapors, sulfuric acid, and electrical power. Alone or in combination, physical danger to you exists from explosion, fire, acid burns to eyes and skin, and electrical shock and burns. In addition, handling batteries will expose you to lead and lead byproducts which if absorbed or ingested can be hazardous to your health. To avoid this the following must be observed:

Read and understand all CAUTIONS and WARNINGS contained in this manual or posted on the equipment.

Wear approved eye and skin protection when working with or charging lead acid batteries.

Never lay tools or metal objects on top of the battery as arcing may result in injury or explosion.

Never wear loose jewelry or metal belt buckles when working with batteries, chargers, or test equipment as arcing may result in injury or explosion.

Make sure to ventilate the area well wherever lead acid batteries are serviced, stored or used.

When ever lead acid batteries or their cables are handled, wash exposed areas or the skin thoroughly as soon as possible to limit exposure to lead.

Introduction:

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The BC3000-0003 Battery Capacity Analyzer has been designed to perform capacity testing of 12 and 24 Volt lead-acid aircraft batteries. Capacity testing is done automatically. This unit is capable of accurately measuring the capacity of a fully charged battery with a rating between 10 and 59 amp-hours. The tester is self-contained and easy to operate and comes with a heavy duty test harness.

WARNING:

CHARGING LEAD ACID AIRCRAFT BATTERIES WILL CAUSE EXPLOSIVE VAPORS TO BE DISCHARGED AS WELL AS CAUSTIC CHEMICALS TO BE PARTICULATED. VENTILATE THE AREA WELL WHERE EVER THE UNIT IS BEING USED. USE OF THIS EQUIPMENT PRESENTS A PHYSICAL DANGER FROM EXPLOSION AND BURNS WHICH MAY BE HAZARDOUS TO ANYONE IN THE AREA.

CAUTION:

DO NOT USE THIS UNIT IN A COMBUSTIBLE ENVIRONMENT OR NEAR ANY FLAMMABLE MATERIALS. DURING NORMAL OPERATION THE UNIT WILL BECOME HOT SO AMPLE SPACE ON EACH SIDE OF UNIT FOR COOLING VENTILATION MUST BE ALLOWED.

The Battery Capacity Analyzer is shipped complete with the unit interconnect cable, the battery interconnect cable, owners manual, calibration manual, and warranty policy.

Controls & Functions:

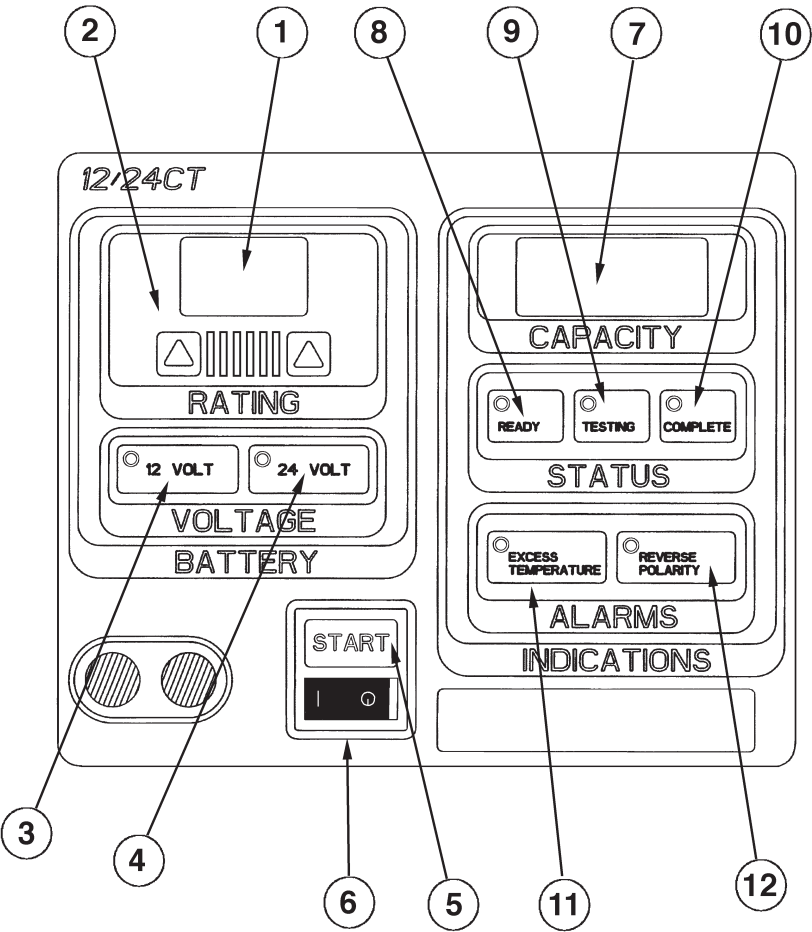


FIGURE 1
Unit Function & Control
Locations

Controls & Functions: (Fig. 1)

1. **RATING** – Ampere Hour Rating Display
One hour rating of the battery's capacity.
2. **▲■■■■■▲ - DIGIT INCREASE BUTTONS**
Left button used to increase rating display by ten. Right button used to increase rating display by one.
3. **12 VOLT** - 12 Volt Battery Sensor LED
Lights automatically when analyzer is attached to a 12-volt battery.
4. **24 VOLT** – 24 Volt Battery Sensor LED
Lights automatically when analyzer is attached to a 24-volt battery.
5. **START** - Start Button
Used to start the test once the correct battery rating has been set.
6. **ON/OFF** – Power Switch
(located below Start Switch)
Used to turn the unit on and off.
7. **CAPACITY** – Capacity Display
Displays the battery's actual capacity as a percentage of the rated capacity (one hour rating).
8. **READY** – Ready LED
Lights when the unit is ready to begin testing.
9. **TESTING** – Testing LED
Lights while unit is in the process of testing.

Controls & Functions: (cont'd)

10. **COMPLETE** – Complete LED

The complete LED lights after testing has finished.

11. **EXCESS TEMPERATURE** – Excess Temp. LED

Lights when testing has been cancelled due to the overheating of the test unit.

12. **REVERSE POLARITY** – Reverse Polarity LED

Lights when the unit is connected to battery backwards.

The unit also has two Audible Alarms:

1. Constant Tone - sounds when polarity is reversed
2. Warbling Tone - sounds when unit has reached it's overheat temperature.

Operating Instructions:

1. Fully charge the battery per the manufactures instructions and allow it to normalize (no charge current for 4 hours before testing).
2. Make sure the Power Switch is off to prevent arcing between battery terminal & cables.
3. Connect the red cable to the positive battery terminal and the black cable to the negative battery terminal.
4. Turn Power Switch on (if a Constant Tone sounds, turn off and reconnect cables with proper polarity).
5. The Ampere Hour Rating Display should be flashing, and the appropriate 12/24 Battery Sensor LED should automatically illuminate.
6. Use the Digit Increase Buttons to set analyzer to the battery's rated capacity (one hour rating).
7. If the Ready LED is illuminated, press the Start Button to begin the test (Testing LED will illuminate and the amp hour rating display will stop flashing).
8. When the battery capacity analyzer has finished, the Complete LED will illuminate, and the Capacity Display shows the battery's capacity as the percentage of its rated capacity (one hour rating).

Operating Instructions: (cont'd)

9. Turn Power Switch off.
10. Disconnect cables from battery terminals.

NOTE: If the unit overheats, the test will end and a Warbling Tone will sound until the power is shut off.

Unit Maintenance:

1. The test unit requires little maintenance under normal usage. The unit should be kept clean with both the air inlet vent and the fan outlet clean and clear of debris. Ample space must be maintained on the air inlet and fan outlet for proper cooling.
2. Cables should be checked for overheat damage with the interconnect connector contacts and the terminals checked for arc damage. Replace damaged contacts or connectors.
3. It is advisable that a calibration of the unit be performed at least once a year or after a prolonged period of storage or non use. The unit must be calibrated using the instruction and test components called out in the Lamar Technologies LLC BC3000-0003 Battery Capacity Analyzer Field Calibration Procedure Manual. The manual is delivered with the unit, however, it may also be downloaded online at www.lamartech.com.

Parts List: (Fig. 2, 3, & 4)

ITEM	QTY.	PART NO.	DESCRIPTION
10	2	20683	SHEATH - BATTERY CABLE
9	2	20753	HEAT SHRINK TUBING
8	1	20680	CABLE - RED
7	1	20679	WIRE - SENSE LEAD (NEG.)
6	1	20676	CONNECTOR ASSY
5	1	20671	WIRE - SENSE LEAD (POS.)
4	2	20666	STRAIN RELIEF
3	1	20665	CABLE - BLACK
2	2	20652	# 8 CONTACT
1	2	20282	RING TERMINAL

FIGURE 2
Unit Interconnect
Cable Assembly

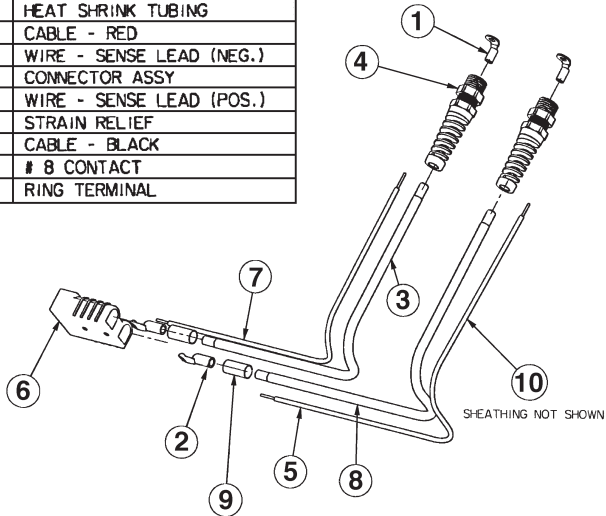
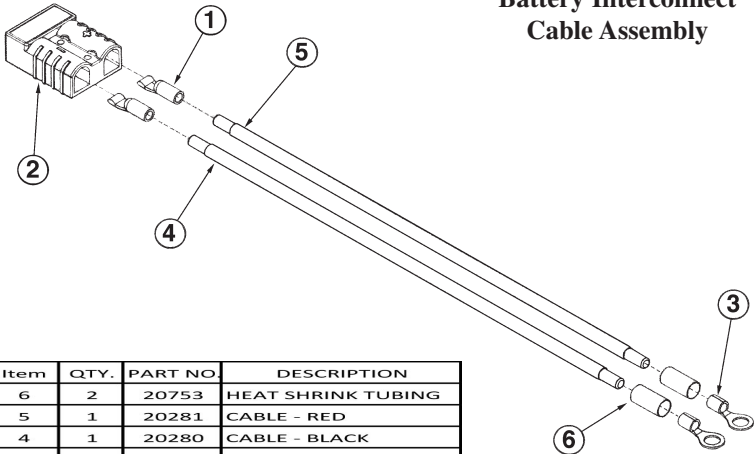


FIGURE 3
Battery Interconnect
Cable Assembly



Item	QTY.	PART NO.	DESCRIPTION
6	2	20753	HEAT SHRINK TUBING
5	1	20281	CABLE - RED
4	1	20280	CABLE - BLACK
3	2	20677	RING TERMINAL
2	1	20676	CONNECTOR ASSY
1	2	20652	# 8 CONTACT

Parts List: (cont'd)

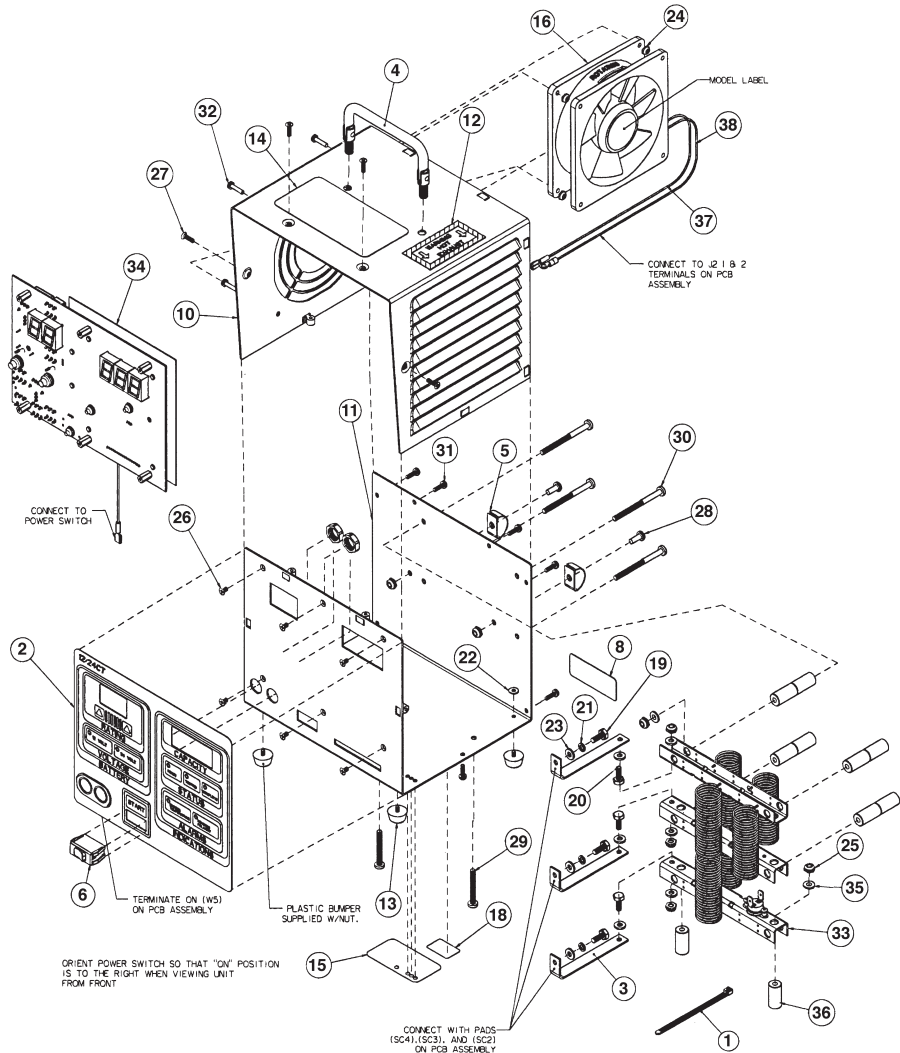


FIGURE 4
Battery Capacity Analyzer
Exploded View

Parts List:

ITEM	QTY.	PART NO.	DESCRIPTION
38	1	WR-63-73-35-65	WIRE ASSEMBLY
37	1	WR-61-73-41-65	WIRE ASSEMBLY
36	10	WA1526	NYLON SPACER - .50 O.D. X .194 I.D. X 1" LG.
35	6	WA1502	SHOULDER WASHER #10
34	1	20584	PCB ASSEMBLY
33	1	20590	LOAD BANK ASSEMBLY
32	4	SC1427	SCREW, PAN HEAD, PHILLIPS, SEMS, 6-32 X 5/8 (PS-300)
31	8	SC1417	#6-32 X .500 PAN HEAD TORX
30	4	MS35207-273	#10-32 X 2.5" PAN HEAD MACHINE SCREW
29	2	MS35207-269	#10-32 X 1.5" PAN HEAD MACHINE SCREW
28	2	MS35207-263	#10-32 X .50 SCREW, PAN HEAD PHILLIPS
27	4	MS24693C-28	#6-32 100 DEG. COUNTER -SUNK SCREW
26	6	MS24693C-24	#6-32 100 DEG. COUNTER -SUNK SCREW
25	11	MS21083N3	#10-32 HEX NUT - SELF-LOCKING INSERT
24	4	MS21083N06	#6-32 HEX NUT - SELF-LOCKING INSERT
23	9	AN960-10	FLAT WASHER #10
22	4	AN960-6	FLAT WASHER #6
21	3	AN935-10	NO. 10 WASHER, LOCK-SPRING HELICAL
20	3	AN3-4A	#10-32 HEX HEAD BOLT X .500 LG.
19	3	AN3-3A	#10-32 HEX HEAD BOLT X .375 LG.
18	1	81554	NAMEPLATE DECAL
17	1	20845	HARNESS ASSEMBLY *
16	1	20773	FAN
15	1	20757	DECAL - CALIBRATION ADJUSTMENTS
14	1	20709	LABEL - OPERATING INSTRUCTIONS
13	4	20708	BUMPER - THREADED
12	1	20707	LABEL - HOT EXHAUST
11	1	20706	TRAY ASSEMBLY
10	1	20705	COVER ASSEMBLY
9	1	20683 *	SHEATH - BATTERY CABLE
8	1	20681	LABEL - MANUFACTURER
7	1	20678-01	BATTERY HARNESS ASSEMBLY
6	1	20668	POWER SWITCH
5	2	20667	STRAP - BATTERY CABLES
4	1	20664	HANDLE
3	3	20593	BUS BAR
2	1	20592-1	MEMBRANE SWITCH
1	2	20283	WIRE TIE

* Not Shown

Warranty & Contacts:

WARRANTY:

Lamar Technologies LLC, warrants that all new BC3000-0003 Battery Capacity Analyzers sold by Lamar Technologies LLC, Marysville WA, USA shall be free from defects in material and workmanship under normal use and service for a period of one (1) year. This is a Limited Warranty, the details, limitations and exclusions of which may be found on www.lamartech.com/warranty

Any claims under the limited warranty must be made through LamarTechnologies, authorized distributor.

CONTACTS:

For technical questions or warranty information concerning this unit while under warranty, contact:

Lamar Technologies LLC, 14900 40th Ave. NE, Marysville, WA 98271

Lamar Technologies LLC

Tel: 360-651-6666 Fax: 360-651-6677

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Technical Support and Warranty:

Technical Support/Warranty/Customer service

(360) 651-6666

(360) 651-6677 Fax Email:

support@lamartech.com

web: www.lamartech.com