

**EBC-502  
INSTRUCTION AND  
MAINTENANCE  
MANUAL**

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MADE IN THE U.S.A.**

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## REVISION RECORD

REVISION NUMBER	DATE	PAGE	REVISION
Rev. 0	September, 1993		Original
Rev. 1	September, 1995		Manual revised to reflect addition of test lamp feature
Rev. 2	September, 1996	Title page	Name of manual changed.
Rev. 3	October, 2000		Manual format changed.

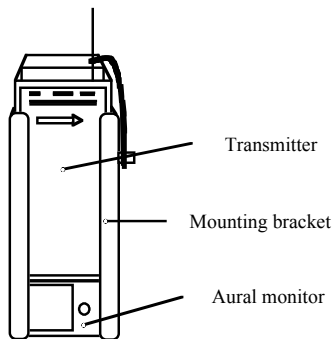
## SECTION 1 GENERAL DESCRIPTION

The EBC-502 is an Emergency Locator Transmitter (ELT) which meets all of the requirements of TSO-C91a in the Portable (P) and Automatic Portable (AP) categories (See Figure 1). It is designed to be mounted in the cabin of the aircraft, within reach of the pilot or co-pilot. As with all EBC ELTs, the increased survivability needs of cabin mounting have been met. The electronics and the activation system are completely encapsulated, and extra protection has been provided for the crystal. Our encapsulation method provides added protection against shock and moisture. The unit transmits simultaneously on the civil 121.5 MHz and military 243.0 MHz emergency frequencies.

The EBC-502 is equipped with a separate audible monitor seated below the ELT in the mounting bracket. It is linked to the ELT via a DC power connector, eliminating the need for a wire harness. The audible monitor is powered by its own internal transistor battery and will emit a loud beeping tone whenever the ELT is transmitting. This is used to alert the pilot or other individuals in the vicinity of an ELT activation.

A self test lamp indication is provided as a simple means of testing the ELT for proper signal output.

The EBC-502's toggle switch is recessed within the ELT to protect it against inadvertent activation or damage caused by flying debris.



**FIGURE 1: EBC-502**

## SECTION 2 DESCRIPTION OF THE TOGGLE SWITCH POSITIONS

### ON position:

Placing the toggle switch in this position (near the antenna) activates the ELT's transmitter. The ELT will radiate an emergency distress signal on 121.5 MHz and 243.0 MHz simultaneously.

### ARM position:

This position (center position) places the ELT in a standby mode. The ELT will activate if it senses a crash.

### OFF/TEST position:

This position deactivates the transmitter. To deactivate, momentarily hold the switch in this position (near the test lamp) and quickly release. This position is spring loaded and the switch will return to the "ARM" position (center position) when released. This position is also used to test the transmitter for proper signal output. Please refer to section 7 for more information.

### DISABLING THE AUTOMATIC ACTIVATION FEATURE

The shipping wire used for transporting the ELT should be saved and used whenever the ELT is removed from its mount for maintenance. Inserting the shipping wire into the sockets located near the test lamp will disable the automatic activation feature.

## SECTION 3 ELT INSTALLATION

RTCA Document DO-183<sup>1</sup> paragraph 3.1.8 describes the mounting requirements which must be followed when choosing a location on which to mount an ELT. It reads as follows:

THE ELT SHALL BE MOUNTED TO PRIMARY AIRCRAFT LOAD CARRYING STRUCTURES SUCH AS TRUSSES, BULKHEADS, LONGERONS, SPARS, OR FLOOR BEAMS (NOT AIRCRAFT SKIN). THE MOUNTS SHALL HAVE A MINIMUM STATIC LOCAL DEFLECTION NO GREATER THAN 2.5mm (0.1 INCH) WHEN A FORCE OF 450 NEWTONS (100 lbs) IS APPLIED TO THE MOUNT IN THE MOST FLEXIBLE DIRECTION. DEFLECTION MEASUREMENTS SHALL BE MADE WITH REFERENCE TO ANOTHER PART OF THE AIRFRAME NOT LESS THAN 0.3 METER (1 FOOT) NOR MORE THAN 1.0 METER (3 FEET) FROM THE MOUNTING LOCATION.

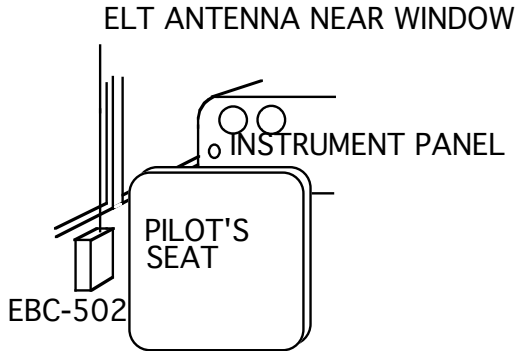
### INSTALLATION INSTRUCTIONS:

1. The EBC-502 must be installed by a certified airframe mechanic. This installation must be entered in the aircraft log.
2. The EBC-502 must be installed with the "DIRECTION OF FLIGHT" arrow pointing toward the nose of the aircraft.
3. The EBC-502 antenna must be vertical with as much of the antenna visible through a window as possible when viewed from the outside of the aircraft. The minimum dimension of the window where the ELT is mounted should be 12 inches in height and 13 inches in width.
4. The antenna should be at least one inch away from any metal window part.
5. The EBC-502 mounting bracket must be securely attached as per the above DO-183 requirements. After selecting a suitable location meeting all of the above requirements, drill

and mount the EBC-502 mounting bracket. Please refer to Figure 2 for an installation recommendation.

6. The shipping wire must be removed before the ELT is installed into its mount. Do not discard. Keep it near the ELT for future use.

The shipping wire disables the automatic activation feature of the ELT and is only to be used when the ELT is removed from its mount in non-emergency situations.



**FIGURE 2: EBC-502 INSTALLATION SUGGESTION**

#### **SECTION 4 FINAL INSTALLATION**

1. Before the ELT is installed into its mounting bracket, the following test must be performed. It is recommended that such test receive prior approval of the nearest control tower. FAA and FCC<sup>ii</sup> regulations require that transmitter test be performed only during the first 5 minutes of each hour and last no longer than 3 audio sweeps.

DO NOT ACTIVATE THE TRANSMITTER UNTIL YOU THOROUGHLY UNDERSTAND HOW TO DEACTIVATE IT!  
Please refer to section 7.

- A: Set com receiver or portable radio to 121.5MHz.
- B: Place toggle switch in the ON position. The distinctive ELT swept tone should be heard over the radio receiver.
- C: Deactivate the ELT by holding the toggle switch in the spring loaded OFF/TEST position, and then quickly releasing and allowing it to return to the center (ARM) position.
- D: To test the G-switch circuitry, hold the ELT in the palm of your hand. Extend your arm horizontally to your side. The direction of flight arrow should be pointing away from you and the antenna should be pointing upwards. Apply a quick forward swinging motion around your body. Proper activation is indicated when the PEOW-PEOW signal is heard through the radio. The ELT can also be activated by holding it at waist level with the arrow pointing down and then apply a rapid upward motion. The distinctive audio sweep should be heard over the radio.
- E: Deactivate ELT by placing the toggle switch in the spring loaded OFF/TEST position, then quickly releasing it.

2. Slide the audible monitor into the mounting bracket and then the ELT. Be certain that the connectors in the ELT and

audible monitor mate with one another. Press down on the ELT until it is fully seated within the bracket.

3. To test the audible monitor, place the ELT toggle switch in the ON position and listen for loud beeps from the audible monitor, then deactivate and rearm the ELT by momentarily holding the toggle switch in the spring loaded OFF/TEST position, then quickly releasing).

#### **SECTION 5 PERIODIC MAINTENANCE**

The following inspection procedures are based on FAA ACTION NOTICE A8150.3 EMERGENCY LOCATOR TRANSMITTER RECOMMENDED SUPPLEMENTAL INSPECTION PROCEDURE (PART 91 OPERATIONS)<sup>iii</sup> The FCC mandates that the transmitter test be performed only during the first 5 minutes of each hour and last no longer than 3 audio sweeps of the ELT signal. This test must be performed a minimum of once a year. (Those parts of FAA ACTION NOTICE A8150.3 which are not applicable to the EBC 502 ELT have been omitted or amended in this restatement).

1. Remove ELT from the mount and inspect the mounting hardware for stability. All required mounting hardware should be reinstalled and secured.
2. Open unit and inspect the ELT. Verify that the ELT battery is a factory-approved GS-52 battery, and check its expiration date.

WARNING: THE EBC-502 WAS CERTIFIED TO TSO-C91a AS A COMPLETE SYSTEM WHICH INCLUDED A GS-52 BATTERY PACK. TO MAINTAIN COMPLIANCE WITH TSO-C91a, A GS-52 BATTERY PACK MUST BE USED.

3. To test the G-switch circuitry, hold the ELT in the palm of your hand. Extend your arm horizontally to your side. The direction of flight arrow should be pointing away from you and the antenna should be pointing upwards. Apply a quick forward swinging motion around your body. Proper activation is indicated when the PEOW-PEOW signal is heard through the radio. The ELT can also be activated by holding it at waist level with the arrow pointing down and then apply a rapid upward motion. The distinctive audio sweep should be heard over the radio. (See note 1 below).
4. Reinstall the ELT into its mount and verify the proper direction of crash activation. Confirm that the audible alarm plug and the ELT jack are properly mated.
5. Activate the ELT using the ELT "ON" switch. The ELT should be heard on the airplane's VHF radio com receiver when tuned to 121.5 MHz. The audible monitor should emit a loud intermittent tone whenever the ELT is activated.

**WARNING! DO NOT USE THE AUDIBLE MONITOR AS A TEST DEVICE! IT IS SOLELY AN INDICATING DEVICE. IT HAS NO DIAGNOSTIC FUNCTION.**

6. To test the transmitter electronics, hold the toggle switch in the spring loaded OFF/TEST position and observe the amber test lamp. A pulsing variation in lamp intensity should be observed. (See note 2 below).

7. Verify that all switches are properly labeled and positioned.  
NOTES:

1. This is not a precise check; thus, it only indicates that the G-switch is working.
2. This is not a measured check. It is an indication that the ELT is radiating a sufficient signal to aid search and rescue

## **SECTION 6 OPERATING LIMITATIONS and BATTERY REPLACEMENT**

FAR 91.207(c) requires that the battery in the ELT must be replaced before the replacement date marked on the EBC-502 or when the transmitter has been in use for more than one cumulative hour. We recommend replacement six months sooner if the ELT is stored in a location where the average ambient temperature is normally above 80 degrees Fahrenheit. The battery should not be stored in a location where the ambient temperature is above 110 degrees Fahrenheit.

**WARNING:** The EBC-502 is designed to be used with battery pack, P/N GS-52. The ELT will not meet the requirements of TSO-C91a if used with another type of battery. If the battery is not connected exactly as stated, the ELT will be damaged. GS-52 battery packs are available from Emergency Beacon Corporation and its dealers.

### **GS-52 BATTERY REPLACEMENT PROCEDURE:**

1. Verify that the ELT is off.
2. Unscrew the 4 back cover screws and remove cover.
3. Observe the manner in which the battery is situated within the ELT. The new GS-52 battery must be installed in the same physical orientation as the current GS-52 battery.
4. Remove the plastic wire nuts from the old GS-52 battery by turning them counterclockwise. Remove the old GS-52 battery .
5. Remove tape from the new GS-52 battery wires and place battery in the ELT.
6. Twist red wire from ELT and red wire from the GS-52 battery together and screw on plastic wire nut.
7. Twist black wire from ELT and black wire from the GS-52 battery together and screw on plastic wire nut.
8. Reinstall back cover and replace 4 cover screws.
9. Install new "REPLACE BATTERY BEFORE" label on the side of the ELT.
10. The replacement date must be entered in the aircraft maintenance record.

### **AUDIBLE MONITOR BATTERY REPLACEMENT:**

The battery in the audible monitor **MUST** be replaced every time the ELT battery is replaced. For best performance, use an Eveready or Duracell alkaline 9 volt transistor battery.

### **PROCEDURE:**

1. Unscrew the 4 back cover screws and remove cover.
2. Remove the old battery and replace with new one.
3. Reinstall cover and screws.

**WARNING:** Before the ELT can be considered ready for use, the functional tests and procedures described in section 4, Final Installation, **MUST** be performed.

## **SECTION 7 OPERATING INSTRUCTIONS**

The EBC-502 **MUST** be installed together with the audible monitor or the system will not meet the requirements of TSO-C91a as they pertain to the activation monitor. The battery in the audible monitor must be replaced every time the battery in the ELT is replaced.

**DO NOT ACTIVATE THE TRANSMITTER UNLESS YOU THOROUGHLY UNDERSTAND HOW TO DEACTIVATE IT! THE TRANSMITTER CAN BE DEACTIVATED BY MOMENTARILY HOLDING THE TOGGLE SWITCH HANDLE IN THE SPRING LOADED OFF/TEST POSITION AND QUICKLY RELEASING IT, ALLOWING IT TO RETURN TO THE CENTER POSITION. SETTING THE SWITCH TO THE ARM POSITION FROM THE ON POSITION WILL NOT DEACTIVATE THE TRANSMITTER. KEEP IN MIND THAT THE OFF/TEST POSITION IS SPRING LOADED AND THE SWITCH WILL RETURN ON ITS OWN TO THE CENTER POSITION WHEN RELEASED. IF YOU PHYSICALLY HAVE TO MOVE THE SWITCH TO THE CENTER POSITION, THEN YOU HAVE NOT DEACTIVATED THE TRANSMITTER.**

The emergency signal should be monitored on the aircraft communications radio set to 121.5MHz.

### **TO MANUALLY ACTIVATE THE ELT**

Move the toggle switch handle to the "ON" position. The audible monitor should emit a loud pulsing beep approximately once a second.

**WARNING! DO NOT USE THE AUDIBLE MONITOR AS A TEST DEVICE! IT IS SOLELY AN INDICATING DEVICE WITH NO DIAGNOSTIC FUNCTION.**

### **TEST LAMP FEATURE**

Normal power output and modulation may be tested by holding the switch in the spring loaded OFF/TEST position and observing the amber light. A pulsing variation in lamp intensity should be observed. A steady lamp indication or no lamp indication can mean a possible fault in the transmitter or

a weak battery pack. Have a certified mechanic check the battery pack for proper voltage. If the battery is weak, replace it. If this does not correct the problem, contact the factory, or refer to section 8 for shipping instructions.

NOTE: Some units will not give a lamp indication unless the antenna is grasped near its top. This is normal.

**REMOVING THE ELT FROM ITS BRACKET**

Remove the ELT by pulling up on the lanyard cord. Whenever the ELT is removed from its mount for a non-emergency, the audible monitor must remain connected to the ELT. Otherwise, an inadvertent activation may go unnoticed. We highly recommend that the shipping wire supplied for shipping purposes be saved and used every time the ELT is temporarily removed from the aircraft. The shipping wire disables the crash sensor.

**REMOVING THE AUDIBLE MONITOR FROM THE MOUNTING BRACKET**

Remove the ELT from its mount and then remove the audible monitor by pushing it up from the bottom.

**INSTALLING THE ELT AND AUDIBLE MONITOR**

Install the audible monitor into the bracket until it is fully seated in its mount, then install the ELT. Be certain to properly mate the connectors and that the ELT is fully seated on the monitor.

NOTE: In an emergency, if it becomes necessary to exit the aircraft with the ELT, removal of the audible monitor is not necessary; its sole function is that of an indicating device. It is not required for the emergency operation of the ELT.

**SECTION 8  
REPAIRS**

The EBC-502 is not field repairable because the circuit board, switch, etc., are totally encapsulated. The only authorized repair facility is the EBC factory (FAA MMF 111-120). Should repairs become necessary, send the beacon to the factory. A note describing the problem or giving other pertinent information would aid in troubleshooting. Emergency Beacon Corporation will evaluate the unit and contact the owner with a repair estimate. There is a nominal fee for this inspection.

**SHIPPING INSTRUCTIONS:**

1. Disconnect and separately tape the battery leads before shipping. This will prevent the battery leads from shorting. Ship the disconnected battery enclosed in the ELT.
2. Enclose a note describing the problem. Be sure to give your name, address and phone number.
3. Pack well and insure.

Shipping costs to and from the factory are paid by the customer. Send the unit to : Emergency Beacon Corporation; 15 River Street, New Rochelle, NY USA 10801

**SECTION 9  
EBC-502 SPECIFICATIONS**

<b>Range- Satellite</b> .....	1200+ miles
<b>Range-Search Aircraft</b> .....	line of sight
<b>Operating Life</b> .....	More than 48 hrs.
<b>Operating Temperature</b> .....	-20°C to +55°C
<b>Battery Type and Shelf Life</b> .....	Alkaline/4 years
<b>Frequencies</b> .....	121.5 MHz and 243.0 MHz simultaneously
<b>Frequency Stability</b> .....	+/-0 005%
<b>Modulation</b> .....	Swept Tone 1600 Hz to 300 Hz 2-4/second
<b>Modulation Duty Cycle</b> .....	33% min., 55% max
<b>Modulation Percentage</b> .....	100%
<b>Peak Effective Radiated Power</b> .....	minimum 50 mW for 50 hours at -20°C
<b>Automatic Activation</b> .....	Velocity change of 3.5 ft./sec
<b>Altitude</b> .....	50,000 ft.
<b>Decompression</b> .....	8000 ft. to 40,000 ft.
<b>High Pressure</b> .....	-15,000 ft.
<b>Humidity</b> .....	95%, 50 hours
<b>Shock performance</b> .....	1000 G's, 6 axis
<b>Vibration</b> .....	10 G's
<b>Immersion Test</b> .....	Withstands 24 hours in salt water
<b>Physical</b>	
<b>Size</b> .....	2.5" W x 2" D x 8.5" H
<b>Weight</b> .....	2.75 lbs
<b>Case</b> .....	Aluminum
<b>Finish</b> .....	Yellow Baked Enamel
<b>Antenna</b> .....	Flexible, stainless steel whip extends 19" above the top of the unit

<sup>i</sup> - DO-183, Minimum Operational Performance Standards for Emergency Locator Transmitters. RadioTechnical Commission for Aeronautics, 1140 Connecticut Avenue, N.W., Suite 1020, Washington, D.C. 20036. May 13, 1983.

<sup>ii</sup> - Emergency Locator Transmitters (ELT's) - Recommended Supplemental Inspection Procedure (Part 91 Operations), Action Notice A 8310.1. Federal Aviation Administration General Aviation Airworthiness Alerts, Federal Aviation Administration, 800 Independence Avenue, Washington, D.C. 20591, Approval Date - September 23, 1988.

<sup>iii</sup> - See Footnote #2

**TWO YEAR WARRANTY**

FOR YOUR RECORDS:

Type of Equipment: \_\_\_\_\_

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Date Purchased: \_\_\_\_\_

Dealer: \_\_\_\_\_

**PLEASE NOTE: ALL WARRANTIES ARE NULL AND VOID IF NON-FACTORY APPROVED BATTERIES ARE EVER USED IN YOUR ELT.**

The EMERGENCY BEACON CORPORATION instrument you purchased is conservatively designed and was carefully inspected before shipment. Properly operated in accordance with the instructions furnished, it will provide you with trouble-free service. Should repairs become necessary, write or call EMERGENCY BEACON CORPORATION describing symptoms of faulty operation. Instructions will be sent to you for obtaining service, if factory judges necessary, authorization for shipment will be given to you. Do not ship without first obtaining this authorization. Pack well and insure when shipping. Repairs will be made without charge for materials and labor within two years from date of warranty registration. Transportation charges both ways are to be borne by the customer. Beyond this warranty period fair charges will be made for service by skilled personnel using factory approved/new parts. This warranty is void if:

- 1- ELT is damaged in transit.
- 2- ELT is abused in any way.
- 3- Repair is attempted by persons not authorized by EBC.
- 4- Unapproved battery is installed.

EMERGENCY BEACON CORPORATION, 15 River Street, New Rochelle, New York USA 10801  
Phone: (914)235-9400 Fax (914)576-7075

(CUT HERE AND RETURN TO FACTORY)

**TWO YEAR WARRANTY REGISTRATION**

Model No: \_\_\_\_\_ Serial No: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

How did you hear of this product? \_\_\_\_\_

What persuaded you to purchase it? \_\_\_\_\_

Dealer: \_\_\_\_\_ City: \_\_\_\_\_

My name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Return this portion to: EMERGENCY BEACON CORPORATION  
15 RIVER ST.  
NEW ROCHELLE, NY 10801 USA

**PLEASE NOTE: ALL WARRANTIES ARE NULL AND VOID IF NON-FACTORY APPROVED BATTERIES ARE EVER USED IN THE ELT.**

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<sup>iii</sup> - See Footnote #2