

**EBC-502H
INSTRUCTION AND
MAINTENANCE
MANUAL**

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**September 1996
Rev. 1**

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SECTION 1 GENERAL DESCRIPTION

The EBC-502H is an Emergency Locator Transmitter (ELT) designed for helicopter installation. It meets the requirements of TSO-C91a in the Portable(P) and Automatic Portable(AP) categories. (See Figure 1.) It is designed to be mounted anywhere 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 also provides added protection against shock and moisture. The unit transmits simultaneously on both the civil 121.5 MHz and military 243.0 MHz emergency frequencies.

One of the unique characteristics of helicopter performance is that in the event of an emergency loss of power, a helicopter will not necessarily go down nose first and may not have any forward motion. This may render a single axis G-switch ineffective. The EBC-502H has two special G-switches that can sense deceleration forces from all directions. It is therefore uniquely suited for helicopter use. These 360° spherical switches are identical to those used and proven in our original helicopter ELTs. They will not trigger during a hard landing.

The EBC-502H is equipped with a separate aural monitor seated below the ELT in the mounting bracket. It is linked to the ELT via a DC power connector. There is no need for a wire harness. The aural monitor is operated by an internal transistor battery and will emit a loud beeping tone whenever the ELT is transmitting. This tone then alerts the pilot or other individuals in the vicinity that the EBC-502H has activated.

The EBC-502H is equipped with a 3 position toggle switch recessed within the ELT to protect it against inadvertent activation or damage caused by flying debris.

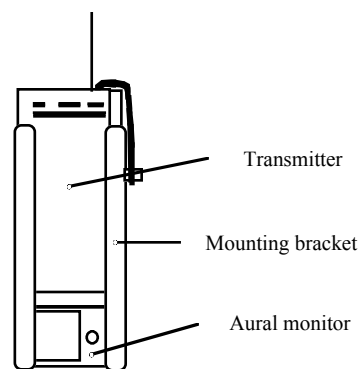


FIGURE 1: EBC-502H

SECTION 2

DESCRIPTION OF TOGGLE SWITCH POSITIONS

ON position:

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

ARM position:

This position (center position) sets the ELT to the standby (automatic) mode. The ELT will activate if it senses a crash.

OFF position:

This position deactivates the ELT's transmitter and disables the crash sensor. The ELT will not respond to a crash. This position is used when the ELT is removed from the aircraft or during shipping.

SECTION 3

ELT INSTALLATION

RTCA Document DO-183¹ 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-502H must be installed by a certified airframe mechanic. This installation must be entered in the aircraft log book.
2. The EBC-502H can be installed in any convenient location within the cockpit / cabin area of the aircraft provided all of the above requirements are met.²
3. The EBC-502H antenna should 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-502H 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-502H mounting bracket. Figure 2 is provided to illustrate a possible mounting arrangement, not necessarily the only one.

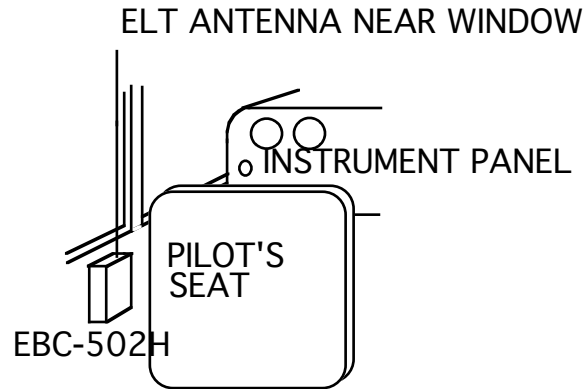


FIGURE 2: EBC-502H INSTALLATION SUGGESTION

SECTION 4 FINAL INSTALLATION

1. Before the ELT is installed into its mounting bracket, the following test must be performed. It is recommended that this test receive prior approval of the nearest control tower. FAA and FCC³ regulations require that transmitter test be performed only during the first 5 minutes of each hour and last no longer than 3 audio sweeps.

A: Set communications 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: To deactivate unit, set switch to the "OFF" position.

D: To test the G-switch circuitry, it is necessary to perform two activations to insure that both G-switches are able to activate the ELT. To test the horizontal switch, place toggle switch in the "ARM" position, and hold the ELT at arms length with the antenna pointed vertically toward the sky. Swing the ELT around your body in the horizontal plane, (like a forehand tennis swing), as fast as possible. This may require a few tries since a great deal of force will be required to simulate a crash. The distinctive audio sweep should be heard over the radio.

E: Deactivate unit by placing the toggle switch in the "OFF" position.

F: To test the vertical activation, set the toggle switch to the "ARM" position, and hold the ELT at arms length with the antenna pointed toward the horizon. swing the ELT around your body as fast as possible. Proper activation will be indicated when the PEOW-PEOW signal is heard through the radio.

G: Deactivate unit by placing the toggle switch in the "OFF" position.

2. Slide the aural monitor into the mounting bracket and then slide the ELT into the mounting bracket making 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 audible monitor, place the ELT toggle switch in the "ON" position and listen for loud beep from audible monitor.

NOTE: An audible indication cannot be used as a test to determine proper ELT operation. Its only function is that of a signaling device to alert individuals of an activation. It does not measure battery voltage, signal output, or modulation characteristics.

4. To deactivate and rearm the ELT so that it is ready for use, place toggle switch in the "OFF" position and then return the switch to the "ARM" position.

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)⁴ 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 at least once a year. (Those parts of FAA ACTION NOTICE A8150.3 which are not applicable to the EBC 502H ELT have been omitted or modified 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 factory-approved and check its expiration date.

3. To test the G-switch circuitry, it is necessary to perform two activations to insure that both G-switches are able to activate the ELT. To test the horizontal switch, hold the ELT at arms length with the antenna pointed vertically toward the sky. Swing the ELT around your body in the horizontal plane, (like a forehand tennis swing), as fast as possible (see note 1, below). This may require a few tries since a great deal of force will be required to simulate a crash. The

distinctive audio sweep should be heard over the radio (see note 2, below). To test the vertical activation, hold the ELT at arms length with the antenna pointed toward the horizon. swing the ELT around

your body as fast as possible. Proper activation will be indicated when the PEOW-PEOW signal is heard through the radio.

4. Reinstall the ELT into its mount and verify that the aural monitor plug and the jack are properly mated.

5. Activate the ELT using the ELT "ON" switch. The ELT should be heard on the airplane's VHF radio communications receiver when tuned to 121.5 MHz. The aural alarm should emit a loud tone any time the ELT is activated.

6. An inexpensive amplitude modulation (AM) broadcast radio receiver could also be used to determine if energy is being transmitted from the antenna. Good quality radios have better filtering which may prevent a response to the ELT signal. If the AM broadcast radio receiver is held about 6 inches from the ELT antenna and the ELT is activated, an ELT aural tone will be heard on the AM broadcast radio receiver.

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, thus it does not verify adequacy of the power output. The signal may be weak even if it is picked up by a receiver located at a considerable distance from the radiating ELT.

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-502H 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-502H is designed to be used with a special 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.

ELT BATTERY REPLACEMENT PROCEDURE:

1. Set toggle switch to the "OFF" position.
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 battery must be installed in the same physical orientation as the current battery.

4. Remove the plastic wire nuts from the old battery by turning them counterclockwise.
Remove the old battery .
5. Remove insulation from the replacement battery wires and place battery in the ELT.
6. Twist red wire from ELT and red wire from battery together and screw on plastic wire nut.
7. Twist black wire from ELT and black wire from 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.

AURAL MONITOR BATTERY REPLACEMENT:

The battery in the aural monitor **MUST** be replaced every time the battery in the ELT 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-502H **MUST** be used in combination with the aural monitor or the requirements of TSO- C91a as they apply to the activation monitor will not be met. The battery in the aural 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 signal is deactivated by moving the toggle switch handle to the "OFF" position and then manually returning the handle to the "ARM" position. The emergency signal can 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. A loud beep from the aural monitor should be heard.

NOTE: An audible indication cannot be used as a test to determine proper ELT operation. Its only purpose is that of a signaling device to alert individuals of an activation. It does not measure battery voltage, signal output, or modulation characteristics.

REMOVING THE ELT FROM ITS BRACKET

The ELT can be removed by pulling up on the lanyard cord. If the ELT is being removed from its mount for storage or transportation, the aural monitor must remain connected to the ELT and the toggle switch must be placed in the "OFF" position, or activations due to handling will go unnoticed.

REMOVING THE AURAL MONITOR FROM THE MOUNTING BRACKET

Remove the ELT from the bracket and lift the monitor from the bracket by pushing on it from the bottom.

INSTALLING THE ELT AND AURAL MONITOR

The aural monitor must be installed into the bracket first. The ELT is then placed in the bracket. Be certain that the connectors are properly mated and that the ELT is fully seated on the monitor and in the bracket.

NOTE: In the event of an emergency, where it becomes necessary to exit the aircraft, it is not necessary to remove the aural monitor; it only functions as an ELT activation indicator and has no effect on the emergency operation of the ELT.

SECTION 8 REPAIRS

The EBC-502H 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. 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-502H SPECIFICATIONS**

Range- Satellite	1200+ miles
Range-Search Aircraft	line of sight
Operating Life	More than 48 hrs.
Operating Temperature	-20°C to +55°C
Battery Type and Shelf Life	Alkaline/4 years
Frequencies	121.5 MHz and 243.0 MHz simultaneously
Frequency Stability	+/-0 005%
Modulation	Swept Tone 1600 Hz to 300 Hz 2-4/second
Modulation Duty Cycle	33% min., 55% max
Modulation Percentage	100%
Peak Effective Radiated Power	minimum 50 mW for 50 hours at -20°C
Automatic Activation	True 360° spherical 6 axis G-switch system 5 - 7 G's, 12-15 mS
Altitude	50,000 ft.
Decompression	8000 ft. to 40,000 ft.
High Pressure	-15,000 ft.
Humidity	95%, 50 hours
Shock performance	1000 G's, 6 axis
Vibration	10 G's
Immersion Test	Withstands 24 hours in salt water

Physical

Size	2.5" W x 2" D x 8.5" H
Weight	2.75 lbs
Case	Aluminum
Finish	Yellow Baked Enamel
Antenna	Flexible, stainless steel whip extends 19" above the top of the unit

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- Damaged in transit.
- 2- 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 STREET
 NEW ROCHELLE, NY 10801, USA

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

¹ - 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.

² - Due to the extreme compatibility of the 502H with the SARSAT satellite system, the ELT radiates a useful signal from virtually any location within the aircraft. While the absolute best results are obtained when the ELT is mounted in the cockpit area, eminently satisfactory results have been obtained from the most unexpected mounting locations. EBC ELTs have been detected by the satellites when radiating from car trunks, junk yards, and sealed UPS trucks.

³ - Emergency Locator Transmitters (ELTs) - Recommended Supplemental Mounting 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.

⁴ - See Footnote #3