ACK TECHNOLOGIES INC.

MODEL E-04 ELT
INSTALLATION MANUAL
OPERATION MANUAL

***IMPORTANT** VISIT OUR WEBSITE WWW.ACKAVIONICS.COM FOR THE LATEST SERVICE BULLETINS AND INSTALLATION INFORMATION BEFORE STARTING THE INSTALLATION.*

THE CONDITIONS AND TESTS REQUIRED FOR TSO APPROVAL OF THIS ARTICLE ARE MINIMUM PERFORMANCE STANDARDS. IT IS THE RESPONSIBILITY OF THOSE DESIRING TO INSTALL THIS ARTICLE ON A SPECIFIC TYPE OR CLASS OF AIRCRAFT TO DETERMINE THAT THE AIRCRAFT INSTALLATION CONDITIONS ARE WITHIN THE TSO STANDARDS. THE ARTICLE MAY BE INSTALLED ONLY IF FURTHER EVALUATION BY THE APPLICANT DOCUMENTS AN ACCEPTABLE INSTALLATION AND IT IS APPROVED BY THE ADMINISTRATOR.

APPROVALS

FAA /TRANSPORT CANADA
TSO C-126
TSO C-142a
TSO C-91a

EASA
ETSO 2C126
ETSO 2C91a
ETSO C142a

COSPAS/SARSAT
T.001
T.007

INDUSTRY CANADA
1863A-E04AF

P/N E04M REV DATE 02/22/2012
Rev 1.6 ***PRINTED IN THE USA***

UNITED STATES
www.beaconregistration.noaa.gov

CANADA
www.canadianbeaconregistry.forces.gc.ca

4.) For other countries contact the COSPAS/SARSAT regulating body for registration instructions. If allowed by your regulating country you may register at the COSPAS/SARSAT website.

INTERNATIONAL
www.406registration.com

5.) When filling out the registration the hex code identifier may also be found on the front right side of the ELT. (Fig 15)

6.) YOU MUST UPDATE YOUR BEACON REGISTRATION every two years, and any time the beacon is used in a different aircraft.

FIGURE 15

BEACON REGISTRATION LABEL
LABEL ON RIGHT FRONT OF ELT

Note: No letter "O" used in Hex codes, just zeros'

SECTION 9 OPERATION AND SELF TEST

THERE ARE THREE MODES THAT THE ELT MAY BE ACTIVATED:

1.) The ELT automatically activates when in the "armed" position, and a crash level deceleration force is applied to the ELT, in the forward direction as indicated by the arrow on the top of the battery pack.

2.) The ELT also may be activated by pressing the "On" button on the cockpit remote control (RCPI). (Page 11 Fig. 16)

3.) A third method of activating the ELT, is by means of placing the main on-off-armed switch, on the front of the ELT in the "On" position. (Page 11 Fig. 17)

The red rubber cover, covering the main switch on the ELT SHOULD BE LEFT OFF AT ALL TIMES, EXCEPT WHEN THE ELT IS IN THE ARMED POSITION. The cover has a center cone, that projects down into the switch recess, and provides for positive retention of the switch in the armed position.

There are two modes in which the ELT may be deactivated.

1.) Pressing the "Reset" button on the remote control (RCPI). (Page 11 Fig. 16)

2.) Placing the main switch on the ELT in the "Off" position. (Page 11 Fig. 17)

When the ELT is activated, and transmitting the 406 Mhz distress signal. The cockpit remote will flash, and the audio alert indicator will emit a series of 9 beeps, approximately every 50 seconds to alert the crew that the ELT is operating. If there is no emergency, reset the ELT using the "Reset" button on the remote, (Page 11 Fig. 16) and immediately notify the appropriate search and rescue operations office, or ATC of the false activation.

SELF TESTS:

The ELT is capable of performing a self test to verify that major ELT systems are functioning properly.

During the self test, the ELT transmits on 121.5 MHz for 1 second, (3 audio sweeps) then transmits a 406 MHz test burst for 550ms, then returns to the armed mode.

There are two modes in which a self test can be initiated:

1.) When the ELT is in the "Armed" position, pressing the "Reset/Test" switch on the cockpit remote control (RCPI) initiates a self test. (Page 11 Fig. 16)

2.) When the main switch of the ELT is moved from the "Off" position to the "Armed" position, it does a self test. This mode is primarily designed to provide a method to bench test the ELT, with the remote control disconnected. (Fig. 17)

FIGURE 16

COCKPIT REMOTE

TURNS ON ELT

RESETS TRANSMITTING ELT TO THE ARMED MODE PREFORMS SELF TEST WHEN PRESSED WHEN ELT IS IN ARMED MODE

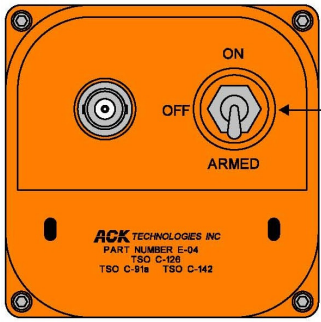

FIGURE 17

MAIN SWITCH

SHOWN IN ARMED POSITION

YOU MUST PERFORM A SELF TEST EVERY THREE MONTHS to verify the ELT is functioning properly.

To perform the self test, make sure THE AIRCRAFT MASTER SWITCH IS OFF AND THERE IS NO POWER APPLIED TO THE ELT THROUGH THE GPS INTERFACE. Tune an aircraft radio to 121.5 MHz, and turn the squelch all the way off to listen for the modulated carrier. With the ELT main switch in the "Armed" position, and not operating, press the "Reset/ Test" button on the cockpit remote control (RCPI) once. You will hear one second of 121.5 audio on the radio, followed by either one beep from the audio alert indicator, or one beep followed by a two second delay, and a second beep if all systems are functioning properly. The light will also flash on the remote. (The flashes are random and have no meaning)

System OK codes: One Beep or One Beep followed by a second beep two seconds later.

A series of 2 – 5 fast beeps, a 2 second delay, and the beep series repeating again indicates there is a self test function that has returned a trouble condition. The ELT will not be disabled, but it should be inspected by a qualified avionics facility as soon as possible.

The trouble code returns a series of beeps with a two second delay, and then the trouble code is repeated one more time. The first beeps alert you that there is a trouble condition. The two second delay is to allow you to be ready to count the second set of beeps.

Trouble code sequence: 2-5 beeps — two second delay — 2-5 beeps

TROUBLE CODES:

2 BEEPS→ BATTERY LOW

3 BEEPS→ LOW RF POWER

4 BEEPS→ FREQUENCY NOT LOCKED

5 BEEPS→ HIGH VSWR OR HIGH CURRENT

SECTION 10 PERIODIC MAINTENANCE/CONTINUING AIRWORTHINESS

THE FOLLOWING TEST MUST BE PERFORMED EVERY THREE CALENDAR MONTHS. ELT SELF TEST FUNCTION AS DESCRIBED IN SECTION 9 OF THIS MANUAL.

THE FOLLOWING TESTS MUST BE PERFORMED A MINIMUM OF EVERY TWELVE CALENDAR MONTHS, TO ASSURE THE CONTINUING AIRWORTHINESS OF THE ELT.

1.) Inspect the ELT transmitter and mounting tray to insure all fasteners, and mechanical assemblies are secure.

2.) Inspect the coaxial cable connecting the ELT transmitter to the antenna for cuts or abrasions on its outer jacket. Disconnect the BNC connector at each end. Examine both BNC connectors and the mating plug on the ELT transmitter, and antenna base for any signs of corrosion.

3.) Inspect the modular cable connecting the ELT to the RCPI unit for signs of wear or abrasion on it's outer jacket. Remove the modular plug connecting the ELT transmitter

to the connecting cable, and inspect the jack and plug assembly for corrosion.

4.) If a GPS is interfaced to the ELT, inspect the modular cable connecting the ELT to the GPS unit for signs of wear or abrasion on its outer jacket. Remove the modular plug connecting the ELT transmitter to the GPS and inspect the jack and plug assembly for corrosion.

5.) Check the expiration date of the RCPI battery and audio alert battery in the aircraft log book. Check the expiration date of the battery pack and replace if necessary.

6.) Leave the ELT in the "Armed" position, then remove the ELT from the aircraft, and perform a G switch test as follows:

This test should be conducted between the hour, and 5 minutes after the hour per FCC requirements. Tune an aircraft radio, or hand held aircraft radio to 121.5 MHz. The radio should be in close proximity to the area where you will conduct the test.

TURN THE SQUELCH CONTROL ALL THE WAY DOWN, OR OFF.** You should be hearing white noise on the radio. If switching the main switch from the "Off" to the "Armed" position wait at least 15 seconds before performing this test. While in the "Armed" position, hold the ELT at your waist with the arrow printed on the battery case facing away from you. Move the ELT rapidly away from your waist. When the ELT reaches the full extent of your arm, retract it back to your waist as fast as possible. You should hear the 121.5 MHz sweep tone in the radio. **AS SOON AS YOU HEAR THE TONE, IMMEDIATELY TURN THE MAIN SWITCH ON THE ELT TO THE "OFF" POSITION.

*The ELT when activated transmits on 121.5 MHz for approximately 50 seconds before a 406 MHz burst is sent to the satellites. This is a live burst which will immediately notify the COSPAS/SARSAT system that there is an emergency. **IT IS IMPERATIVE THAT YOU DO NOT ALLOW AN ACTIVATED ELT, TO TRANSMIT FOR MORE THAN 30 SECONDS DURING G SWITCH TESTING.***

7.) Reinstall the ELT, make sure the cables are secured, and properly connected. Make sure to seal the din connector if the ELT is connected to the aircraft GPS. (Page 8 Fig. 12.5) Place the main switch in the "Armed" position, and install the rubber cover over the main switch opening.

8.) Perform the self test described in section 9 to verify proper operation.

SECTION 11 E-04.0 LITHIUM BATTERY REPLACEMENT

REPLACEMENT OF THE MAIN LITHIUM BATTERY P/N E-04.0

The lithium battery (P/N E-04.0) must be replaced on, or before the battery expiration date marked on the battery. It is no longer airworthy after this date. See far 91.207 for other ELT requirements.

1.) Using a 3/32 hex wrench, remove the four retaining screws that attach the battery case to the ELT transmitter assembly, and gently pull the battery pack from the transmitter section. (Page 7 Fig. 9)

*2.) **WITH THE MAIN SWITCH IN THE "OFF" POSITION,** install the new sealed battery pack. (P/N E-04.0) The battery pack is designed so the battery can only be installed in the proper orientation. Wet the O-ring with a mild dish soap solution, and shake off the excess solution, or use silicon vacuum grease. Install the O-ring onto the battery case. Remove the two protective caps from the battery contacts. (Page 13 Fig. 18) The battery pack should slide easily into the transmitter housing.*

3.) Re-attach the transmitter assembly to the battery pack by replacing the four hex head screws. Tighten the screws to 3.5-4.0 in-lbs.

4.) Record the new battery expiration date in the airframe logbook.

5.) After re-installation of the ELT into the aircraft, a self test must be performed. Refer to section 9.

BATTERY AND ELT DOT/ IATA SHIPPING INFORMATION

*The ELT with the battery attached is a DOT/IATA class 9 hazmat material under the category of life saving appliances not self inflating UN 3072. **THERE ARE NO AIR SHIPMENT RESTRICTIONS FOR SUCH DEVICES, AND THEY MAY BE SHIPPED IN ANY QUANTITY IN PASSENGER CARRYING, OR TRANSPORT AIRCRAFT.** The original ACK ELT shipping box complies with (UN) United Nations packaging specifications.*

SECTION 19 TROUBLE SHOOTING / MISCELLANEOUS NOTES

The Remote Control and Audio Alert indicator do not work	*Make sure you have installed batteries in the Remote Control and Audio Alert indicator. Make sure you are using a CR 2 battery in the Audio Alert indicator. See Section 4 and 5 of this manual.*
Remote flashes constantly and Audio Alert makes a clicking sound with ELT off or armed	*The remote cable is crossed. Remove one of the male RJ 11 plugs and reverse the plug 180 degrees and re-crimp new plug. This can occur if you make your cables and do not use the factory supplied cables.*
No GPS data is being received the ELT test light does not flash or LED stays on	*Check that the data being sent to the ELT meets the data protocol in Section 17 of this manual. Connect test LED to pin 4 and ground of the cable providing GPS data and power (page 8 Fig 13) test light should flash if not reverse test LED and If flashing retry test lead on ELT.*
There are no GPS coordinates when the message is decoded on a beacon tester.	*COSPAS/SARSAT requirements do not allow GPS position information to be transmitted during the self test message. The coordinates are only sent during a live distress transmission.*
Beacon tester can not decode the 406 MHz message	*Check with the beacon tester manufacturer to make sure the tester will recognize our 406.037 MHz transmission. Many of the early testers will not decode the newer COSPAS/SARSAT assigned frequencies.*
ELT transmits when switched from the "Off" to "Armed" position	*The ELT does a self test when you switch from the "off" to the "armed" position. It transmits on 121.5 MHz for one second followed by a 406 MHz test burst. See section 9 of this manual.*
ELT continues to transmit when the "Reset/Test" button is pressed	*Make sure the Placard is positioned so that the "Reset/Test" is over the black pushbutton switch. See Section 4 Figure 5 of this manual.*
Audio Alert gives a trouble code of 5 beeps (High VSWR or high current)	*Check to make sure the ELT is connected to one of our two approved antennas. Check the coax cable from the ELT to antenna. Make sure the antenna has a proper ground plane and is not in close proximity of metal surfaces. Check ELT battery condition.*
Audio Alert gives a trouble code of 4 beeps (Frequency not locked)	*Frequency synthesizer is not locked. Retest 2 times if trouble code does not clear return ELT to our facility for service. If code clears retest during the next 3 flights. If trouble code again appears return ELT to our facility for service.*
Audio Alert gives a trouble code of 3 beeps (Low RF power)	*Check battery*
Audio Alert gives a trouble code of 2 beeps (Low battery)	*Replace battery*

Battery testing procedure:

At an ambient temperature of 25C +/- 5C, remove the battery from the ELT and measure open circuit voltage. This should be above 11.6 volts. Place a 7 Ohm 15 watt resistor momentarily across the battery contacts, and observe the voltage it should remain above 10 volts.

An alternate method to test the battery is to separate the battery and transmitter section, and use jumpers to connect the negative contact of the battery, to the negative contact of the transmitter. Connect an amp meter capable of measuring a minimum of 3 amps across the positive battery terminals, and the transmitter terminals. Place a second volt meter across the terminals. Place a 50 Ohm load on the antenna BNC connector, and perform a self test by switching the ELT from the "Off" position to the "Armed" position. During the test current should be in the range of 1.5 to 2.2 amps voltage should stay above 9.5 volts.

See Section 14 Canadian Maintenance Procedures "caution" before performing this test.

LIMITED WARRANTY

THIS MODEL E-04 EMERGENCY LOCATOR TRANSMITTER IS GUARANTEED BY ACK TECHNOLOGIES, INC. AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWO YEARS FROM THE INSTALLATION DATE OR TWO YEARS THREE MONTHS FROM THE DATE IT WAS MANUFACTURED WHICHEVER OCCURS FIRST. ACTIVATE YOUR WARRANTY BY REGISTERING ON LINE AT OUR WEBSITE WWW.ACKAVIONICS.COM THIS WARRANTY IS LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE E-04 ELT AND ASSOCIATED PARTS WHICH WERE MANUFACTURED BY ACK TECHNOLOGIES, INC. THE DEFECTIVE PARTS MUST BE RETURNED FREIGHT PREPAID TO OUR MANUFACTURING FACILITY. THIS WARRANTY DOES NOT INCLUDE REPAIR OR REPLACEMENT OF ANY PART THAT HAS BEEN IMPROPERLY USED, INSTALLED OR PHYSICALLY DAMAGED. THIS WARRANTY DOES NOT COVER ANY DAMAGE CAUSED BY CHEMICAL EXPOSURE TO THE ELT. DISCHARGE OF THE LITHIUM BATTERY IS NOT COVERED BY THIS OR ANY OTHER WARRANTY. EXCEPT AS PROVIDED HEREIN ACK TECHNOLOGIES, INC. MAKES NO EXPRESS WARRANTIES, AND ANY IMPLEMENTED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE IS LIMITED IN ITS DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES SET FORTH HEREIN. ACK TECHNOLOGIES, INC. SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR MISUSE OF THIS PRODUCT. EXCEPT AS PROVIDED HEREIN NO EMPLOYEE, AGENT, DEALER, OR OTHER PERSON IS AUTHORIZED TO GIVE ANY WARRANTIES OF ANY NATURE ON BEHALF OF ACK TECHNOLOGIES, INC.

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