

ACK TECHNOLOGIES INC.

MODEL E-04 ELT INSTALLATION MANUAL OPERATION MANUAL

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

**FAA APPROVALS
TSO C-126
TSO C-142a
TSO C-91a**



**P/N E04M REV DATE 08/06/2009
Rev 1.1**

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SECTION 1 406 MHz ELT OVERVIEW

THE MODEL E-04 121.5/406 MHz ELT IS DESIGNED FOR USE IN AIRCRAFT USED FOR GENERAL AND COMMERCIAL AVIATION. OLDER GENERATION ELT'S WERE VERY LIMITED IN THERE ABILITY TO RAPIDLY LOCATED AND IDENTIFY A DOWNED AIRCRAFT.

OFTEN IT TOOK SEVERAL PASSES OF THE ORBITING SATELLITES TO GET AN APPROXIMATE FIX ON A DOWNED AIRCRAFT. THE OLDER GENERATION ELT'S GAVE RESCUERS NO INFORMATION ON TYPE OF AIRCRAFT, OWNER/OPERATOR OR CONTACT INFORMATION. THE NEW GENERATION 406 MHz ELT'S PROVIDE MUCH BETTER AND FASTER LOCATION ACCURACY ALONG WITH PROVIDING INFORMATION TO SEARCH AND RESCUE ORGANIZATIONS ABOUT THE AIRCRAFT TYPE, OWNERSHIP AND EMERGENCY CONTACT INFORMATION. LOCATION ACCURACY WITH OLDER GENERATION ELT'S WAS LIMITED TO ABOUT A 15 MILE RADIUS AND COULD TAKE SEVERAL HOURS TO PROVIDE ACCURATE LOCATION DATA. FOR NEW GENERATION 406 MHz ELT'S WITHOUT GPS POSITION INFORMATION THE AVERAGE TIME TO PROCESS AND IDENTIFY THE AIRCRAFT LOCATION IS 1-2 HOURS WITH A SEARCH RADIUS OF ABOUT 2 MILES. **WITH GPS INFORMATION THE TIME TO LOCATE THE AIRCRAFT POSITION IS 10 MINUTES OR LESS WITH AN ACCURACY OF ABOUT 300 FEET.**

THE MODEL E-04 ELT MAY BE INSTALLED WITHOUT INTERFACING IT WITH THE AIRCRAFT GPS SYSTEM **HOWEVER WE STRONGLY RECOMMEND THAT WHEN AVAILABLE THE GPS DATA BE SUPPLIED TO THE ELT.** FOR AIRCRAFT WHICH DO NOT HAVE GPS DATA AVAILABLE THE UNIT CAN BE INTERFACED WITH A LOW COST GPS DATA RECEIVER SUCH AS THE GARMIN GPS 18PC WHICH IS AVAILABLE FOR LESS THAN \$100.00. **YOU MUST REGISTER THIS BEACON** BEFORE ACTIVATING IT FOR USE WITH THE COSPAS/SARSAT SYSTEM. FAILURE TO DO SO CAN RESULT IN MONETARY FINES AND OTHER SANCTIONS. **YOU MUST ALSO UPDATE YOUR REGISTRATION EVERY TWO YEARS.** TO REGISTER YOUR BEACON SEE SECTION 11 and 12 ADDRESSING ELT PROGRAMMING AND REGISTRATION.

SECTION 2 ELT INSTALLATION

SEVERAL PROBLEMS ASSOCIATED WITH PREVIOUS TSO C-91 ELT INSTALLATIONS IS THE RESULT OF POORLY CHOSEN MOUNTING LOCATIONS. GENERALLY THE MOST SUITABLE LOCATION FOR FIXED WING AIRCRAFT IS TO POSITION THE ELT TRANSMITTER IN THE FUSELAGE AS FAR AFT AS POSSIBLE. ANTENNA LOCATION AND ACCESSIBILITY FOR MAINTENANCE ARE FACTORS THAT SHOULD BE CONSIDERED WHEN CHOOSING A MOUNTING LOCATION.

THE ELT MUST BE MOUNTED WITH THE ARROW WHICH IS PRINTED ON THE BATTERY CASE POINTING IN THE DIRECTION OF FLIGHT. THE ELT SHOULD BE MOUNTED WITH IT'S LONGITUDINAL AXIS ALIGNED WITHIN 10 DEGREES OF THE LONGITUDINAL AXIS OF THE AIRCRAFT FUSELAGE. AVOID MOUNTING THE ELT NEAR SOURCES OF STRONG EMI/RFI RADIATION.

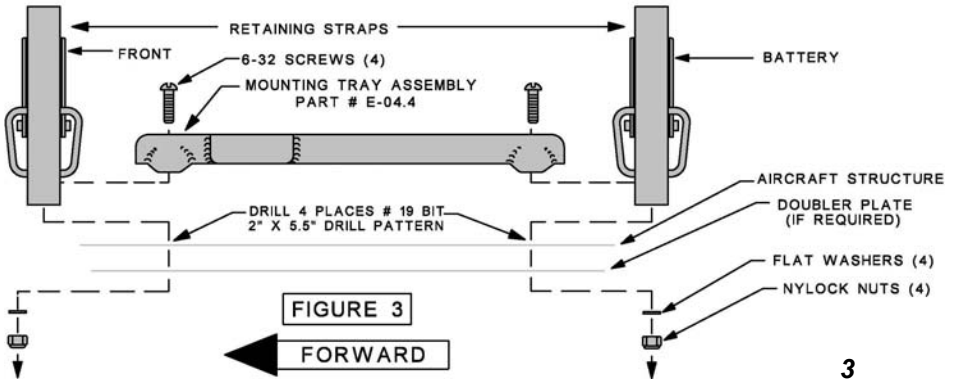
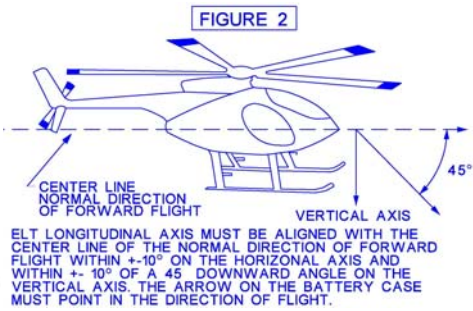
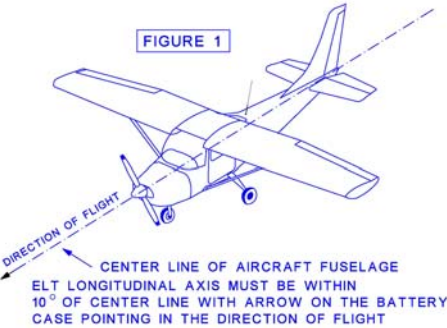
RTCA DOCUMENT DO-204 PARAGRAPH 3.1.8. PRESCRIBES THE MOUNTING REQUIREMENTS WHICH MUST BE MET WHEN INSTALLING THIS ELT THESE REQUIREMENTS ARE AS FOLLOWS:

THE ELT SHALL BE MOUNTED TO PRIMARY LOAD-CARRYING STRUCTURES SUCH AS TRUSSES, BULKHEADS, LONGERONS, SPARS, OR FLOOR BEAMS. (NOT AIRCRAFT SKIN.) THE MOUNTS SHALL HAVE A MAXIMUM 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.

AFTER SELECTING A SUITABLE LOCATION MEETING ALL OF THE ABOVE REQUIREMENTS. DRILL AND MOUNT THE ELT TRAY ASSEMBLY AS SHOWN IN FIGURE 3. A DOUBLER PLATE MAY BE REQUIRED. IMPORTANT: THE QUICK RELEASE RETAINING STRAPS WHICH SECURE THE ELT TO THE TRAY ARE SLIGHTLY DIFFERENT IN SIZE. THE STRAP WHICH FITS AROUND THE FRONT OF THE ELT (TRANSMITTER ASSEMBLY) IS MARKED "FRONT." THE STRAP WHICH FITS AROUND THE BATTERY CASE END OF THE ELT IS MARKED "BATTERY."

HELICOPTER INSTALLATION

THE MODEL E-04 ELT IS SUITABLE FOR HELICOPTER INSTALLATION. THE PROCEDURES FOR INSTALLATION MAINTENANCE AND OPERATION ARE THE SAME AS FOR FIXED WING AIRCRAFT EXCEPT FOR THE ORIENTATION OF THE ELT IN RELATION TO THE HELICOPTER LONGITUDINAL AXIS. THE ARROW ON THE BATTERY CASE OF THE ELT SHOULD BE POINTED IN THE NORMAL DIRECTION OF FORWARD FLIGHT. THE LONGITUDINAL SHOULD BE ALIGNED WITHIN ± 10 DEGREES OF THE LONGITUDINAL AXIS HORIZONTALLY AND AT A 45 DEGREE DOWNWARD ANGLE AS SHOWN IN FIGURE 2.



SECTION 3 ANTENNA INSTALLATION

IN ORDER TO MEET THE REQUIREMENTS OF TSO C-126 TSO-C91a AND FAR 91.207 AN APPROVED ANTENNA MUST BE USED. THE ANTENNA SUPPLIED WITH THE ELT PART# E-04.8 IS A MONOPOLE DUAL FREQUENCY ANTENNA DESIGN. IT HAS A RECOMMENDED OPERATING SPEED OF UP TO 260 KNOTS. WE ALSO HAVE AVAILABLE A HIGH SPEED BLADE ANTENNA PART NUMBER S65-1231-1 WHICH IS RATED TO MACH 1. OTHER ANTENNAS MAY BE USED PROVIDED THEY MEET THE MINIMUM VSWR REQUIREMENTS AS NOTED IN THE SPECIFICATIONS SECTION OF THIS MANUAL (SECTION 12) AND MEET COSPAS/SARSAT APPROVAL FOR USE WITH THE MODEL E-04 ELT.

THE ANTENNA MAY BE MOUNTED INTERNALLY IN COMPOSITE CONSTRUCTION AND TUBULAR FABRIC COVERED AIRCRAFT AS LONG AS THE FABRIC OR COMPOSITE MATERIAL IS OF A NON CONDUCTIVE NATURE. THE ANTENNA MUST BE MOUNTED EXTERNALLY ON AIRFRAMES OF METALLIC CONSTRUCTION. THE ANTENNA SHOULD BE MOUNTED AS CLOSE TO THE ELT TRANSMITTER AS PRACTICAL. THE COAXIAL CABLE CONNECTING THE ANTENNA TO THE ELT TRANSMITTER SHOULD NOT BE RUN IN CLOSE PROXIMITY TO COMM RADIO COAXIAL CABLES AND SHOULD AVOID CROSSING AIRCRAFT PRODUCTION BREAKS (i.e. RIVETED FUSELAGE SECTIONS.) THE ANTENNA MUST BE MOUNTED WITHIN 30 DEGREES OF VERTICAL WHEN THE AIRCRAFT IS IN NORMAL FLIGHT ATTITUDE. THE INSTALLED ANTENNA MUST BE ABLE TO WITHSTAND A STATIC LOAD OF 100 (ONE HUNDRED) TIMES IT'S WEIGHT. (13 lbs.) APPLIED TO THE BASE OF THE ANTENNA ALONG THE LONGITUDINAL AXIS OF THE AIRCRAFT. THE ANTENNA SHOULD BE MOUNTED A MINIMUM DISTANCE OF 3 (THREE) FEET (1 METER) FROM ANY VERTICALLY POLARIZED COMMUNICATION ANTENNAS (i.e. ANTENNAS RADIATING IN THE 118-137 MHz BAND.)

MODEL E-04.8 WHIP ANTENNA

- 1.) DRILL A ½" DIAMETER HOLE IN THE AIRCRAFT AT THE ANTENNA MOUNTING LOCATION (FIGURE 4)**
- 2.) INSTALL THE ANTENNA AND DETERMINE IF THE ANTENNA MEETS THE STATIC LOAD REQUIREMENTS. IF NOT A DOUBLER SHOULD BE FABRICATED.**
- 3.) IF THE ANTENNA IS BEING MOUNTED ON A NON CONDUCTIVE PORTION OF THE AIRFRAME A SUPPLEMENTARY GROUND PLANE MUST BE INSTALLED. THE SUPPLEMENTAL GROUND PLANE MUST HAVE A MINIMUM DIAMETER OF 48" AND MUST BE CENTERED AROUND THE BASE OF THE ANTENNA. THIS MAY BE FABRICATED OUT OF COPPER OR ALUMINUM TAPE. THE TAPE SHOULD BE CUT INTO 6 (SIX) ELEMENTS 24" LONG AND THE TAPE ELEMENTS SHOULD BE EVENLY SPACED RADIATING IN A CIRCULAR PATTERN FROM THE BASE MOUNTING POINT OF THE ANTENNA. MAKE SURE ALL ELEMENTS ARE ELECTRICALLY BONDED TO THE BASE OF THE ANTENNA. THE TAPE MAY FOLLOW THE CONTOUR OF THE FUSELAGE. THE METALLIC AIRFRAME OF FABRIC COVERED AIRCRAFT MAY BE USED AS THE GROUND PLANE. WHEN INSTALLING THE ANTENNA MAKE SURE THE BASE OF THE ANTENNA IS ELECTRICALLY BONDED TO THE TUBING FRAME.**
- 4.) ASSEMBLE THE ANTENNA AS SHOWN IN FIGURE 4. MAKE SURE THE RUBBER WASHER WHICH FORMS A MOISTURE SEAL BETWEEN THE ANTENNA BASE AND AIRCRAFT STRUCTURE IS IN PLACE BEFORE INSTALLING THE ANTENNA. ALSO MAKE SURE THE SERRATED LOCKING WASHER IS IN PLACE.**

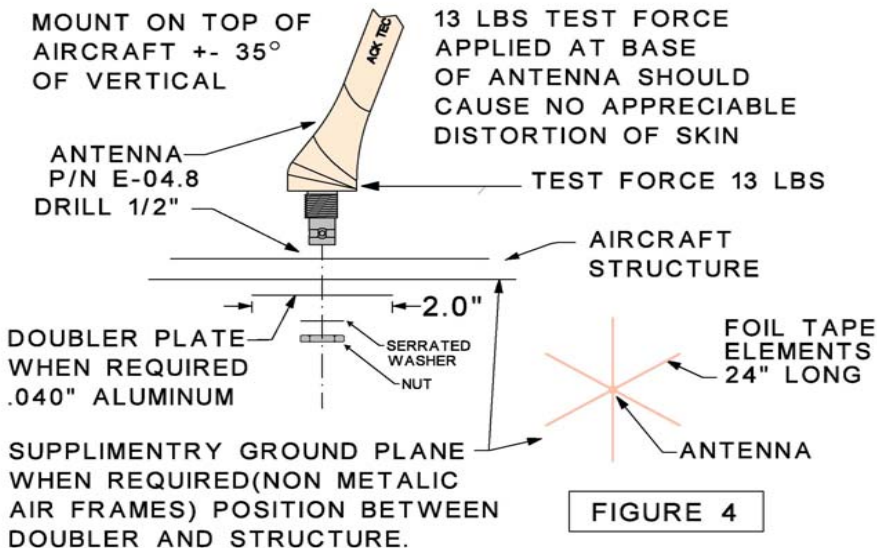
IF THE AIRCRAFT SKIN AT THE MOUNTING POINT IS LESS THAN .040" THICK WHEN INSTALLING THE P/N E-04.8 WHIP ANTENNA A 2" DIAMETER DOUBLER MUST BE FABRICATED USING .040" THICK 2024 OR 7075 T6 ALUMINUM FIGURE 4.

SENSOR SYSTEMS S65-1231-1 HIGH SPEED BLADE ANTENNA INSTALLATION

- 1.) USE A LENGTH OF STRING TO FORM A LINE FROM THE CENTER OF THE VERTICAL STABILIZER TO THE CENTER LINE OF THE FUSELAGE AT THE CABIN OF THE AIRCRAFT.**

PRINT A FULL SIZE PAPER TEMPLATE WHICH IS AVAILABLE ON OUR WEBSITE AND POSITION THE BNC CENTER LOCATION JUST ABOVE THE STRING. ROTATE THE TEMPLATE UNTIL THE ORIENTATION LINE ON THE TEMPLATE IS PARALLEL TO THE STRING.

2.) MARK THE LOCATION OF THE BNC CENTER HOLE AND THE 6 MOUNTING SCREWS. DRILL A 1/2" HOLE AT THE BNC LOCATION DRILL THE SIX MOUNTING SCREWS WITH A 3/16" DRILL. INSTALL THE GASKET UNDER THE ANTENNA AND TIGHTEN SCREWS.



SECTION 4 REMOTE CONTROL INSTALLATION

IMPORTANT YOU MUST INSTALL A BATTERY IN THE REMOTE

THE REMOTE CONTROL PANEL/INDICATOR (RCPI) PART # E-04.5 IS DESIGNED TO BE POWERED BY A SINGLE DURACELL PX28L 6 VOLT LITHIUM BATTERY OR AN EQUIVALENT. UNDER NORMAL OPERATING CONDITIONS THE LITHIUM BATTERY MUST BE REPLACED EVERY 8 (EIGHT) YEARS. IF THE ELT IS ACTIVATED FOR AN UNKNOWN PERIOD OF TIME THE BATTERY MUST BE REPLACED. EQUIVALENT BATTERIES FROM OTHER MANUFACTURERS ARE ACCEPTABLE FOR USE IN THE RCPI UNIT.

TO INSTALL OR REPLACE THE RCPI BATTERY FOLLOW THESE STEPS:

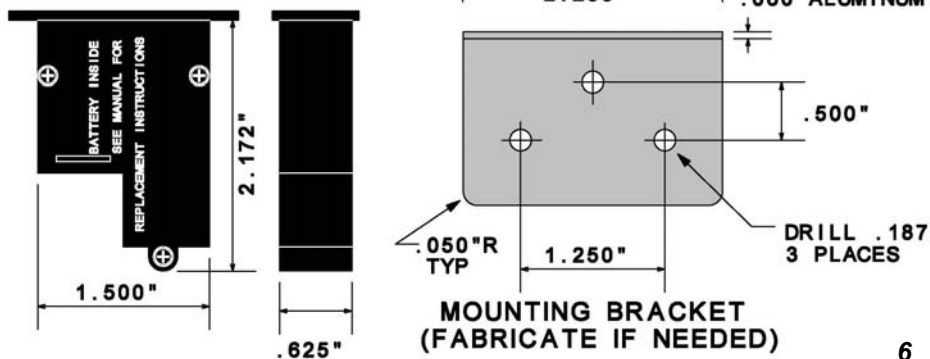
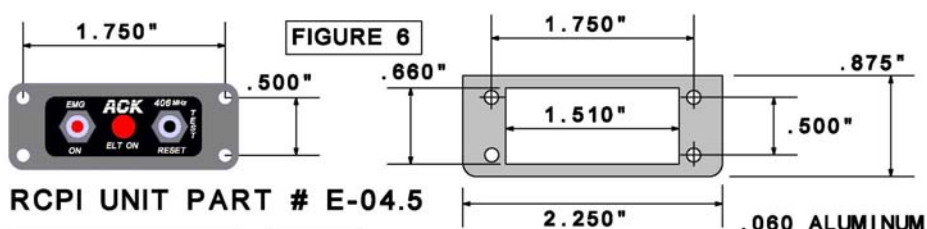
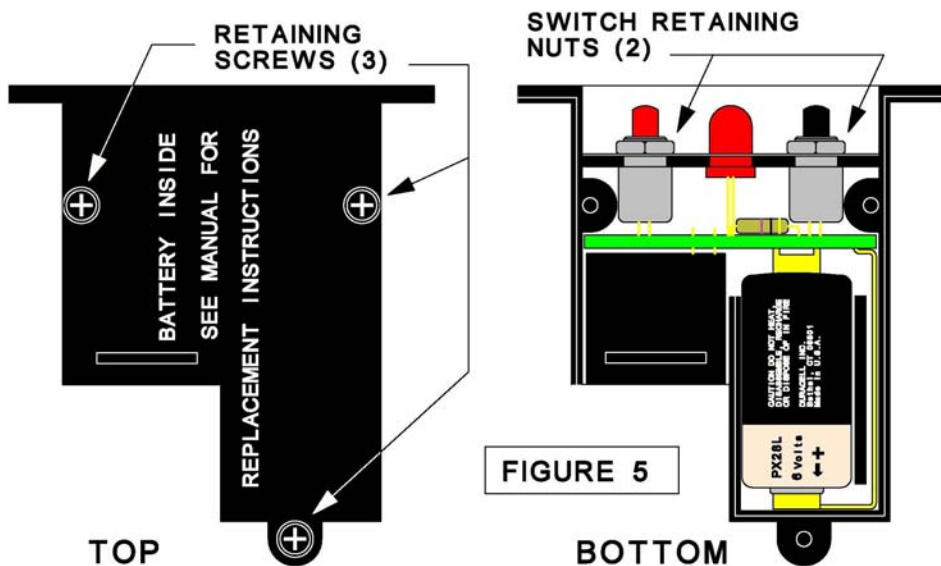
- 1.) REMOVE THE THREE RETAINING SCREWS WHICH SECURE THE TOP AND BOTTOM HALF OF THE RCPI UNIT. (FIGURE 5)**
- 2.) LOOSEN THE TWO SWITCH RETAINING NUTS LOCATED ON THE FACE OF THE RCPI. THERE ARE TWO PLACARDS SUPPLIED WITH THE REMOTE A HORIZONTAL AND A VERTICAL. THE RCPI COMES WITH THE HORIZONTAL INSTALLED. TO REPLACE IT WITH THE VERTICAL REMOVE THE TWO SWITCH RETAINING NUTS AND PLACE THE VERTICAL PLACARD OVER THE HORIZONTAL PLACARD.**
- 3.) CAREFULLY REMOVE THE TOP HALF OF THE RCPI UNIT EXPOSING THE BATTERY COMPARTMENT. (FIGURE 5) IF REPLACING AN OLD BATTERY, CAREFULLY INSPECT THE BATTERY CONTACTS FOR DIRT OR CORROSION. IF THE CONTACTS NEED CLEANING USE ONLY NON ABRASIVE ELECTRICAL CONTACT CLEANER AND A STIFF**

BRUSH. ABRASIVE CLEANERS WILL REMOVE THE NICKEL AND GOLD PLATING FROM CONTACTS.

4.) INSERT THE BATTERY WITH THE POLARITY AS SHOWN IN (FIGURE 5). THE POLARITY IS ALSO ENGRAVED ON THE BOTTOM OF THE BATTERY COMPARTMENT.

5.) REPLACE THE TOP HALF OF THE RCPI AND REPLACE THE 3 (THREE) RETAINING SCREWS AND 2 (TWO) RETAINING NUTS ON THE FACE OF THE RCPI.

6.) THE NEXT RCPI BATTERY REPLACEMENT DATE *SHOULD BE RECORDED IN AIRCRAFT LOG BOOKS* WITH A NOTE INDICATING THE BATTERY EXPIRATION DATE

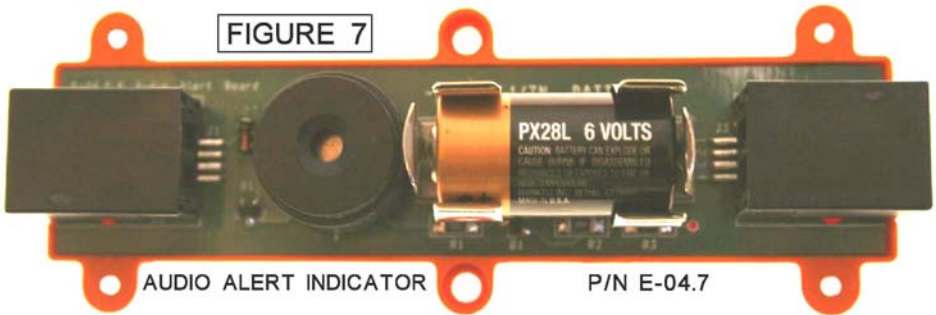


IMPORTANT: THE RCPI MUST BE MOUNTED SO THAT IT CAN BE SEEN AND OPERATED BY THE PILOT OF THE AIRCRAFT FROM A NORMAL OPERATING POSITION. WE STRONGLY RECOMMEND THAT THE RCPI BE LOCATED WITHIN AN AREA THAT IS PART OF THE PILOTS REGULAR INSTRUMENT SCAN.

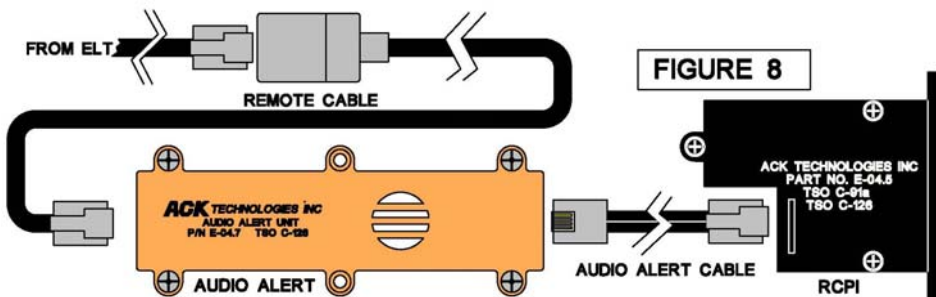
5.) MOUNT THE RCPI USING 4 (FOUR) 4-40 SCREWS AND NUTS. (FIGURE 6) SHOWS THE DIMENSIONS OF THE CUT OUT FOR THE RCPI UNIT. IF THE UNIT IS TO BE MOUNTED IN A LOCATION THAT DOES NOT HAVE A FLUSH MOUNTING SURFACE (i.e. BENEATH THE PANEL GLARE SHIELD.) AN ANGLE BRACKET SHOULD BE FABRICATED (FIGURE 6)

SECTION 5 AUDIO ALERT INDICATOR INSTALLATION

REMOVE THE FOUR SCREWS THAT HOLD THE TOP COVER ON THE AUDIO ALERT INDICATOR P/N E-04.7. BEND THE TWO END SPRING CONTACTS IN SLIGHTLY AND MAKE SURE THEY ARE MAKING FIRM CONTACT WITH THE BATTERY TERMINALS. INSTALL A DURACELL PX 28L OR EQUIVALENT BATTERY MAKE SURE TO OBSERVE THE BATTERY POLARITY (FIGURE 7). REPLACE THE TOP COVER MAKING SURE THE GRILL PORTION OF THE INDICATOR IS POSITIONED OVER THE BUZZER. THE BATTERY MUST BE REPLACED EVERY 8 YEARS THE EXPERATION DATE MUST BE ENTERED IN THE AIRCRAFT LOG BOOKS



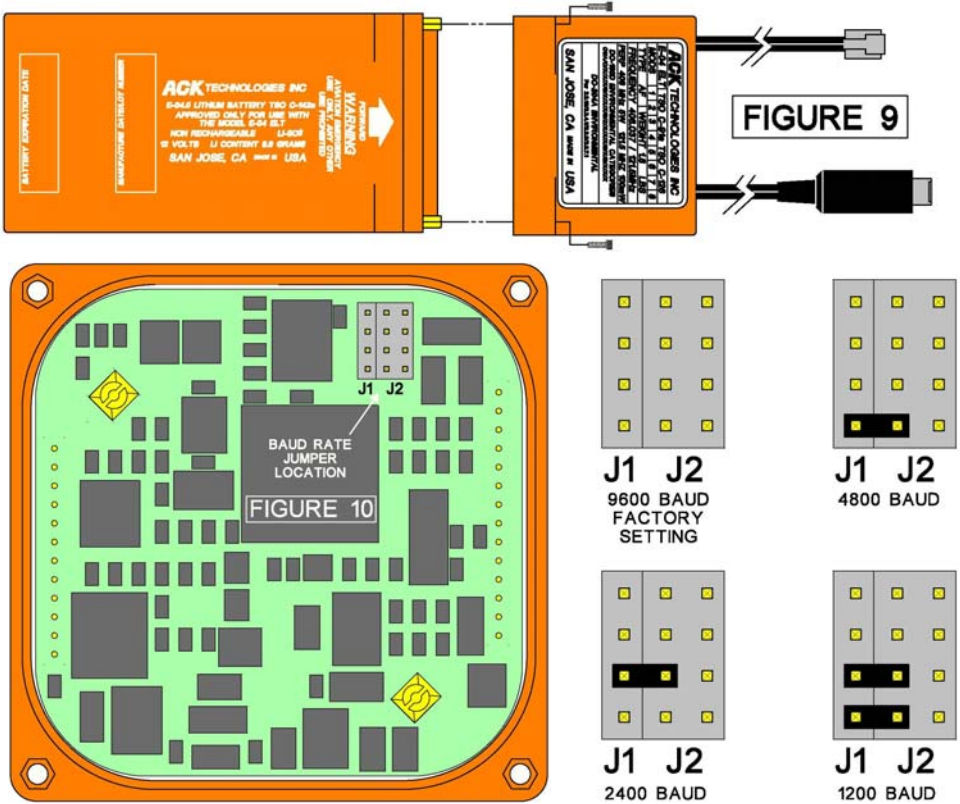
PLUG THE AUDIO ALERT CABLE P/N E-04.10.3 INTO THE RCPI UNIT AND ONE END OF THE AUDIO ALERT INDICATOR. PLUG THE MALE END OF THE REMOTE CABLE



SECTION 6 GPS INTERFACE INSTALLATION

THE MODEL E-04 ELT WILL INTERFACE AND RECOGNIZE EIA STANDARD RS 232 DATA FROM NEMA 0183 SOURCES AT 1200, 2400, 4800 AND 9600 BAUD. GARMIN AVIATION FORMAT DATA AT 9600 BAUD AND BENDIX/KING AVIATION FORMAT DATA AT 9600 BAUD. THE DEFAULT SETTINGS ARE 9600 BAUD.

TO CHANGE THE BAUD RATE A JUMPER IS INSTALLED ON THE DIGITAL BOARD OF THE ELT. TO ACCOMPLISH THIS REMOVE THE 4 SCREWS AT THE FRONT OF THE ELT AND REMOVE THE BATTERY PACK (FIGURE 9). FIGURE 10 SHOWS HOW TO POSITION THE JUMPER ON THE DIGITAL BOARD FOR THE VARIOUS BAUD RATES. AFTER SELECTING THE DESIRED BAUD RATE REPLACE THE BATTERY PACK AND TORQUE THE SCREWS TO 3-4 IN LBS.



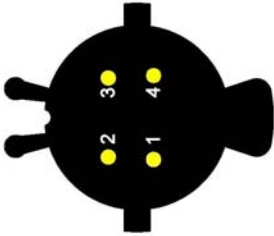
MODEL E-04 ELT IS INTERFACED TO THE AIRCRAFT SOURCE OF NAVIGATION DATA THROUGH A 4 PIN MINI DIN CONNECTOR. 3 OF THE PINS ARE USED FOR INTERFACING WITH THE AIRCRAFT SYSTEMS AND THE FOURTH PIN IS USED TO VERIFY THE ELT IS RECEIVING AND PROCESSING THE DATA PROPERLY WHEN INSTALLING THE ELT.

A 3 CONDUCTOR SHIELDED CABLE 24 GA OR HEAVIER (AIRCRAFT SPRUCE P/N 11-04478 OR EQUIVALENT) SHOULD BE USED TO CONNECT THE ELT RS 232 DATA AND POWER TO THE AIRCRAFT SYSTEMS. FIGURE 11 SHOWS THE PIN OUTS FOR RS232 AND POWER INPUT

- 1. DISASSEMBLE THE MINI DIN CONNECTOR NOTATING THE POSITION OF THE PARTS FOR REFERENCE WHEN REASSEMBLING THE CONNECTOR .**
- 2. CONNECT ONE CONDUCTOR TO PIN 1 OF THE DIN CONNECTOR AND TO 10 - 30 VOLTS DC FROM THE AIRCRAFT BUSS PROTECT WITH A 1 AMP FUSE OR CIRCUIT BREAKER FIG 13**
- 2. CONNECT ONE CONDUCTOR AND THE OUTER SHIELDING TO PIN 3 FIG 12.1 AND CONNECT TO A/C GROUND AT THE COCKPIT FIG 13**
- 3. CONNECT ONE CONDUCTOR TO PIN 4 OF THE DIN CONNECTOR TO THE RS 232 OUTPUT FROM THE NAVIGATION EQUIPMENT WHICH IS PROVIDING DATA. MAKE SURE**

THIS DATA CONFORMS TO ONE OF OUR RECOGNIZED DATA FORMATS AND BAUD RATES FIG 13.

4. BRING A SHORT 24 GA WIRE (4") OUT FROM PIN 2 TO BE USED LATER IN VERIFYING THAT THE ELT IS RECEIVING AND PROCESSING THE GPS DATA PROPERLY FIG 12.4.
5. SOLDER THE CONNECTIONS AND SEAL THE BACK OF THE JACK AND WIRE SOLDER JOINTS WITH SILICON RTV SEALANT (LOCTITE 59530 OR EQUIVALENT) FIG 12.2.
6. APPLY RTV SEALANT TO THE INSIDE OF THE OUTER COVER TO SEAL THE WIRE WHERE IT ENTERS THE OUTER HOUSING FIG 12.3



RS 232 CABLE DIN CONNECTOR	
PIN	FUNCTION
1	A+ 10-30V DC 40 ma TYP
2	RS 232 SEND
3	GROUND
4	RS 232 REC

FIGURE 11

LOOKING AT
BACK SIDE OF
JACK (SOLDER CUPS)

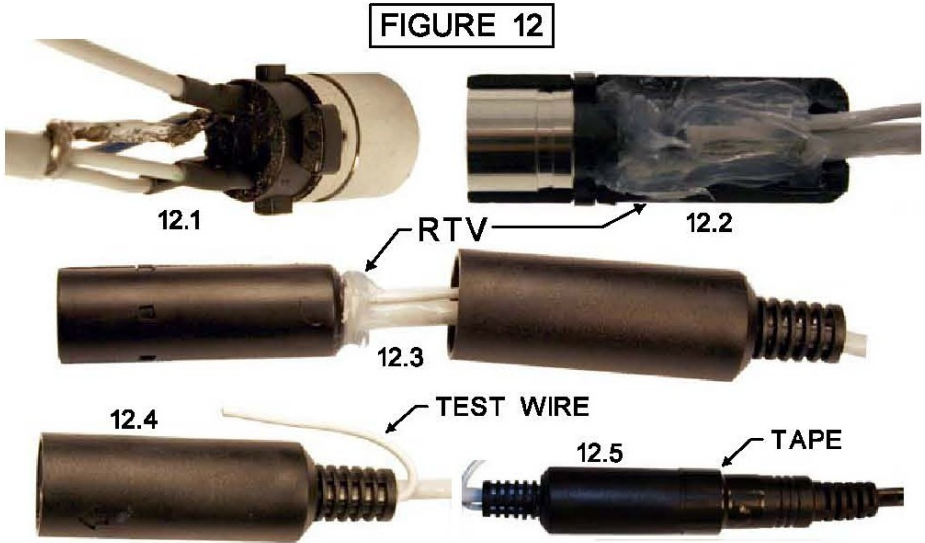


FIGURE 12

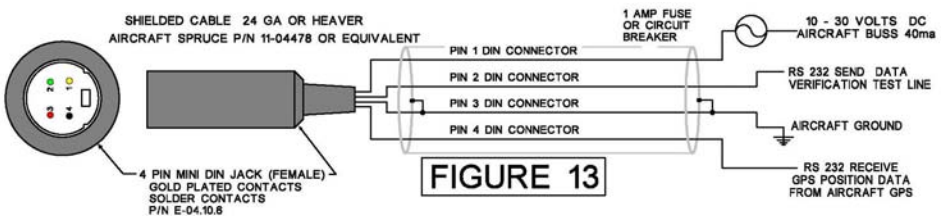


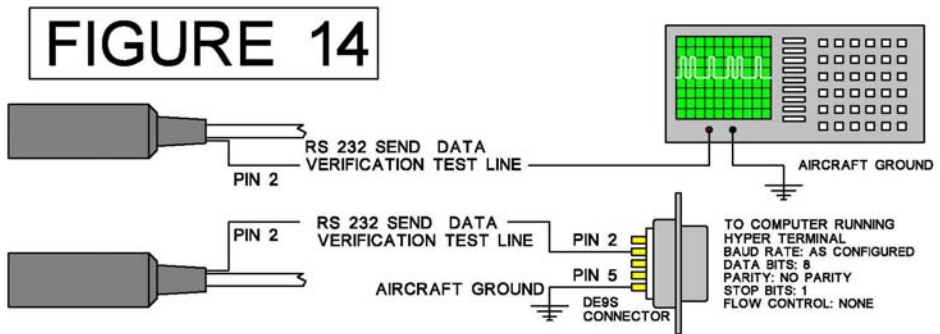
FIGURE 13

SECTION 7 FINAL INSTALLATION AND CHECK OUT

1. AFTER INSTALLING THE ELT, ANTENNA, AND RCPI IN THE AIRCRAFT. INSTALL THE COAXIAL CABLE BETWEEN THE ELT TRANSMITTER AND ANTENNA BASE. IF POSSIBLE THE CABLE SHOULD NOT CROSS ANY PRODUCTION BREAKS IN THE AIRFRAME, AND MUST HAVE A REASONABLE AMOUNT OF SLACK AT THE TRANSMITTER. THE SLACK IS NECESSARY FOR EASY REMOVAL OF THE COAXIAL CABLE DURING MAINTENANCE. IF A LONGER CABLE THAN THE ONE SUPPLIED WITH THE UNIT (4 FOOT) IS NEEDED IT MAY BE FABRICATED USING RG-58 CABLE AND AMP 227079-5 CONNECTORS OR THEIR EQUIVALENT. INSERTION LOSS OF THE CABLE AT 121.5 MHz FREQUENCY SHOULD NOT EXCEED 3dBm AND AT THE 406 MHz FREQUENCY 2 dBm. SECURE THE COAXIAL CABLE USING TIE WRAPS OR OTHER APPROPRIATE METHODS. MAKE SURE THE CABLE IS PROTECTED FROM ABRASION.

2. THE RCPI UNIT IS CONNECTED TO THE ELT TRANSMITTER VIA RJ-11 STANDARD TYPE MODULAR CONNECTORS. A 15 FOOT CONNECTING CABLE IS INCLUDED WITH EACH ELT. TO INSTALL THE CABLE CONNECT TO THE MODULAR PLUG ON THE ELT TRANSMITTER, INTO THE JACK END OF THE INTERCONNECTING CABLE. RUN THE PLUG END OF THE CABLE TO THE AUDIO ALERT UNIT. RUN THE SHORT AUDIO ALERT CABLE FROM THE RCPI TO THE AUDIO ALERT MODULE (SEE FIG 8) AVOID RUNNING THIS CABLE NEAR SOURCES OF STRONG EM/RFI RADIATION. (i.e. COMM CABLES, STROBE LIGHT POWER CABLES, STARTER CABLES.) SECURE THE CABLE ALONG ITS RUN USING TIE WRAPS OR OTHER SUITABLE METHODS. THE INTERCONNECTING CABLE MAY BE SHORTENED OR A LONGER CABLE OF UP TO 150ft. MAY BE USED IF NECESSARY. REFER TO PAGE 7 FIGURE 8. AFTER CONNECTING THE MINI DIN RS 232 JACK AND PLUG. WRAP ELECTRICAL TAPE AROUND THE JOINT AT THE CENTER OF THE CONNECTOR TO SECURE THE TWO PARTS TOGETHER AND SEAL THE JOINT FROM MOISTURE SEE PAGE 9 FIG 12.5.

3. AFTER INSTALLATION AND WIRING IS COMPLETE. VERIFY THAT THE ELT IS RECEIVING AND PROCESSING GPS DATA CORRECTLY. APPLY POWER TO BOTH THE ELT AND THE GPS EQUIPMENT FROM WHICH THE ELT IS RECEIVING DATA. MAKE SURE THE GPS HAS A SATELLITE FIX AND IS REPORTING POSITION DATA. USING WINDOWS HYPER TERM OR AN OSCILLOSCOPE IN ORDER TO VERIFY THAT THE ELT IS RECEIVING GPS DATA.



4. CONNECT HYPER TERM OR THE OSCILLOSCOPE AS SHOWN IN FIG 14. THE MAIN SWITCH ON THE ELT SHOULD BE IN THE OFF POSITION.

5. WITH THE POWER SUPPLIED BOTH TO THE ELT AND THE GPS AND MAKING SURE THE GPS HAS ACQUIRED THE SATELLITES AND IS GIVING VALID POSITION DATA. HYPER TERM SHOULD DISPLAY AN ASTERISK EACH TIME THE ELT RECEIVES A VALID GPS DATA POSITION TYPICALLY ONCE PER SECOND.

6. IF USING AN OSCILLOSCOPE WITH POWER APPLIED TO THE ELT AND WITH VALID GPS POSITION DATA PRESENT YOU SHOULD SEE A BIT PATTERN AS SHOWN IN FIGURE 14 ON THE OSCILLOSCOPE EACH TIME THE GPS RECEIVES A VALID GPS

POSITION TYPICALLY ONCE PER SECOND. THIS TEST VERIFIES THAT THE ELT IS PROPERLY RECEIVING POSITION DATA FROM THE GPS SYSTEM.

7. AFTER VERIFYING THAT THE ELT IS RECEIVING AND PROCESSING GPS DATA CORRECTLY. SEAL THE END OF THE GPS VERIFICATION TEST LINE USING ADHESIVE LINED END CAP (McMASTER-CARR 72855K21) OR OTHER METHOD TO PROTECT FROM MOISTURE. SECURE THE TEST WIRE TO THE SHIELDED CABLE WITH A TIE WRAP.

8. COMPLETE THE STEPS IN SECTION 8 REGISTRATION BEFORE YOU VERIFY THE INSTALLED OPERATION OF THE ELT. AFTER YOU HAVE REGISTERED THE ELT DO THE SELF TEST AS DESCRIBED IN SECTION 9 TO VERIFY COMPLETE SYSTEM IS FUNCTIONING PROPERLY.

9. RECORD THE ELT EXPIRATION DATE MARKED ON THE ELT BATTERY CASE AND THE EXPIRATION OF THE RCPI AND AUDIO ALERT BATTERIES IN THE AIRFRAME LOGBOOK.

SECTION 8 REGISTRATION

1. BEFORE COMPLETING THE FINAL CHECK OUT OF THE ELT **YOU MUST FIRST REGISTER YOUR BEACON FOLLOWING THE REGISTRATION REQUIREMENTS OF THE COUNTRY WHERE THE AIRCRAFT IS BASED.** THERE IS A PREPRINTED SELF ADHESIVE LABEL SUPPLIED WITH THE ELT THAT HAS THE HEX CODE, MANUFACTURER AND MODEL NUMBER ON IT WHICH YOU SHOULD AFFIX TO THE TOP OF THE REGISTRATION FORM OR YOU CAN REFER TO THIS LABEL WHEN REGISTERING OVER THE INTERNET.

2. IN THE US AND CANADA YOU CAN MAIL OR FAX THE ENCLOSED REGISTRATION FORMS HOWEVER IT IS STRONGLY RECOMMEND THAT BEACON REGISTRATION BE COMPLETED ON LINE AT THE FOLLOWING SITES:

UNITED STATES

www.beaconregistration.noaa.gov

CANADA

www.canadianbeaconregistry.forces.gc.ca

3. 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

4. WHEN FILLING OUT THE REGISTRATION THE HEX CODE IDENTIFIER MY BE FOUND ON THE FRONT RIGHT SIDE OF THE ELT FIG 15.

5. YOU MUST UPDATE YOUR BEACON REGISTRATION EVERY TWO YEARS AND ANY TIME THE BEACON IS USED IN A DIFFERENT AIRCRAFT.

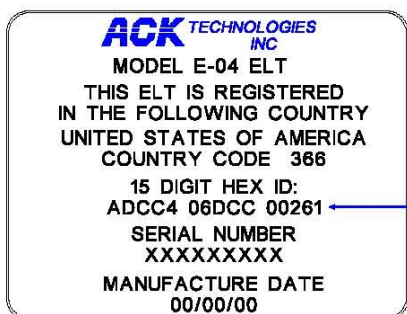


FIGURE 15

BEACON REGISTRATION LABEL LABEL ON RIGHT FRONT OF ELT

HEX CODE

SECTION 9 OPERATION AND SELF TEST

THERE ARE THREE MODES IN WHICH 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). 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. FIG 17

THE 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 WHICH 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). FIG16
2. PLACING THE MAIN SWITCH ON THE ELT IN THE OFF POSITION. FIG 17

WHEN THE ELT IS IN THE ACTIVE MODE (TRANSMITTING) THE COCKPIT REMOTE WILL FLASH AND THE AUDIO ALERT INDICATOR WILL EMMITT 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 ON THE COCKPIT REMOTE AND IMMEDIATELY NOTIFY THE APPROPRIATE SEARCH AND RESCUE OPERATIONS OFFICE OF THE FALSE ACTIVATION. FIG 16

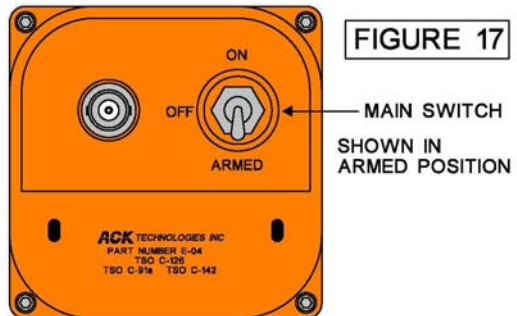
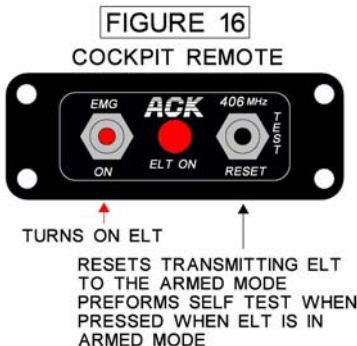
SELF TESTS:

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) AND 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 MODE PRESSING THE RESET/TEST SWITCH ON THE COCKPIT REMOTE CONTROL (RCPI) INITIATES A SELF TEST. 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 FOR A METHOD TO BENCH TEST THE ELT WITH THE REMOTE CONTROL DISCONNECTED. FIG 17



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.

WITH THE ELT IN THE ARMED POSITION AND NOT OPERATING PRESS THE RESET/TEST BUTTON ON THE COCKPIT REMOTE CONTROL (RCPI) ONCE.

THE LIGHT WILL FLASH ON THE REMOTE AND YOU WILL HEAR ONE BEEP FROM THE AUDIO ALERT INDICATOR IF ALL SYSTEMS ARE OK.

A SERIES OF 2-5 BEEPS 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 A MINIMUM OF EVERY 3 (THREE) CALENDAR MONTHS.

1. ELT SELF TEST FUNCTION AS DESCRIBED IN SECTION 9 OF THIS MANUAL.

THE FOLLOWING TESTS MUST BE PERFORMED A MINIMUM OF EVERY 12 (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 IT'S 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 IT'S 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 AS WELL AS THE EXPIRATION DATE OF THE BATTERY PACK AND REPLACE IF NECESSARY.

6. LEAVE THE ELT IN THE ARMED POSITION AND 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.

HOLD THE ELT AT YOUR WAIST WITH THE ARROW 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 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 AND 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. FIG 12.5 (PAGE 9)

8. PERFORM A SELF TEST DESCRIBED IN SECTION 9 TO VERIFY PROPER OPERATION

SECTION 11 E-04.0 LITHIUM BATTERY REPLACEMENT

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.

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

- 1 USING A STANDARD PHILLIPS HEAD SCREWDRIVER REMOVE THE 4 (FOUR) RETAINING SCREWS THAT ATTACH THE BATTERY CASE TO THE ELT TRANSMITTER ASSEMBLY. FIG 9 (PAGE 8)
- 2 INSTALL THE NEW ACK TECHNOLOGIES, INC. SEALED BATTERY PACK ASSEMBLY PART# E-04.0. THE BATTERY PACK IS DESIGNED SO THE BATTERY CAN ONLY BE INSTALLED IN THE PROPER ORIENTATION. THE BATTERY PACK SHOULD SLIDE EASILY INTO THE TRANSMITTER HOUSING. INSTALL THE O RING ONTO THE BATTERY CASE. BEFORE INSTALLING THE O RING WET IT WITH A MILD DISH SOAP SOLUTION AND SHAKE OFF THE EXCESS SOLUTION OR USE SILICON VACUUM GREASE.
3. REATTACH THE TRANSMITTER ASSEMBLY TO BATTERY PACK BY REPLACING THE 4 (FOUR) PHILLIP HEAD SCREWS. TIGHTEN THE SCREWS TO 3.5-4.0 IN/LBS.
4. RECORD THE NEW BATTERY EXPIRATION DATE IN THE AIRFRAME LOGBOOKS.
5. AFTER RE-INSTALLATION OF THE ELT INTO THE AIRCRAFT A SELF TEST MUST BE PERFORMED SEE SECTION 9

THE FOLLOWING IS AN EXCERPT FROM FAA AC 91-44A PARAGRAPH 8.a WHICH DEFINES WHEN ELT BATTERY REPLACEMENT MAY BE DONE UNDER 14 CFR PART 43.3(h) AS PREVENTIVE MAINTENANCE.

“...THE REPLACEMENT CAN BE DONE BY THE PILOT IF THE PREVENTIVE MAINTENANCE LIMITATIONS OF PART 43.3(h) OF THE FAR, ARE COMPLIED WITH. FOR EXAMPLE, A PORTABLE TYPE ELT THAT IS READILY ACCESSIBLE AND CAN BE REMOVED AND REINSTALLED IN THE AIRCRAFT BY A SIMPLE OPERATION SHOULD BE CONSIDERED PREVENTIVE MAINTENANCE. FIXED TYPE ELT INSTALLATIONS ARE OFTEN PERMANENTLY MOUNTED IN A REMOTE AREA OF THE AIRCRAFT NEAR FLIGHT CONTROL CABLES, VITAL AIRCRAFT COMPONENTS, AND CRITICAL ATTACHMENTS TO THE AIRCRAFT STRUCTURE. INSTALLATIONS OF THIS NATURE REQUIRE AN EXTERNAL ANTENNA AND OFTEN A REMOTE ON/OFF TRANSMITTER CONTROL SWITCH THAT IS USUALLY LOCATED NEAR THE PILOTS FLIGHT POSITION. THIS TYPE OF INSTALLATION IS COMPLEX AND BATTERY REPLACEMENT SHOULD BE ACCOMPLISHED BY A CERTIFIED MECHANIC OR CERTIFIED REPAIR STATION...”

SECTION 12 SPECIFICATIONS

ELT PART NUMBER E-04

APPROVAL:

TSO C-126 TSO C-91a

TYPE:

TSO C-126 AF

FREQUENCY:

121.5 MHz & 406.037 MHz

MODULATION:

406 MHz +/- 2 kHz Bi-Phase L (16KOG1D)

121.5 MHz +/- 6 kHz AM (3K20A3N)

SWEPT DOWNWARD 1400 – 400 Hz

REPETITION RATE 3 Hz

MODULATION FACTOR $\geq 90\%$

DUTY CYCLE $\geq 45\%$

POWER AT TERMINAL 50 Ω LOAD:

121.5 MHz 20.7 dBm 50 HOURS@ -20C

406.037 MHz 37.3 dBm 24.5 HOURS @ -20C

STANDBY CURRENT ARMED MODE 24uA

PEAK CURRENT 406 MHz BURST 1.5 – 2 A

CURRENT 121.5 MHz OPERATION 80 mA

PEAK EIRP WITH E-04.8 WHIP ANTENNA
AND E-04.10.4 COAX CABLE:

121.5 MHz +23 dBm 200 Mw

406.037 MHz +41.4 dBm 13.7 W

OPERATING TEMPERATURE:

-20C TO +55C

STORAGE TEMPERATURE:

-55C TO +85C

CRASH ACTIVATION:

4.5 FpS +/- .5 FpS

DIMENSIONS:

7.750" X 2.850" X 2.850"

192 mm X 72 mm X 72 mm

WEIGHT:

ELT AND BATTERY PACK 1.6 LBS .73 Kg

ELT TRAY AND STRAPS .2 LBS .09 Kg

REMOTE CONTROL (RCPI) 1.1 Oz 31 g

AUDIO ALERT INDICATOR 1.5 Oz 43 g

ANTENNA PART NUMBER E-04.8

LENGTH 20.625" 524 mm SWEPT 20 °

WEIGHT 2.1 Oz 60 g

IMPEDANCE 50 OHM NOMINAL

VSWR @ 121.5 MHz $\leq 2.0:1$

VSWR @ 406 MHz $\leq 1.4:1$

MAX AIRSPEED 260 KNOTS@ SEA LEVEL

BATTERY PART NUMBER E-04.0

APPROVAL:

TSO C-142a

TYPE:

LI-SO₂

NON FLAMMABLE ELECTROLYTE

VOLTAGE:

12 VOLTS

OPERATING TEMPERATURE:

-20C TO +55C

DIMENSIONS:

5.750" x 2.850" X 2.850"

146mm X 72mm X 72mm

WEIGHT:

1.18 LBS .535 Kg

AMP HOUR RATING:

7.25 Ah

NON RECHARGEABLE

LITHIUM CONTENT:

9.8 GRAMS

MAXIMUM DISCHARGE RATE:

2.5 AMPS

BATTERY LIFE:

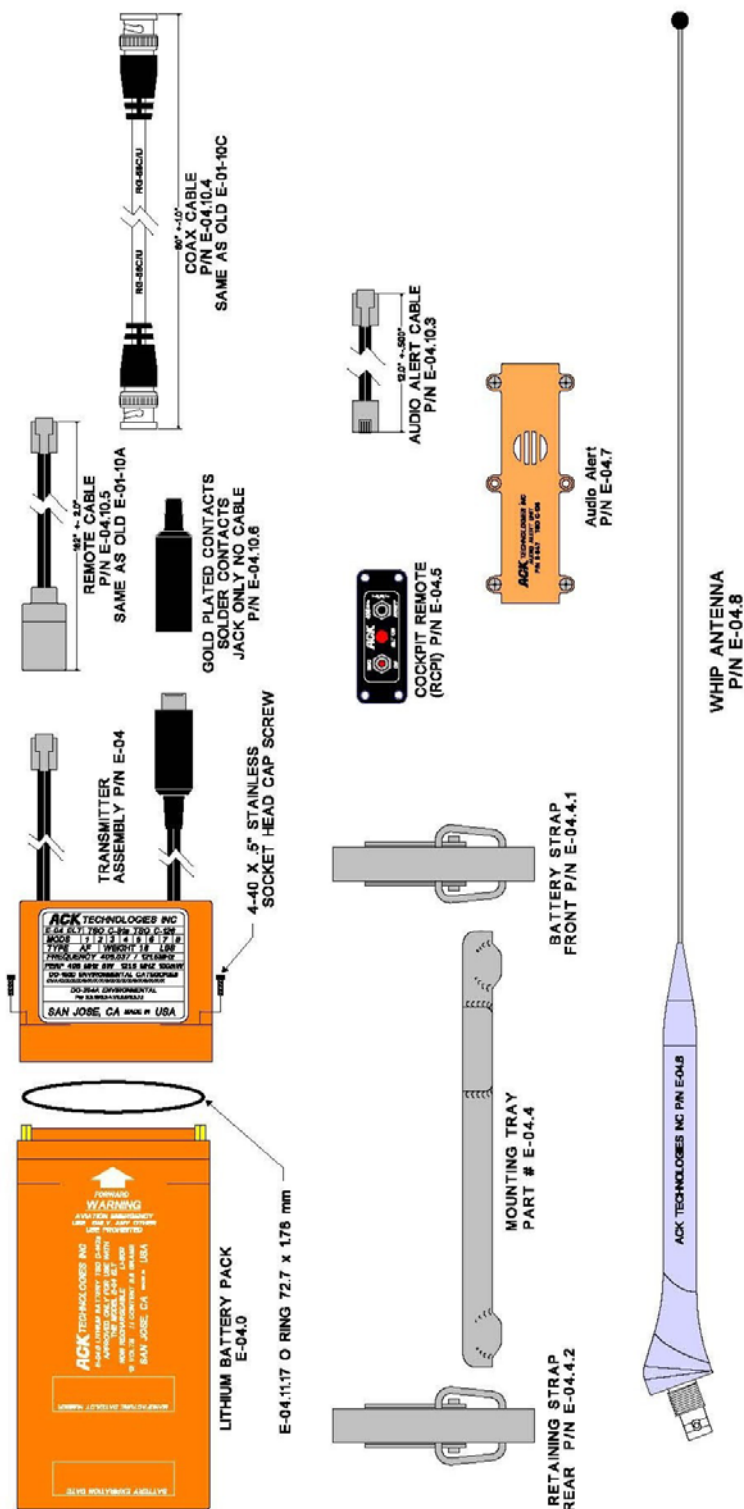
5 YEARS

WHEN USED WITH THE MODEL E-04 ELT

LIMITATIONS: ANY OTHER USE OF THIS BATTERY IN AIRCRAFT IS PROHIBITED UNLESS APPROVED BY ACK TECHNOLOGIES INC.

THE CONDITIONS AND TESTS FOR TSO APPROVAL OF THIS ARTICLE ARE MINIMUM PERFORMANCE STANDARDS. THOSE INSTALLING THIS ARTICLE, ON OR IN A SPECIFIC TYPE OR CLASS OF AIRCRAFT, MUST DETERMINE THAT THE AIRCRAFT INSTALLATION CONDITIONS ARE WITHIN THE TSO STANDARDS. TSO ARTICLES MUST HAVE SEPARATE APPROVAL FOR INSTALLATION IN AN AIRCRAFT. THE ARTICLE MAY BE INSTALLED ONLY ACCORDING TO 14 CFR PART 43 OR THE APPLICABLE AIRWORTHINESS REQUIREMENTS. LITHIUM CELL AND BATTERY SAFETY CONCERNS INCLUDE THE POSSIBILITY OF FIRE AND VENTING OF TOXIC GASES

E-04 ELT MAJOR PARTS



SECTION 13 PROGRAMMING

THE ELT IS FACTORY PROGRAMMED TO THE STANDARD LOCATION SERIAL NUMBER FORMAT.

THE ELT MAY BE PROGRAMMED IN THE FIELD TO THE FOLLOWING FORMATS:

SERIAL NUMBER (YOU MAY ONLY REPROGRAM THE COUNTRY CODE IN THIS FORMAT)

STANDARD LOCATION 24 BIT ADDRESS

STANDARD LOCATION TAIL NUMBER

TO REPROGRAM THE ELT YOU MUST USE OUR PROGRAMMING MODULE P/N E-04.PRG. THE MODULE INTERFACES TO A PC RUNNING WINDOWS XP OR VISTA VIA A USB PORT. THE PROGRAMMING SOFTWARE MAY BE DOWNLOADED FROM OUR WEB SITE WWW.ACKAVIONICS.COM.

A PROGRAMMING INSTRUCTIONS MANUAL IS INCLUDED WITH THE E-04.PRG MODULE

SECTION 14 WARRANTY PROCEDURE

SHOULD IT BECOME NECESSARY TO RETURN THE ELT FOR WARRANTY REPAIR.

REMOVE THE ELT BATTERY BEFORE SHIPPING THE UNIT TO OUR FACILITY. THE BATTERY IS A DOT/IATA CLASS 9 HAZARDOUS MATERIAL AND DOT/IATA REGULATIONS MUST BE FOLLOWED WHENEVER SHIPPING THE BATTERY OR ELT AND BATTERY. THIS IS ALSO TO PREVENT ACCIDENTAL ACTIVATION OF THE ELT DURING TRANSIT.

ALL UNITS MUST BE RETURNED TO OUR FACILITY FREIGHT PREPAID. OUR SHIPPING ADDRESS IS AS FOLLOWS

ACK TECHNOLOGIES, INC.
440 W. JULIAN ST.
SAN JOSE, CA 95110

MAKE SURE THAT YOU HAVE INCLUDED PAPERWORK WITH A RETURN ADDRESS THAT IS SUITABLE FOR UPS RETURN SHIPMENT. (NO P.O. BOXES OR APO NUMBERS.) PLEASE INCLUDE A SHORT DESCRIPTION OF THE PROBLEM YOU HAVE BEEN EXPERIENCING AND A TELEPHONE NUMBER WHERE YOU MAY BE REACHED DURING BUSINESS HOURS IF POSSIBLE.

ANY UNIT THAT IS RETURNED FOR WARRANTY AND FOUND NOT TO BE DEFECTIVE WILL BE CHARGED A MINIMUM HANDLING AND SERVICE CHARGE AND RETURNED C.O.D.

RECORD YOUR AIRCRAFT AND ELT INFORMATION FOR FUTURE REFERENCE

AIRCRAFT _____

REGISTRATION NUMBER _____ COUNTRY _____

INSTALLATION DATE _____

ELT SERIAL NUMBER (FROM TSO LABEL) _____

ELT HEX CODE (FROM RIGHT SIDE LABEL) _____

UPDATE REGISTRATION EVERY TWO YEARS

NEXT REG DUE

NEXT REG DUE

NEXT REG DUE

NEXT REG DUE

NEXT REG DUE

SECTION 15 DO-160F/ED-14F ENVIRONMENTAL CATEGORIES

CONDITIONS	SECTION	DESCRIPTION OF TESTS CONDUCTED
<i>Temperature and Altitude</i>	<i>4.0</i>	<i>Qualifies To Category D1</i>
<i>Temperature Variation</i>	<i>5.0</i>	<i>Qualifies To Category A</i>
<i>Humidity</i>	<i>6.0</i>	<i>Qualifies To Category C</i>
<i>Shock and Crash DO-204 Par. 2.3.4.1 DO-204 Par. 2.4.2.4</i>	<i>7.0</i>	<i>Not Tested Category Identified as X Shock Crash Safety</i>
<i>Vibration</i>	<i>8.0</i>	<i>Qualifies To Category R</i>
<i>Explosive Atmosphere</i>	<i>9.0</i>	<i>Not Tested Category Identified as X</i>
<i>Waterproofness</i>	<i>10.0</i>	<i>Qualifies To Category S</i>
<i>Fluids Susceptibility</i>	<i>11.0</i>	<i>Not Tested Category Identified as X</i>
<i>Sand and Dust</i>	<i>12.0</i>	<i>Not Tested Category Identified as X</i>
<i>Fungus</i>	<i>13.0</i>	<i>Not Tested Category Identified as X</i>
<i>Salt Spray</i>	<i>14.0</i>	<i>Qualifies To Category S</i>
<i>Magnetic Effect</i>	<i>15.0</i>	<i>Qualifies To Category Z</i>
<i>Power Input</i>	<i>16.0</i>	<i>Qualifies To Category B Additional Testing to 16.6.1.3 (b)</i>
<i>Voltage Spike</i>	<i>17.0</i>	<i>Qualifies to Category B</i>
<i>Audio Frequency Conducted Susceptibility</i>	<i>18.0</i>	<i>Qualifies To Category B</i>
<i>Induced Signal Susceptibility</i>	<i>19.0</i>	<i>Qualifies To Category BC</i>
<i>Radio Frequency Susceptibility</i>	<i>20.0</i>	<i>Not Tested Category Identified as X</i>
<i>Radio Frequency Emissions</i>	<i>21.0</i>	<i>Qualifies To Category H</i>
<i>Lightning Induced Transient susceptibility</i>	<i>22.0</i>	<i>Not Tested Category Identified as X</i>
<i>Lightning Direct Effects</i>	<i>23.0</i>	<i>Not Tested Category Identified as X</i>
<i>Icing</i>	<i>24.0</i>	<i>Not Tested Category Identified as X</i>
<i>Electro-Static Discharge</i>	<i>25.0</i>	<i>Not Tested Category Identified as X</i>
<i>Fire, Flammability DO-204 Par. 2.3.7.1</i>	<i>26.0</i>	<i>Not Tested Category Identified as X Flame Test</i>

Additional DO-204 Testing

DO-204	Par 2.3.2.1	Low Temperature Battery Life
DO-204	Par 2.3.2.2	High Temperature Battery Life
DO-204	Par 2.3.2.3	Frequency Stability With Temperature Gradient
DO-204	Par 2.3.2.4	Thermal Shock
DO-204	Par 2.3.2.5	VSWR
DO-204	Par 2.3.2.6	Self Test
DO-204	Par 2.3.1.1	Low Temperature Activation
DO-204	Par 2.3.1.2	High Temperature Activation
DO-204	Par 2.3.1.3	Altitude
DO-204	Par 2.3.1.4	Decompression
DO-204	Par 2.3.1.5	Overpressure

SECTION 16 CANADIAN MAINTENANCE REQUIREMENTS

IN CANADA YOU MUST COMPLY WITH CAR PART 5 CHAPTER 571 MAINTENANCE REQUIREMENTS FOR CONTINUED AIRWORTHINESS. WE STRONGLY RECOMMEND THE WS TECHNOLOGIES INC BT100AV OR BT100AVS TESTER BE USED TO VERIFY THE PERFORMANCE CHARACTERISTICS OF THE ELT. WEBSITE: WWW.WST.CA

THE MINIMUM AND MAXIMUM ACCEPTABLE VALUES FOR A TSO C-126 ELT ARE AS FOLLOWS:

406 FREQUENCY: 406.037000 MHz +/- 2 kHz
POWER: 35—39 dBm
POWER RISE TIME: NOT MORE THAN 5 ms
PHASE DEVIATION: 1.1 RADIANS +/- .1 RADIANS
MODULATION RISE TIME: 150 uS +/- 100 uS
MODULATION FALL TIME: 150 uS +/- 100 uS
MODULATION SYMMETRY: NOT TO EXCEED 5%
MODULATION BIT RATE: 396-404 bps

121.5 MHz FREQUENCY: 121.5 MHz +/- 6 kHz
POWER: + 17 dBm MINIMUM
AUDIO FREQUENCY: WITHIN THE RANGE OF 300-1600 Hz
SWEEP RANGE: NOT LESS THAN 700 Hz
SWEEP REPETITION RATE: 2-4 Hz
MODULATION FACTOR: 85-100%
DUTY CYCLE: 33-55%

YOU MAY ACCESS THE ORIGINAL ELT TEST DATA AND MANUFACTURE DATE ON OUR WEBSITE WWW.ACKAVIONICS.COM BY ENTERING THE SERIAL NUMBER FROM THE TSO LABEL IN OUR SERIAL NUMBER TEST DATA LOOK UP PROGRAM.

THE CURRENT DRAW REQUIREMENTS OF THE REGULATIONS MAY BE CONFIRMED BY REMOVING THE BATTERY CASE AND USING JUMPERS TO CONNECT THE BATTERY IN SERIES WITH THE CURRENT METER. CAUTION THE POWER INPUT IS NOT PROTECTED FROM REVERSE POLARITY. IF REVERSE POLARITY IS APPLIED SEVERE DAMAGE WILL OCCUR. THE MAXIMUM AVERAGE CURRENT VALUES ARE AS FOLLOWS:

STANDBY CURRENT IN THE ARMED MODE: 30 uA MAX
OPERATING CURRENT DURING 121.5 MHz OPERATION: 96 Ma MAX (50 Ω LOAD)
CURRENT DURING 406 MHz BURST: 2.5 AMPS MAX (50 Ω LOAD)

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 DONE BY CHEMICAL EXPOSURE TO THE ELT. 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 OUT OF 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.

YOU MAY HAVE ADDITIONAL LEGAL RIGHTS WHICH VARY FROM STATE TO STATE

**ACK TECHNOLOGIES
INC.**

AVIONICS FOR GENERAL AND COMMERCIAL AVIATION
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HOURS OF OPERATION 9:00am—5:00pm PST

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