15-110. EMERGENCY LOCATOR TRANSMITTER THRU P33700292 AND FP3370022.

15-111. DESCRIPTION. The ELT is a self-contained, solid state unit, having its own power supply, with an externally mounted antenna. The C589510-0209 transmitter is designed to transmit simultaneously on dual emergency frequencies of 121.5 and 243.0 Megahertz. The 589510-0211 transmitter thru P3370257 and the C589510-0212 beginning with P3370258 used for Canadian registry, operates on 121.5 only. The unit is mounted in the cabin top, aft of the main spar at various positions, due to installations of other equipment. The transmitters are designed to provide a broadcast tone that is audio modulated in a swept manner over the range of 1600 to 300 Hz in a distinct, easily recognizable distress signal for reception by search and rescue personnel and others monitoring the emergency frequencies. Power is supplied to the transmitter by a battery-pack which has the service life of the batteries placarded on the batteries and also on the outside end of the transmitter. ELT's thru early 1974 models, were equipped with a battery-pack containing six magnesium "D" size dry cell batteries wired in a series. (See figure 15-19) Mid 1974 thru early 1975, ELT's are equipped with a battery pack containing four "in-line" lithium "D" batteries wired in series. Early 1975 and on ELT's are equipped with a battery-pack containing four lithium "D" size batteries which are stacked in two's (Refer to figure 15-20). The ELT exhibits line of sight transmission characteristics which correspond approximately to 100 miles at a search altitude of 10,000 feet. When battery inspection and replacement schedules are adhered to, the transmitter will broadcast an emergency signal at rated power (75 MW-minimum), for a continuous period of time as listed in the following table.

TRANSMITTER LIFE
TO 75 MILLIWATTS OUTPUT

Temperature	6 Cell Magnesium Battery Pack	4 Cell Lithium Battery Pack
+130°F	89 hrs	115 hrs
+ 70°F	95 hrs	115 hrs
- 4°F	49 hrs	95 hrs
- 40°F	23 hrs	70 hrs

Battery-packs have a normal shelf life of five to ten (5-10) years and must be replaced at 1/2 of normal shelf life in accordance with TSO-C91. Cessna specifies 3 years replacement of magnesium (6-cell) battery-packs and 5 years replacement of lithium (4-cell) battery packs.

15-112. OPERATION. A three position switch on the forward end of the unit controls operation. Placing the switch in the ON position will energize the unit to start transmitting emergency signals. In the OFF position, the unit is inoperative. Placing the switch in the ARM position will set the unit to start transmitting emergency signals only after the unit has received a 5g (tolerances are +2g and -0g) impact force, for a duration of 11-16 milliseconds.

CAUTION

Do not leave the emergency locator transmitter in the ON position longer than 5 seconds or you may activate downed aircraft procedures by C. A. P., D. O. T. or F. A. A. personnel.

WARNING

Magnesium (6-cell) battery-packs (excluding 4 cell lithium battery-packs) after prolonged continuous use (1 hour) in a sealed environment give off explosive gas. If your ELT has operated for this time period or longer, as a precautionary measure, loosen the ELT cover screws, lift the cover to break air tight seal and let stand for 15 minutes before tightening screws. Keep sparks, flames and lighted cigarettes away from battery-pack.

NOTE

After relatively short periods of inactivation, the magnesium (6-cell) battery-pack develops a coating over its anode which drastically reduces self discharge and thereby gives the cell an extremely long storage life. This coating will exhibit a high resistance to the flow of electric current when the battery is first switched on. After a short while (less than 15 seconds), the battery current will completely dissolve this coating and enable the battery to operate normally. If this coating is present when your ELT is activated, there may be a few seconds delay before the transmitter reaches full power.

15-113. CHECKOUT INTERVAL:

100 HOURS.

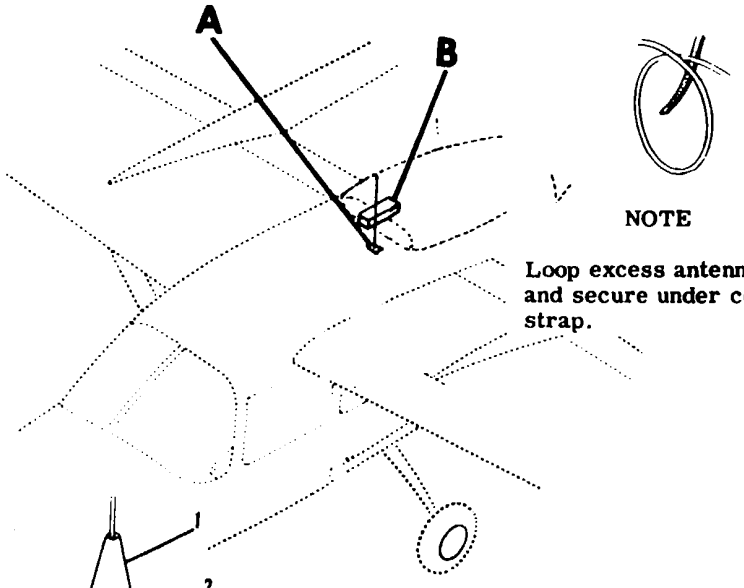
a. Turn aircraft master switch ON.
b. Turn aircraft transceiver ON and set frequency on receiver to 121.5 MHz.
c. Remove the ELT's antenna cable from the ELT unit.
d. Place the ELT's function selector switch in the ON position for 5 seconds or less. Immediately replace the ELT function selector switch in the ARM position after testing ELT.
e. Test should be conducted only within the time period made up of the first five minutes after any hour.

CAUTION

Tests with the antenna connected should be approved and confirmed by the nearest control tower.

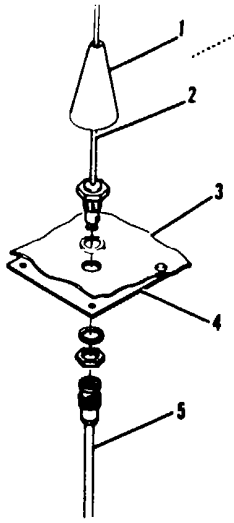
NOTE

Without its antenna connected, the ELT will produce sufficient signal to reach your receiver, yet it will not disturb other communications or damage output circuitry.

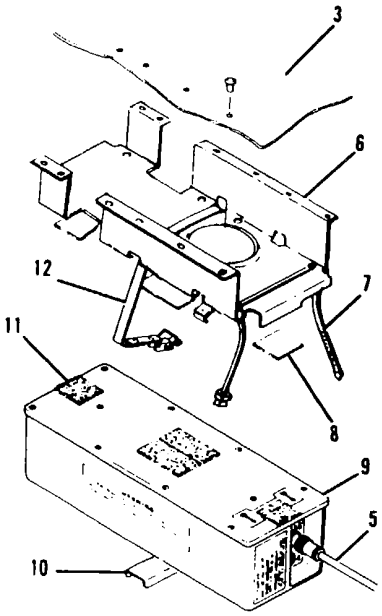


NOTE

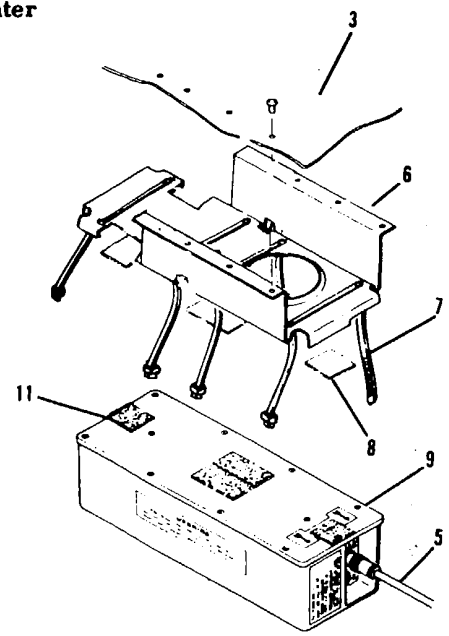
Loop excess antenna cable and secure under center strap.



Detail **A**



✸ Detail **B**



✸ Detail **B**

NOTE

Due to the varied methods of attaching ELT, reinstall as presently installed in your aircraft.

✸ STANDARD LOCATION

✸ WITH HF RADIO

1. Rubber Boot
2. Antenna
3. Cabin Top Skin
4. Doubler
5. Co-axial Cable
6. Bracket
7. Sta-strap
8. Fabric Fastener (Hook)
9. Transmitter
10. Shim
11. Fabric Fastener (Pile)
12. Strap Assembly

NOTE

Reference Cessna Avionics Service Letters, AV74-14 and AV74-16.

Figure 15-18. Emergency Locating Transmitter Installation

NOTE

After accumulated test or operation time equals 1 hour, battery-pack replacement is required.

f. Check calendar date for replacement of battery-pack. This date is supplied on a sticker attached to the outside of the ELT case and to each battery.

15-114. REMOVAL AND INSTALLATION OF TRANSMITTER. (Refer to figure 15-18.)

NOTE

Due to optional equipment installed in the aft cabin area there are two locations for the ELT. Refer to figure 15-18.

a. Remove overhead console and headliner as necessary to gain access to the ELT, refer to Section 3.
b. Disconnect co-axial cable from end of transmitter.
c. Depending upon the particular installation, either cut four sta-straps and remove transmitter or cut sta-strap securing antenna cable and unlatch metal strap to remove transmitter.

NOTE

Transmitter is also attached to the mounting bracket by velcro strips; pull transmitter to free from mounting bracket and velcro.

NOTE

To replace velcro strips, clean surface thoroughly with clean cloth saturated in one of the following solvents: Trichloric thylene, Aliphatic Napthas, Methyl Ethyl Ketone or Enmar 6094 Lacquer Thinner. Cloth should be folded each time the surface is wiped to present a clean area and avoid redepositing of grease. Wipe surface immediately with clean dry cloth, do not allow solvent to dry on surface. Apply Velcro #40 adhesive to each surface in a thin even coat and allow to dry until quite tacky, but no longer transfers to the finger when touched (usually between 5 and 30 minutes). Porous surfaces may require two coats. Place the two surfaces in contact and press firmly together to insure intimate contact. Allow 24 hours for complete cure.

d. To reinstall transmitter, reverse preceding steps.

NOTE

An installation tool is required to properly secure sta-straps on units installed with sta-straps. This tool may be purchased locally or ordered from the Pandiut Corporation, Tinley Park, Ill., part number GS-2B (Conforms to MS90387-1).

CAUTION

Ensure that the direction of flight arrows (placarded on the transmitter) are pointing towards the nose of the aircraft.

15-115. REMOVAL AND INSTALLATION OF ANTENNA. (Refer to figure 15-18.)

a. Disconnect co-axial cable from base of antenna.
b. Remove the nut and lockwasher attaching the antenna base ot the fuselage and the antenna will be free for removal.
c. To reinstall the antenna, reverse the preceding steps.

NOTE

Upon reinstallation of antenna, cement rubber boot (14) using RTV102, General Electric Co. or equivalent, to antenna whip only; do not apply adhesive to fuselage skin or damage to paint may result.

CAUTION

In-service 6 cell magnesium battery-pack powered ELT's require the installation of a static electricity suppressor in the antenna cable to prevent the possibility of damage to the case of the ELT. Refer to Cessna Avionics Service Letter AV74-16 and figure 15-18.

15-116. REMOVAL AND INSTALLATION OF MAGNESIUM SIX (6) CELL BATTERY-PACK. (Refer to figure 15-19.)

NOTE

Since replacement 6 cell magnesium battery-packs are no longer available, when in-service units require replacement, use the 4 cell lithium battery-pack. Refer to paragraph 15-117.

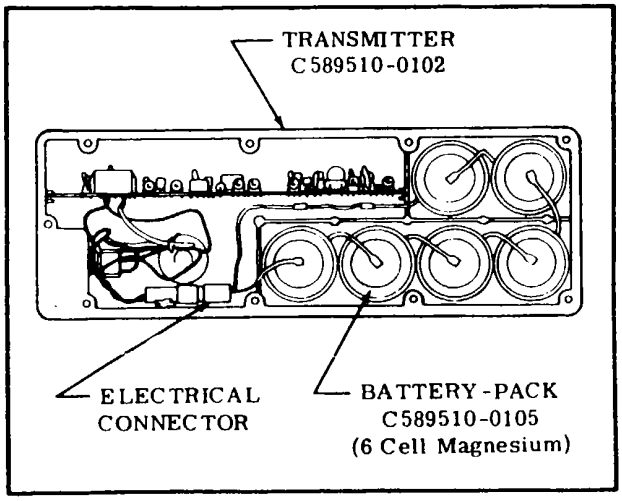


Figure 15-19. Magnesium 6 Cell Battery-Pack Installation

15-117. REMOVAL AND INSTALLATION OF LITHIUM FOUR (4) CELL BATTERY-PACK. (Refer to figure 15-20.)

NOTE

When existing battery fails or exceeds normal expiration date, convert ELT System to new D/M alkaline powered ELT per Avionics Service Letter AV78-31 Dated November 20, 1978.

NOTE

Transmitters equipped with the 4 cell battery-pack can only be replaced with another 4 cell battery-pack.

a. After the transmitter has been removed from aircraft in accordance with para. 15-114, place the transmitter switch in the OFF position.
b. Remove the nine screws attaching the cover to the case and then remove the cover to gain access to the battery-pack.

NOTE

Retain the rubber "O" ring gasket, rubber washers and screws for reinstallation.

c. Disconnect the battery-pack electrical connector and remove battery-pack.
d. Place new battery-pack in the transmitter with four batteries as shown in the case in figure 15-20.
e. Connect the electrical connector as shown in figure 15-20.

NOTE

Before installing the new 4 cell battery-pack, check to ensure that its voltage is 11.2 volts or greater.

CAUTION

If it is desireable to replace adhesive material on the 4 cell battery-pack, use only 3M Jet Melt Adhesive #3738. Do not use other adhesive materials since other materials may corrode the printed circuit board assembly.

f. Replace the transmitter cover by positioning the rubber "O" ring gasket, if installed, on the cover and pressing the cover and case together. Attach cover with nine screws and rubber washers.
g. Remove the old battery-pack placard from the end of transmitter and replace with new battery-pack placard supplied with the new battery-pack.

CAUTION

Be sure to enter the new battery-pack expiration date in the aircraft records. It is also recommended this date be placed in your ELT Owner's Manual for quick reference.

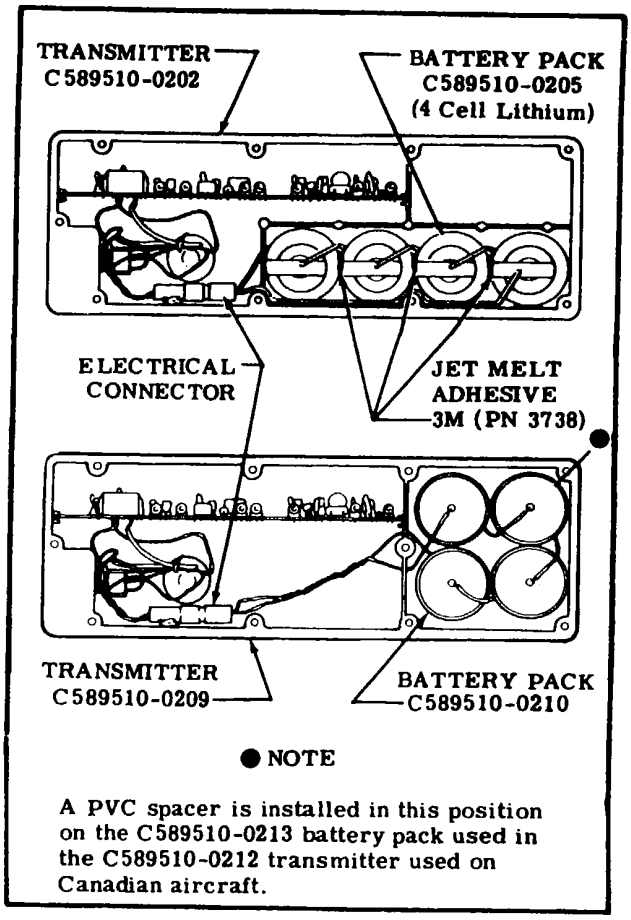


Figure 15-20. Lithium 4 Cell Battery Pack Installations

15-118. TROUBLE SHOOTING. Should your Emergency Locating Transmitter fail the 100 Hours performance checks, it is possible to a limited degree to isolate the fault to a particular area of the equipment. In performing the following trouble shooting procedures to test peak effective radiated power, you will be able to determine if battery replacement is necessary or if your unit should be returned to your dealer for repair.

TROUBLE	PROBABLE CAUSE	REMEDY
*POWER LOW	Low battery voltage.	1. Set toggle switch to off. 2. Remove plastic plug from the remote jack and by means of a Switchcraft #750 jackplug, connect a Simpson 260 model voltmeter and measure voltage. If the battery-pack voltage on the 6-cell magnesium battery pack transmitter is 10.8 volts or less, and on the 4-cell lithium battery pack transmitters is 11.2 volts or less, the battery pack is below specification.
	Faulty transmitter.	3. If the battery-pack voltage meets the specifications in step 2, the battery-pack is O.K. If the battery is O.K., check the transmitter as follows: a. Remove the voltmeter. b. By means of a switchcraft 750 jackplug and 3 inch maximum long leads, connect a Simpson Model 1223 ammeter to the jack. c. Set the toggle switch to ON and observe the ammeter current drain. If the current-drain is in the 85-100 ma range, the transmitter or the co-axial cable is faulty.
	Faulty co-axial antenna cable.	4. Check co-axial antenna cable for high resistance joints. If this is found to be the case, the cable should be replaced.

*This test should be carried out with the co-axial cable provided with your unit.

SHOP NOTES:

15-119. EMERGENCY LOCATOR TRANSMITTER BEGINNING WITH P33700293 AND FP3370023.

15-120. DESCRIPTION. The ELT is a self-contained solid state unit, having its own power supply, with an externally mounted antenna. The C589511-0103 is used thru 1978 and the C589511-0117 beginning with 1979 models. The transmitters are designed to transmit simultaneously on dual emergency frequencies of 121.5 and 243.0 Megahertz. Aircraft with Canadian registry utilize the C589511-0104 thru 1978 and the C589511-0113 beginning with 1979. The unit operates on 121.5 only. The unit is mounted in the overhead aft of the console. Location will vary slightly when oxygen bottles are installed. The transmitters are designed to provide a broadcast tone that is audio modulated in a swept manner over the range of 1600 to 300 Hz in a distinct, easily recognizable distress signal for reception by search and rescue personnel and others monitoring the emergency frequencies. Power is supplied to the transmitter by a battery-pack which has the service life of the batteries placarded on the batteries and also on the outside end of the transmitter. C589511-0104 and C589511-0103 ELT's equipped with a lithium battery-pack must be modified by SK185-20 as outlined in Avionics Service Letter AV78-31, dated 20 November 1978, to incorporate the new alkaline batteries which are installed beginning with 1979 models (see figure 15-24). The ELT exhibits line of sight transmission characteristics which correspond approximately to 100 miles at a search altitude of 10,000 feet. When battery inspection and replacement schedules are adhered to the ELT supplied domestic aircraft thru 1978 models transmit on both distress frequencies simultaneously at 75 mw rated power output for 48 continuous hours in the temperature range of -40°F to +131°F (-40°C to +55°C). The ELT unit in export aircraft transmits on 121.5 MHz at 25 mw rated power output for 100 continuous hours in the temperature range of -40°F to +131°F (-40°C to +55°C). Battery packs have a normal shelf life of five to ten (5-10) years and must be replaced at 1/2 of normal shelf life in accordance with TSO-C91. Cessna specified 5 years replacement of lithium (4-cell) battery-packs, C589511-0105. Beginning with 1979 models the ELT supplied domestic aircraft transmits on both distress frequencies simultaneously at 75 mw rated power output for continuous hours in the temperature range of -4°F to +131°F (-20°C to +55°C). The ELT unit in export aircraft transmits on 121.5 MHz at 25 mw rated power output for 100 continuous hours in the temperature range of -4°F to +131°F (-20°C to +55°C). Alkaline battery-packs have the service life of the battery-pack stamped on the battery-pack, on the end of the transmitter below the switch and on top of the transmitter.

15-121. OPERATION. A three position switch on the forward end of the unit controls operation. Placing the switch in the ON position will energize the unit to start transmitting emergency signals. In the OFF position, the unit is inoperative. Placing the switch in the ARM position will set the unit to start transmitting emergency signals only after the unit has received a 5g (tolerances are +2g and -0g) impact force, for a duration of 11 - 16 milliseconds.

CAUTION

Do not leave the emergency locator transmitter in the ON position longer than 5 seconds or you may activate downed aircraft procedures by C.A.P., D.O.T. or F.A.A. personnel.

15-122. CHECKOUT INTERVAL:

100 HOURS

a. Turn aircraft master switch ON.

b. Turn aircraft transceiver ON and set frequency on receiver to 121.5 MHz.

c. Remove the ELT's antenna cable from the ELT unit.

d. Place the ELT's function selector switch in the ON position for 5 seconds or less. Immediately replace the ELT function selector switch in the ARM position after testing ELT.

e. Test should be conducted only within the time period made up of the first five minutes after any hour.

CAUTION

Tests with the antenna connected should be approved and confirmed by the nearest control tower.

NOTE

Without its antenna connected, the ELT will produce sufficient signal to reach your receiver, yet it will not distrub other communications or damage output circuitry.

NOTE

After accumlated test or operation time equals 1 hour, battery-pack replacement is required.

f. Check calendar date for replacement of battery-pack. This date is supplied on a sticker attached to the outside of the ELT case and to each battery.

15-123. REMOVAL AND INSTALLATION OF TRANSMITTER. (Refer to figure 15-21).

a. Remove overhead console and headliner to gain access to the transmitter and antenna.

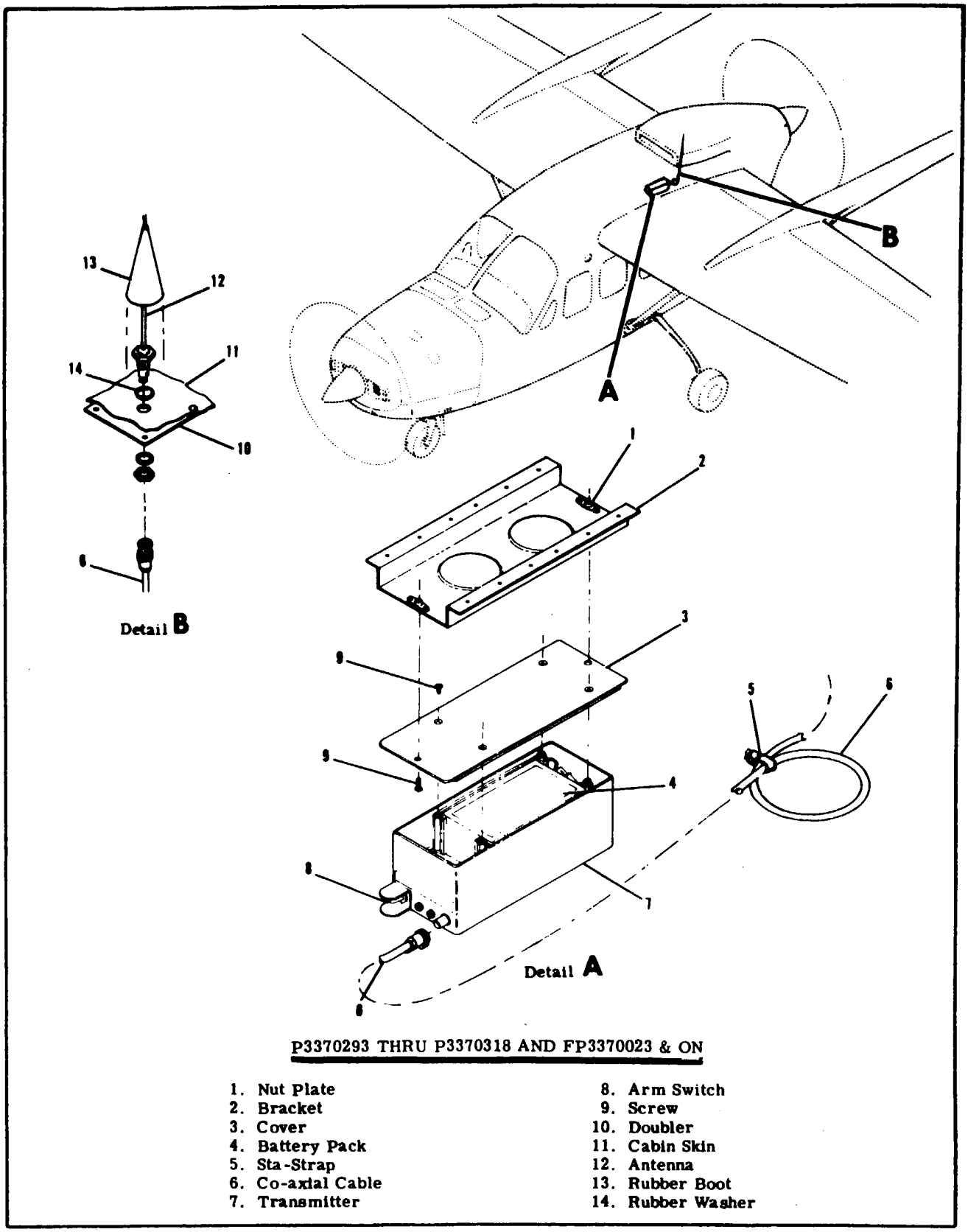
b. Disconnect co-axial cable from end of transmitter.

c. Remove the tow #10 screws from the baseplate of the ELT and remove ELT.

d. To reinstall transmitter, reverse preceding steps.

CAUTION

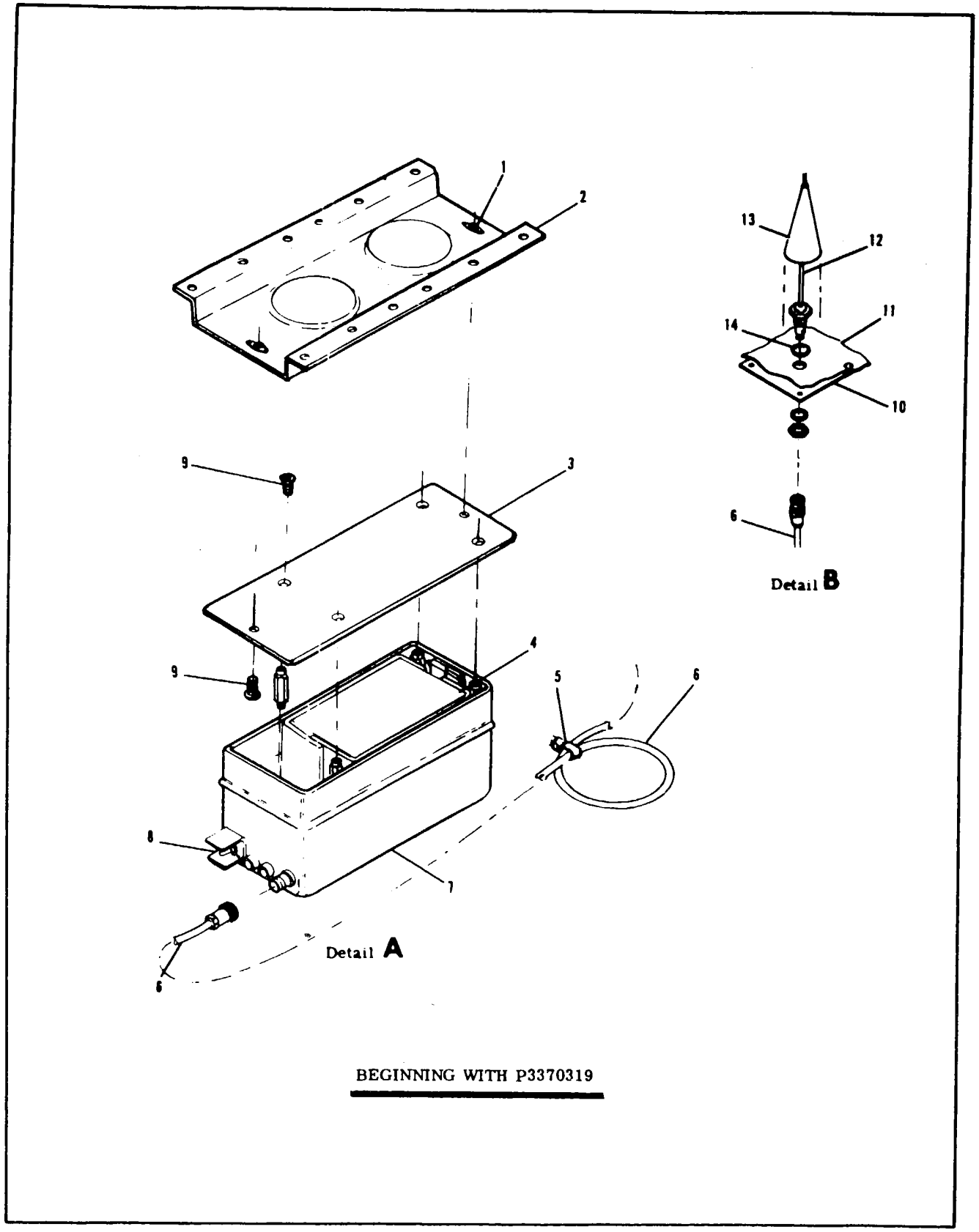
Ensure that the direction of flight arrows (placard on the transmitter) are pointing towards the nose of the aircraft.



P3370293 THRU P3370318 AND FP3370023 & ON

1. Nut Plate
2. Bracket
3. Cover
4. Battery Pack
5. Sta-Strap
6. Co-axial Cable
7. Transmitter
8. Arm Switch
9. Screw
10. Doubler
11. Cabin Skin
12. Antenna
13. Rubber Boot
14. Rubber Washer

Figure 15-21. Emergency Locator transmitter Installation (Sheet 1 of 2)



BEGINNING WITH P3370319

Figure 15-21. Emergency Locator Transmitter Installation (Sheet 2 of 2)

15-124. REMOVAL AND INSTALLATION OF ANTENNA. (Refer to figure 15-21)

a. Disconnect co-axial cable from base of antenna.

b. Remove the nut and lockwasher attaching the antenna base to the fuselage and the antenna will be free for removal.

c. To reinstall the antenna, reverse the preceding steps.

NOTE

Upon reinstallation of antenna, cement rubber boot (14) using RTV102, General Electric Co. or equivalent, to antenna whip only; do not apply adhesive to fuselage skin or damage to paint may result.

15-125. REMOVAL AND INSTALLATION OF BATTERY PACK. (Refer to figure 15-22).

NOTE

Transmitters equipped with the C589511-0105 or C589511-0106 battery-packs can only be replaced with a C589511-0114 after modification by SK185-20 has been completed.

NOTE

Lithium battery-packs must be replaced with alkaline battery-packs per SK185-20.

a. After the transmitter has been removed from aircraft in accordance with para. 15-123, place the transmitter switch in the OFF position.

b. Remove the four screws attaching the cover to the case and then remove the cover to gain access to the battery-pack.

c. Disconnect the battery-pack electrical connector and remove battery-pack.

d. Place new battery-pack in the transmitter with four batteries as shown in the case in figure 15-22.

e. Connect the electrical connector as shown in figure 15-22.

NOTE

Before installing the C589511-0105 pack, check to ensure that its voltage is 7.5 volts or greater.

f. Replace the transmitter baseplate on the unit and pressing the baseplate and unit together attach baseplate with four nylok patch screws.

g. Stamp the new replacement date on the outside of the ELT. The date should be noted on the switching nameplate on the side of the unit as well as on the instruction nameplate on top of the unit.

WARNING

The battery-pack has pressurized contents. Do not recharge, short circuit, compact or dispose of in fire.

CAUTION

Be sure to enter the new battery-pack expiration date in the aircraft records, It is also recommended this date be placed in your ELT Owner's Manual for quick reference.

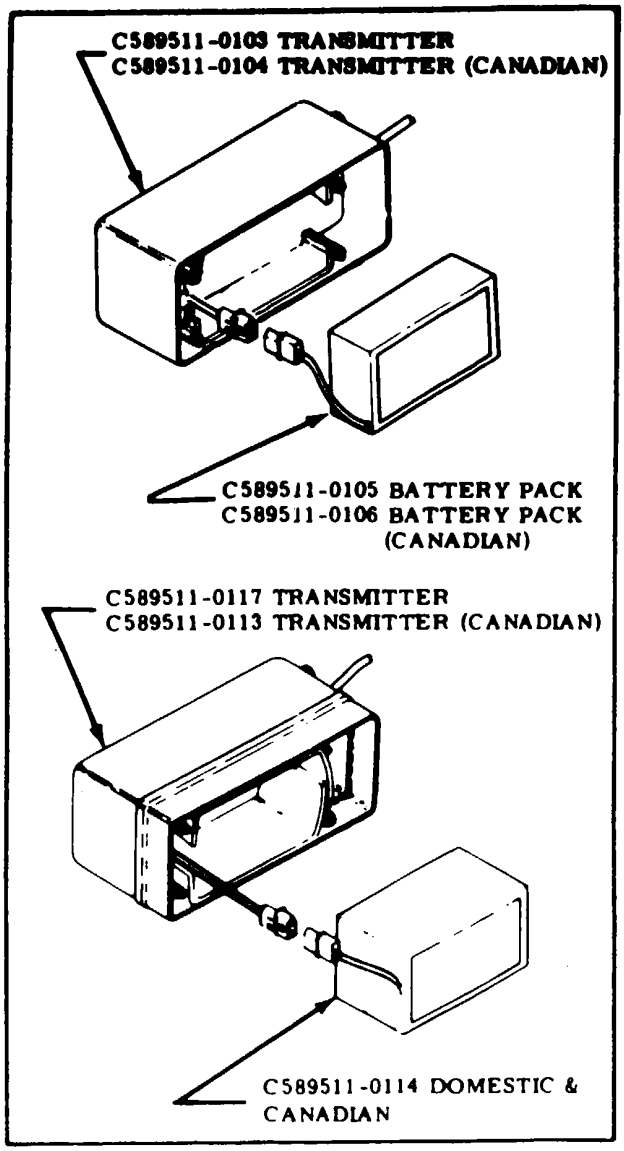


Figure 15-22. BATTERY PACK INSTALLATION.

15-126. TROUBLE SHOOTING. Should your Emergency Locator Transmitter fail the 100 Hours performance checks, it is possible to a limited degree to isolate the fault to a particular area of the equipment. In performing the following trouble shooting procedures to test peak effective radiated power, you will be able to determine if battery replacement is necessary or if your unit should be returned to your dealer for repair.