

The Airframe

5. New aircraft while engaged in flight operations incident to their manufacture, preparation, and delivery.
6. Aircraft while engaged in flight operations incident to the aerial application of chemicals and other substances for agricultural purposes.
7. Aircraft certificated by the Administrator for research and development purposes.
8. Aircraft while used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys.
9. Aircraft equipped to carry not more than one person.
10. An aircraft during any period for which the transmitter has been temporarily removed for inspection, repair, modification, or replacement, subject to the following: (i) No person may operate the aircraft unless the aircraft records contain an entry which includes the date of initial removal, the make, model, serial number and reason for removing the transmitter, and a placard is located in view of the pilot to show "ELT not installed." (ii) No person may operate the aircraft more than 90 days after the ELT is initially removed from the aircraft.

The subject of required ELTs was very controversial at the time. Over 90% of the distress signals are erroneous. Eighty percent of them originate at airports and once they are finally found, the searchers typically can't contact the aircraft's owner; sometimes they can't even get into the hangar. One ELT was found, after an extensive search, in the pilot's flight bag, located in his hotel room.

Most ELTs are self-contained, portable, handheld devices that mount in the aircraft. Weight ranges from 1 to 5 pounds with the battery pack installed. Some have remote antennas mounted on the fuselage, some have antennas on the unit itself, and some have both types. When the aircraft is subjected to a G load in excess of the permissible range, such as in a crash, the ELT is activated by a "G" switch, which is essentially a vibration sensor.

There are two principle types of activation methods: rolamite switch and sliding mass. The rolamite switch is a "rolling mass" type of switch. Under the influence of high Gs, the switch mechanically closes the activation switch and the ELT begins to broadcast its warble alert. The sliding mass system is a spring-loaded, instantaneous-type switch. The switch closes the electrical contacts, which then hold themselves closed once contact has been made. In either case, once the ELT is activated it transmits a distinct, "wow-wow" modulated tone signal on 121.5 and in most cases also 243.0 MHz. The catch is someone has to be listening.

Installation Considerations

With hundreds of thousands of ELT units installed in the United States alone, manufacturers have learned a few things about installation. A study of accidents reveals some interesting details about survivability. The tail section remains relatively intact approximately 84% of the time, the nose only 1%, and the cockpit only 2%! Of course, the ELT has a much higher survival rate in any of those areas, but that certainly gives you an idea about the best place to mount it.