



Proposed Technical Standard Order

Subject: Aviation Visual Distress Signals

1. **PURPOSE.** This Technical Standard Order (TSO) is for manufacturers and designers of aviation visual distress signals, who are applying for a TSO authorization or letter of design approval. In it, we (the Federal Aviation Administration, or FAA) tell you what minimum performance standards (MPS) your aviation visual distress signal must first meet for approval and identification with the applicable TSO marking.
2. **APPLICABILITY.** This TSO affects new applications submitted after this TSO's effective date.
3. **REQUIREMENTS.** New models of aviation visual distress signals, identified and manufactured on or after the effective date of this TSO, must meet the MPS in Society of Automotive Engineers, Inc. (SAE) Aerospace Standard (AS) 5134, "Aviation Distress Signal," dated June 2001.
 - a. **Functionality.** Under Title 14 of the Code of Federal Regulations (14 CFR) § 121.339(a)(3), this TSO's standards apply to a handheld, high-intensity, stroboscopic light source that can be added to aviation survival kits to supplement pyrotechnic devices. These light sources must:
 - (1) Eliminate significant potential equipment and personnel hazards posed by untrained personnel using pyrotechnics in inflatable life rafts, and
 - (2) Provide an equivalent level of safety to pyrotechnics that aid in locating and rescuing aviation accident survivors.
 - b. **Functional Qualification.** Demonstrate the required performance under the test conditions in SAE AS 5134, "Aviation Distress Signal," dated June 2001.
 - c. **Environmental Qualification.** Test the equipment per RTCA Document No. RTCA/DO-160D, "Environmental Conditions and Test Procedures for Airborne Equipment," Change 4, dated July 29, 1997, or most current version.

d. Deviations. We have provisions for using alternative or equivalent means of compliance to the criteria in the MPS of this TSO. If you invoke these provisions, you must show that your equipment maintains an equivalent level of safety. Apply for a deviation per 14 CFR § 21.609.

4. MARKING.

a. Mark at least one major component permanently and legibly with all the information in 14 CFR § 21.607(d), except for:

(1) Section 21.607(d)(2). Use the name, type, and part number instead of the optional model number, and

(2) Section 21.607(d)(3). Use the date of manufacture instead of the optional serial number.

b. In addition, mark the following permanently and legibly with at least the manufacturer's name, subassembly part number, and the TSO number:

(1) Each component that is easily removable (without hand tools),

(2) Each interchangeable element, and

(3) Each separate sub-assembly of the article that you determined may be interchangeable.

5. APPLICATION DATA REQUIREMENTS. Under 14 CFR § 21.605(a)(2), you, as the manufacturer/applicant, must give the FAA's Aircraft Certification Office (ACO) manager responsible for your facilities, one copy each of the following technical data to support our design and production approval:

a. Operating instructions and equipment limitations, sufficient to describe the equipment's operational capability.

b. Installation procedures and limitations, sufficient to ensure that the aviation visual distress signal, when installed according to the installation procedures, still meets this TSO's requirements. The limitations must identify any unique aspects of the installation. Finally, the limitations also must include a note with the following statement:

The conditions and tests for TSO approval of this article are minimum performance standards. Those installing this article, on or within 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 can be installed only under 14 CFR part 43 or the applicable airworthiness requirements.

c. Schematic drawings, as applicable to the installation procedures.

- d. Wiring diagrams, as applicable to the installation procedures.
- e. List of the components, by part number, that make up the aviation distress signal complying with the standards prescribed in this TSO. You should include vendor part number cross-references, when applicable.
- f. A Component Maintenance Manual (CMM) covering the periodic maintenance, calibration, and repair, for the continued airworthiness of installed aviation distress signals. Instructions include recommended inspection intervals and service life.
- g. Material and process specifications list.
- h. The quality control system description required by 14 CFR §§ 21.605(a)(3) and 21.143(a), including functional test specifications. These test each production article to ensure compliance with this TSO.
- i. Manufacturer's TSO qualification test report.
- j. Nameplate drawing providing the information required by paragraph 4 of this TSO.
- k. A list of all drawings and processes, including revision level, to define the article's design. For a minor change, you only need to make revisions to the list available on request.
- l. An environmental qualifications form as described in RTCA/DO-160D for each component of the system.

6. MANUFACTURER DATA REQUIREMENTS. Besides the data to be furnished directly to the FAA, each manufacturer must have the following technical data available for review by the responsible ACO:

- a. The functional qualification specifications for qualifying each production article to ensure compliance with this TSO.
- b. Corrective maintenance procedures within 12 months after TSO authorization.
- c. Schematic drawings.
- d. Wiring diagrams.
- e. Material and process specifications.
- f. The results of the environmental qualification tests conducted per RTCA/DO-160D, or most current version.

7. FURNISHED DATA. With each article manufactured under this TSO, provide one copy of the technical data and information in paragraphs 5a(1) and 5a(2) of this TSO. Add any other data or information necessary for the proper installation, certification, and use, or for continued airworthiness, or both, of the aviation visual distress signal.

8. AVAILABILITY OF REFERENCED DOCUMENTS.

a. You can buy copies of RTCA Document Nos. DO-160D from RTCA, Inc., 1140 Connecticut Avenue, N.W., Suite 1020, Washington, D.C. 20036. Telephone (202) 833-9339, fax (202) 833-9434. You can also get copies through the RTCA Internet website @ www.rtca.org.

b. You can buy copies of SAE AS 5134 from the Society of Automotive Engineers, Inc., Department 331, 400 Commonwealth Drive, Warrendale, PA 15096-0001. Telephone (724) 776-4970, fax (724) 776-0790. You also can get copies through the SAE Internet website @ www.sae.org.

c. You can buy copies of 14 CFR part 21, Subpart O, from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402-9325. Telephone (202) 512-1800, fax (202) 512-2250. You also can get copies from the Government Printing Office (GPO), electronic CFR Internet website @ www.access.gpo.gov/ecfr/.

d. You can get Advisory Circular (AC) 20-110, "Index of Aviation Technical Standard Orders," and AC 20-36, "Index of Articles Certified under the Technical Standard Order System," from the U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785. Telephone (301) 322-4477, fax (301) 386-5394. You also can get copies from the FAA's Regulatory and Guidance Library (RGL) @ www.airweb.faa.gov/rgl. On the RGL website, select "Advisory Circulars."

David W. Hempe
Manager, Aircraft Engineering Division
Aircraft Certification Service