



AEROSPACE STANDARD

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Superseding AS8700

Installation and Test of Electronic Equipment in Aircraft
General Specification for

FSC MISC

RATIONALE

The Technical Committee which originated this document no longer exists. Most references in the document are inactive or cancelled and may no longer be applicable for new design.

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This document has been taken directly from U.S. Military Specification MIL-I-8700A, Amendment 1 and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-I-8700A, Amendment 1. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this SAE technical document.

1. SCOPE:

- 1.1 This specification covers the general requirements for the installation and test of electronic equipment in piloted aircraft.

2. APPLICABLE DOCUMENTS:

- 2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Military

MIL-C-172	Cases: Bases, Mounting; and Mounts, Vibration (For Use With Electronic Equipment in Aircraft)
MIL-B-5087	Bonding, Electrical and Lightning Protection, for Aerospace Systems
MIL-W-5088	Wiring, Aircraft, Installation of
MIL-E-5400	Electronic Equipment, Airborne, General Specification For
MIL-E-6051	Electromagnetic Compatibility Requirements, Systems
MIL-C-6781	Control Panel: Aircraft Equipment, Rack or Console Mounted
MIL-E-7080	Electrical Equipment, Aircraft, Selection and Installation of
MIL-F-7179	Finishes and Coatings, General Specification For Protection of Aircraft and Aircraft Parts
MIL-N-7513	Nomenclature Assignment, Contractors Method for Obtaining
MIL-R-7705	Radomes, General Specification For
MIL-C-7762	Compasses, Installation of
MIL-P-7788	Plate, Plastic, Lighting
MIL-A-9094	Arrester, Lightning, General Specification for Design of
MIL-S-9129	Static Discharger AN/ASA-3B
MIL-F-15733	Filters, Radio Interference
MIL-F-25173	Fastener, Control Panel, Aircraft Equipment
MIL-M-81288	Mounting Bases, Flexible Plastic Foam

STANDARDS

Military

MIL-STD-100	Engineering Drawing Practices
MIL-STD-130	Identification Marking of U. S. Military Equipment
MIL-STD-454	Standard General Requirements For Electronic Equipment
MIL-STD-877	Antenna Subsystems, Airborne, Criteria for Design and Location of
MIL-STD-882	System Safety Program For Systems and Associated Subsystems and Equipment; Requirements For
MIL-STD-889	Dissimilar Metals
MIL-STD-970	Standards and Specifications, Order of Preference for the Selection of

2.1 (Continued):

MS21047	Nut, Self-Locking, Plate, Two Lug, Low Height, Steel, 125 KSI FTU, 450 DEG, and 800 DEG. F
MS 21048	Nut Self-Locking, Plate, Two Lug, Low Height, CRES, 125 KSI FTU, 450 DEG
MS 24435	Connector Receptacle, Power Outlet, Electronic Test Equipment

PUBLICATIONS

Military Handbooks

MIL-HDBK-216	RF Transmission Lines and Fittings
MIL-HDBK-660	Fabrication of Rigid Waveguide Assemblies (Sweep Bends and Twists)

(Copies of specifications, standard, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS:

3.1 Applicability of requirements:

The electronic equipment installations shall be in accordance with this specification, approved applicable detail equipment installation specifications and drawings, approved equipment handbooks, and other alternate or additional information available to the airframe contractor and approved by the procuring activity.

- 3.1.1 In case of conflict between the requirements of this specification and the requirements of any detail installation or test specification for electronic equipment, the requirements of the detail specification shall govern.

3.2 Materials and equipment:

Materials and equipment used in the installation of electronic equipment in aircraft shall be of high quality, suitable for the purpose, and shall conform to specifications as are applicable under the contract.

- 3.2.1 Selection: Materials and equipment shall be in accordance with MIL-E-5400 and other specifications selected in accordance with MIL-STD-970, except as otherwise specified herein.

- 3.2.1.1 Standard parts: Standard parts (MS, AN, or JAN) shall be used in the installation of equipment wherever they are suitable for the purpose, and shall be identified on the drawing by their part numbers.
- 3.2.1.2 Nonstandard parts: Commercial utility parts such as screws, bolts, nuts, cotter pins, etc. may be used, provided they possess suitable properties and are replaceable by standard parts (MS, AN, or JAN) without alteration, and provided the corresponding standard part numbers are referenced in the parts list and, if practicable, on the contractor's drawings. In the event there is not suitable corresponding part in effect on date of invitation for bids, commercial parts may be used provided they conform to all requirements of this specification. Nonstandard parts shall be submitted for approval as stipulated in requirement 22 of MIL-STD-454.
- 3.2.2 Metals: Metals involved in the installation of electronic equipment and associated wiring shall be of a corrosion-resistant type or shall be suitably protected to resist corrosion and electrolytic action during normal service life. The specific requirements of MIL-B-5087 shall apply to all metals that are part of the bonding path. Finish and coating requirements in accordance with MIL-F-7179 shall not take precedence over MIL-B-5087 unless approved by the procuring activity.
- 3.2.2.1 Dissimilar metals: When aircraft structures are involved in aircraft installations and dissimilar metals are used, MIL-STD-889 shall apply. MIL-STD-454, requirement 16, shall apply for installations of electrical and electronic equipment.
- 3.2.3 Nonmetals: Nonmetals used, including plastics, fabrics, and protective finishes, shall, insofar as practicable, be moisture and flame resistant, shall not support fungus growth, or shall be so treated as not to support fungus growth and shall not be adversely affected by aircraft fluids. The specific requirements of MIL-B-5087 shall apply. Nonmetals installed on the exterior of the aircraft shall be coated with a conductive coating of resistance not less than 10 megohms per square unit or more than 50 megohms per square unit.
- 3.2.4 Sealing materials: Sealing materials (potting compounds) chosen to seal wire junctions and entrances to connectors, electronic-and-communication-type relays, terminals, and splices shall be in accordance with MIL-STD-454, requirement 47.
- 3.2.5 Contractor-furnished equipment (CFE):
 - 3.2.5.1 Contractor specifications: Material and equipment conforming to contractor's specification may be used, provided there are no applicable Government specifications and the contractor's specification are approved by the procuring activity. If contractor's specifications are used, the contractor shall, when required by the procuring activity, provide samples for test. Contractor's specification shall use an asterisk (*) or similar symbol to denote changes, deviations or modifications. The use of contractor's specifications shall not constitute waiver of Government inspection.

- 3.2.5.2 Contractor modifications: The contractor shall not alter, rework, or modify contractor-furnished equipment built to, and meeting, Government specifications, unless authorized or directed by the procuring activity. When such modifications are authorized, the contractor shall identify the equipment by new nomenclature or part number as approved by the procuring activity.
- 3.2.5.3 Console control panels: All contractor-furnished control panels shall be designed for mounting in a console arrangement, shall meet the requirements of MIL-C-6781, shall have a plastic lighting plate meeting the requirements of MIL-P-7788, shall be equipped with fasteners meeting the requirements of MIL-F-25173, and shall be electrically bonded in accordance with MIL-B-5087. Human engineering design criteria shall be in accordance with requirement 62 of MIL-STD-454.
 - 3.2.5.3.1 All control panels installed for use by the pilot and, if applicable, the co-pilot shall be grouped together in a console arrangement located for convenient access, with preference given to ease of operation by the pilot. All control panels installed for other crew members shall be grouped in a console arrangement at the crew members position and located for convenient operation.
- 3.2.6 Government-furnished aircraft equipment (GFAE): Materials and equipment furnished by the Government shall be installed without modification, unless otherwise authorized or directed by the procuring activity. Modifications to GFAE shall be subject to inspection and approval by the procuring activity and shall be suitably identified by an additional nameplate, or other means, to indicate the rework.
- 3.3 Installation design requirements:
 - 3.3.1 Equipment components and parts:
 - 3.3.1.1 Cases and mounting bases: Materials, bonding, shielding, and performance requirements of MIL-C-172 shall apply to all cases. Mounting bases shall conform to MIL-C-172 or MIL-M-81288, as applicable, except that performance shall be met for the frequencies and amplitude shown in the specific curve of figure 3 of MIL-E-5400 for the applicable equipment. Mounts and vibration isolators, whether integral or not, shall be subject to the approval of the procuring activity. Self-locking fasteners shall be used. Foam mounts may be used only if specified in the equipment specification.
 - 3.3.1.2 Switches:
 - 3.3.1.2.1 Toggle, push-button, rotary, lever-lock switches: Toggle, push-button, rotary, and lever-lock switches shall be selected and applied in accordance with requirement 58 of MIL-STD-454. All toggle switches shall be accessible in flight, except those used for ground operation only.
 - 3.3.1.2.2 R-f coaxial switches: R-f coaxial switches shall be in accordance with requirement 58 of MIL-STD-454 as applicable. MIL-HDBK-216 may be used for guidance. R-f coaxial switches to be installed in nonenvironmentally shielded applications shall be moisture resistant.