SAE The Engineering Resource For Advancing Mobility
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AEROSPACE STANDARD

AS 1426
Appendix II

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Revised

STANDARD GALLEY SYSTEM SPECIFICATION
APPENDIX II
20.0 DATA REQUIREMENTS AND PROCEDURES

20.1 Scope: This appendix covers requirements for system and end item documentation and procedures used for the standard galley system.

20.2 Configuration Management:

20.2.1 General: Standard galley practices for system configuration management shall be as contained in MIL-STD-483, Configuration Management Practices.

This specification covers only in-flight galley standard end items and systems. The following paragraphs can be used as a guide for describing similar standard and custom ground equipment specifications to complement and support the flight galleys.

20.2.2 End Item Identification: The buyer's contract with the galley supplier and the airframe manufacturer's contract with the airplane buyer shall each contain a complete list of contract end items. This shall list the exact title of each galley contract end item (CEI) and the applicable specification numbers and specification issue dates.

20.2.3 Specification Outline and Content:

20.2.3.1 Standard Specification Outline: All SAE Standard Specifications shall conform to the following general outline and content:

1. SCOPE:

General Scope, intended use, brief introductory notes.

2. APPLICABLE DOCUMENTS:

Contains only documents referenced elsewhere in the text, listed by title, number and issue date.

20.2.3.1 (Continued):

3. REQUIREMENTS:

Contains only hardware performance and design requirements organized into major technical categories.

4. QUALITY ASSURANCE PROVISIONS:

Contains only hardware test and inspection requirements and methods. Paragraph breakdown corresponds to major categories in 3.

5. PREPARATION FOR DELIVERY:

Contains only requirements for the preparation of equipment for delivery.

6. NOTES:

Contains only supplementary material of an informative nature not appropriate to the requirements of other sections.

Appendix I, 10.0 FIGURES

Contains all full page figures referenced in other parts of the specification, identified by the paragraph number (to third decimal level) where first referenced, and a dash number.

Appendix II, 20.0 DATA REQUIREMENTS AND PROCEDURES

Contains requirements for documentation and procedures required for management of hardware developed or manufactured to conform to the specification.

20.2.3.2 Standard Galley System Specification: The complete system of standard galley specifications is classified into end items as listed in 3.1.1.1 of this specification, AS 1426. Preparation of system specifications shall follow style, content, and format as described in MIL-STD-490 Appendix I for Type A specifications. AS 1426 contains the outline requirements of all standard end items. It also defines environments, configuration interface relationships, and other general requirements that integrate the standard galley end items as a complete unified standard hardware system, and lists the complete index with numbers and latest issue dates for standard specifications.

20.2.3.3 Standard End Item Specifications: A Standard End Item specification is a specification which contains a complete detailed definition of a separately deliverable standard hardware equipment item, or a related group of standard items. Preparation of standard end item specifications shall follow style, content and format as described in MIL-STD-490 Appendix II for Type Bl specifications. The end item is defined only in terms of its own configuration interfaces, and its own inputs and outputs, without reference to any external system or airplane installation of which it is a part or might be used. A standard end item which has features limiting its use to one or several type(s) or model(s) of airplane installation(s) shall be identified by a unique type or series designation without reference to the particular airplane model(s) on which it may be used.

The following features of the end item shall be included in the specification:

a. Interfaces with the airplane and other end item equipment, such as: structural attachments; air, electrical, and water connections; and envelope tolerances for clearance to adjacent equipment and airplane.

b. Performance.

c. Environments, reliability, maintainability, service, life, and similar general requirements.

d. Quality assurance provisions including inspections, tests, analyses, and similarity methods.

e. All drawings, specifications, and documents that are referenced shall be listed in Section 2, Applicable Documents, including their applicable document number, revision, and issue date.

f. Specifications may refer to government specifications, interface drawings, and other industry specifications for components that it uses or interfaces with. Where drawings are needed to define standard dimensions and interface features of equipment, they are referred to in the related end item specification.

20.2.3.4 Custom Specifications: A galley custom specification defining selected options, and any exceptions or variations from the standard specifications shall be issued or authorized by the galley buyer. The custom specification shall be changed by controlled procedures through the originating engineering activity.

20.3 Data Requirements:

20.3.1 Data Tabulation: The paragraphs below contain listings of all documentation described in 20.3.2. This includes specifications, drawings, approval data items, analyses, test reports, government regulatory certifications, and similar documentation prepared by airframe and galley manufacturers to assure a complete and adequately tested standard galley system as defined by this system specification. These are required for the first shipset of qualification test articles comprising a complete standard galley system configuration. Any change in quantity or design of end items affecting the system qualification requires requalification of the affected parts of the system.

Data listed below shall be furnished by the originator to the galley manufacturer or the airframe manufacturer, as applicable, with copies to the buyer as specified in the buyer's contract.

20.3.1.1 Airframe Data:

Reference Paragraph	Drawings or Data Required
20.3.2.1	Interface Control Drawings and Specifications

20.3.1.2 Galley Manufacturer/BFE Buyer Data:

Reference Paragraph	Drawings or Data Required
20.3.2.2.2	System Design and Equipment List Data
20.3.2.2.3	General Arrangement and Interface Loads
20.3.2.2.4	Assembly Instructions and Drawings
20.3.2.2.5	Wiring Diagrams
20.3.2.2.6	Wiring Installation Drawings
20.3.2.2.6a	Electrical Components List
20.3.2.2.7	Water, Drain, and Vent System Installation Drawings
20.3.2.2.8.1	Structural Test Plan
20.3.2.2.8.2	Structural Test Report
20.3.2.2.8.3	Stress Analysis Report
20.3.2.2.9.1	E.M.I. Test Plan
20.3.2.2.9.2	E.M.I. Test Report
20.3.2.2.10.1	Noise Test Plan
20.3.2.2.10.2	Noise Test Report
20.3.2.2.11.1	Flammability Test Plan
20.3.2.2.11.2	Flammability Test Report
20.3.2.2.11.3	Fire Containment Test Plan
20.3.2.2.11.4	Fire Containment Test Report
20.3.2.2.12	Sanitary Construction Data
20.3.2.2.13	Acceptance Data

20.3.1.2 (Continued):

20.3.2.2.14 Compliance Data
20.3.2.2.15 Weight Control Data
20.3.2.2.16 Refrigeration System Data

20.3.2 Data Description:

20.3.2.1 Airframe Interface Control Drawings and Specifications: Interface control drawings and specifications shall show the detailed physical relationship of critical interfaces between the airplane provisions and the galleys. Each critical dimension and tolerance locating structural attach points, service connections, interfacing non-structural surfaces, interfacing materials and finishes, and other critical interface call-outs shall be identified.

20.3.2.2 Galley Manufacturer Data:

20.3.2.2.1 General: Data for galley system qualification as listed in 20.3.1.2 shall be furnished by the galley manufacturer to the buyer on the dates listed in buyer contract schedules. Contents and format of this documentation shall be as described in sub-paragraphs below. Quality of documentation shall be suitable for microfilming. Specification practices shall be consistent with 20.2.3 of this specification.

Where existing test reports or engineering data from previous standard end item testing, analysis, or use experience are available which support demonstration of compliance with the requirements of this specification, they may be submitted to the buyer for consideration instead of the data listed above, provided an analysis justifying similarity and data showing previous compliance to supporting certification is included.

When change is made to a system or end item which was qualified using any previously approved documentation, it shall be revised to reflect the new configuration and retesting results, if different, and shall be resubmitted to the buyer for approval.

20.3.2.2.2 System Design and Equipment List Data: During initial galley development negotiations, the buyer shall provide information on the overall food service system concept and the standard end item equipment list data.

The end item list shall identify by part number and quantities all production and test items, including galley shells, fixed equipment items, carts, modules, removable inserts and other groups of items which will be delivered to the buyer for installation and delivery with each airplane in the buyer order block.

20.3.2.2.3 Galley System Arrangement and Interface Loads:

20.3.2.2.3.1 General Arrangement Information: The galley system general arrangement information may be limited in detail but shall specify at least the information listed below. All locations relative to the airplane shall be designated by airplane WL, BL and Station. Use of standard provisions or special requirements shall be confirmed.

a. Overall dimensions and location of each standard galley unit, bar and buffet.

b. Floor interface dimensions and locations of each galley unit.

c. Each galley complex total weight.

d. Each galley unit and each end item individual weights.

e. Each attachment fitting location and directions of restraint.

f. Electrical requirements.

g. Water.

h. Ventilation.

i. Drain locations.

j. Location of refrigeration system air condenser intake, exhaust, and the heat load to be dissipated.

k. Chilled air refrigeration duct locations and airplane interface duct.

20.3.2.2.3.2 Interface Load Analysis: Interface load analysis shall be submitted to the buyer for each end item interfacing with the airplane. The load analysis shall show the magnitude of loads entering galley complex/airplane interface attachment locations for the ultimate inertia conditions.

20.3.2.2.4 Assembly Instructions and Drawings: Assembly instructions and drawings shall clearly define the procedures and parts to be assembled. They shall be in sufficient detail for the buyer to make airplane galley installations. These details shall include the following as a minimum:

a. Sequence of assembly.

b. External dimensions of galleys, including airplane stations, water lines, and buttock lines.

20.3.2.2.4 (Continued):

c. Galley attachment to airplane floor.

(1) Location of all floor fittings including bolts and nuts by part number.

(2) Location of overhead tie rod attachment points.

d. Assembly breakdown of each galley.

(1) Location of break points.

(2) Joint configuration.

(3) Location and type of fasteners used to join subassemblies.

(4) Description and part numbers of each subassembly.

(5) Details of all trim strips that are removed/assembled, including part numbers, quantity and type of fasteners.

(6) Location, part number, and attachment details (including type and quantity of fasteners) on removable decorative panels and kick strips.

e. Location, direction of opening, and open position of all access panels.

f. Galley insert equipment (component) data and drawings.

(1) Nomenclature and part number.

(2) Method of installation and location in galley, including type and number of fasteners.

g. Galley refrigeration data.

(1) Nomenclature and part numbers of major units.

(2) Location and type of electrical and mechanical connections.

(3) Location of air intake and exhaust and condensate drain.

h. Location and type of inserts and attachments for all attendant seats, magazine racks, movie screens, bassinets and other galley-mounted items.

i. Location of areas that must have sealant applied during assembly of the galley subassemblies.

20.3.2.2.5 Wiring Diagrams: Diagrams of the wiring system of each end item and auxiliary electrical equipment shall be provided and shall include the following minimum details:

a. All wire sizes, types and numbers.
b. All connector sizes, types and part numbers.
c. All switch sizes, types and part numbers.
d. All circuit breaker sizes, types and part numbers.
e. Galley part number and top drawing number.
f. AC Grounds.
g. DC Grounds.
h. Static (equipment case) grounds.
i. Wiring diagram number.
j. Each auxiliary equipment part number and manufacturer.
k. Electrical load data.

20.3.2.2.6 Wiring Installation Drawings: Wiring installation drawings shall depict pictorially the physical location of all electrical components. The following minimum details shall be included:

a. Physical location and part number of each of the following:

Wire bundles
Connectors
Ground studs
Bonding wires
Circuit breakers
Terminal strips
Motors
Auxiliary electrical equipment including ovens, coffee makers, water boilers, warmers, hot cups and similar items.

b. All installation hardware part numbers, locations and assembly details.

c. All special assembly processes such as sealing, etc.

d. Provisions made for protection of connectors and wires routed through storage compartments.

e. Orientation of all connectors.

20.3.2.2.7 Water, Drain and Vent System Installation Drawings: Water, drain and vent system installation drawings shall show the physical location of all components that will be installed or connected by the airframe manufacturer. Minimum details of the parts will include:

a. Location, part number and function of all valves.

b. Location, part number and description of all connections.

20.3.2.2.7 (Continued):

c. Sizes and material of all tubing.

d. Size, part number and type of all mounting hardware.

e. Airplane/galley interface connector or clamp description and part number.

f. Airplane/galley flexible tube length, size, material and part numbers.

g. Locations and details of supports for galley/airplane interface wiring, water line and vent line.

h. All special assembly processes such as sealing, etc.

i. Provisions made for protection of filters, valves and water lines routed through storage compartments.

j. If galleys have integral floors, details of drain line penetration through the floor and method of sealing the penetration.

k. Location, part number and description of sinks and screens.

20.3.2.2.8 Structural Substantiation Documentation: Galley systems and end items may be substantiated by the following three methods:

a. Static test

b. Partial static test and part analysis

c. Stress analysis

A test plan (outlined in 20.3.2.2.8.1) and a test report (outlined in 20.3.2.2.8.2) are required for methods (a) and (b). A stress analysis report only (outlined in 20.3.2.2.8.3) is required for method (c) and the analysis part of (b).

20.3.2.2.8.1 Structural Test Plan: A structural test plan shall be prepared for each different galley structure and shall contain the following minimum information:

a. References and Test Item Identification:

(1) Name and address of galley and major component manufacturers.

20.3.2.2.8.1 (Continued):

(2) Complete list of articles used in testing, including top and major component assemblies and inserts. List the part numbers, names, serial numbers and applicable drawing numbers with revision letters.

(3) Location of equipment if not at galley manufacturer's address.

(4) Date(s) on which test and inspection are planned.

(5) Name and telephone number of supplier contact at the inspection test site.

b. Data:

(1) Tabulation and diagram of galley structure arrangement showing locations and maximum loaded weight of inserts.

(2) List center of gravity locations.

(3) State method used to determine weights.

c. Plan of Test:

(1) Purpose of test.

(2) Description of proposed tests with sketches showing all planned loading conditions and directions of applied loads.

(3) Detailed sketches and explanation of proposed tests to substantiate door latch, cart latch and other retention device combinations, critically loaded modules, sub-units, and inserts (ovens, refrigerators, waste units, coffee-makers, etc.).

(4) Detailed design concept drawings and description of test fixture which simulates airplane structure deflections and flexibility, including structural configuration, detailed galley to fixture attach fittings, method and material used to apply load and descriptions of all load distribution devices or panel protectors where used.

(5) Instrumentation required including make, range, accuracy.

d. Schedule:

(1) Scheduled date(s) for conducting tests.

(2) Structural tests shall commence only after test plan approval by the airframe manufacturer and the buyer.

20.3.2.2.8.2 Structural Test Report: Upon satisfactory completion of static test, or test and stress analysis combination, a test report shall be prepared containing the following:

a. A description of all variations and deviations from the test plan, if any.

b. Tabulation of test results including a listing of instrumentation used with serial numbers, range, accuracy and calibration dates.

c. Actual galley weight, including itemized empty weight of major galley units and total galley loaded weight, including insert equipment and simulated weight of food and contents.

d. Eight by ten inch photographs showing the structure when subjected to each test condition, including upper and lower attachments and support structure, and a corresponding description. Photographs shall be taken at ultimate load conditions and after test to show any deformation.

e. Conclusions drawn from test and a statement that the galley configuration as defined by referenced top assembly drawing(s) and dash number(s) demonstrates compliance with requirements of this document.

f. Date of test completion, name and location of test laboratory and name(s) of responsible test official(s).

g. A complete set of structural drawings required to define all critical structure, latches, hinges, retention devices, etc.

h. Test report number, title, issue date and name(s) of person(s) preparing and approving it. All pages shall be numbered and dated plus revisions shall be dated, identified and itemized.

20.3.2.2.8.3 Stress Analysis Report: When stress analysis is conducted, a stress analysis report shall be prepared in accordance with good engineering form and practice. It shall include the following minimum information:

a. Listing of specific part number(s) and name(s) of galley assemblies and parts being analyzed with reference to applicable drawings, including top assembly and major structural subsections.

b. Listing of final certified actual weight of all items listed in (a) above, including total weight of galley complex and major units with fixed inserts. Weight allowance for other content items and galley supported items shall be listed with locations of centers of gravity identified.

20.3.2.2.8.3 (Continued):

c. Identify and reference all design loads and include all information pertinent to the analysis, (skin gage, material, dimension, tolerances). Loads of galley contents and galley supported items, such as attendant seats, shall be identified.

d. State all assumptions, method of analysis and justification for similarity analysis.

e. State critical conditions.

f. Show derivation and reference all design allowables.

g. Reference all pertinent data, handbooks, manuals, drawings, etc., used in analysis.

h. Show margin of safety for each part analyzed.

i. All calculations shall be included.

j. State conclusions drawn from analysis and include a statement that galley configuration as defined by referenced top assembly drawing(s) and dash number(s) meets the requirements of applicable portions of FAR 25 and this specification; it shall list the exceptions and areas of non-compliance, if any.

k. Analysis report title page shall show number, title, issue date, manufacturer, name(s) and signature(s) of person(s) preparing and approving it. All pages shall be numbered and dated, plus revisions dated, identified and itemized.

l. When utilizing a stress analysis as the basis for structural substantiation, design allowables must be based on materials whose specific strength properties are contained in MIL-HDBK-5, MIL-HDBK-17 and MIL-HDBK-23. Should materials other than those listed in these specifications be utilized, then sufficient documentation regarding the substantiation of design allowables must be presented sufficiently in advance to obtain FAA approval of such design allowables prior to their usage with a stress analysis report.

m. A copy of each of the referenced drawings shall be included with the report. An analysis by similarity to another configuration shall include structural drawings of both configurations.

20.3.2.2.9 Electromagnetic Interference Documentation:

20.3.2.2.9.1 Electromagnetic Interference Test Plan: A test plan and detailed test procedures covering items or portions of galleys to be subjected to electromagnetic interference tests shall be prepared and shall include the scheduled date(s) for conducting tests.

20.3.2.2.9.2 Electromagnetic Interference Test Report: A test report substantiating compliance with the electromagnetic interference test requirements shall be prepared in accordance with good engineering form and practice.

20.3.2.2.10 Noise Documentation:

20.3.2.2.10.1 Noise Test Plan: If verification of system noise level conformance to requirements of 3.2.2.7 is accomplished by test of galleys after installation, on ground or in flight, a test plan shall be prepared in accordance with good engineering form and practice. The plan shall contain a detailed description of the test set-up, instrumentation and procedures, and shall identify the method of qualification.

20.3.2.2.10.2 Noise Test Report: If verification of system noise level conformance to requirements of 3.2.2.7 is accomplished by test of galleys after installation, on ground or in flight, a test report shall be prepared in accordance with good engineering form and practice. It shall include the following information:

a. The galley installation shall be described and a diagram or photograph shall be included showing specific noise-producing components such as drain and vent line arrangements, rotating part locations and instrument sensor locations.

b. Test results shall be tabulated including listing of instrumentation used with serial numbers, range, accuracy and calibration dates.

c. Applicable drawing numbers and revision dates describing the installed configuration shall be listed.

d. The report shall state conclusions drawn from test and shall state that the galley configuration as defined by referenced top assembly drawing(s) and dash number(s) demonstrates compliance with the requirements of this specification and applicable end item specifications.

20.3.2.2.11 Flammability and Fire Containment Documentation:

20.3.2.2.11.1 Flammability Test Plan: A flammability test plan shall be provided for buyer review prior to conducting the tests. The plan shall include the following information:

20.3.2.2.11.1 (Continued):

a. A list of materials that is subdivided into categories descriptive of the type of material.

b. Each category shall identify and describe material flammability data, specification number, or technical description; the minimum thickness or gage used; use location and test method used, with sample orientation and ignition time duration.

c. When decorative materials are bonded over large areas of any items specified in the requirements of FAR 25.853(a), such as galley walls, flammability tests shall be performed on cut sections from the final as-used composites. Classification and results of each test shall be tabulated and described, with the specific test method used.

20.3.2.2.11.2 Flammability Test Report: A test report substantiating compliance with the general fire protection of materials requirements of the Flammability Test Plan shall be provided. It shall include, as a minimum, the following information for all materials to be qualified by test, similarity or analysis.

a. The report shall state conclusions and shall include a statement that the material(s) as used for construction of equipment as defined by the referenced top drawing(s) and dash number(s) comply with the fire protection requirements of this specification.

b. Date(s) of test(s) completion, and name and location of test laboratory.

c. Written approval of the buyer shall be included directly in the report or by reference in official correspondence.

20.3.2.2.11.3 Fire Containment Test Plan: When a fire containment test is to be conducted, a plan shall be provided for buyer review prior to conducting the test. The airframe manufacturer then shall forward the test plan to the appropriate FAA personnel for their approval. The plan shall include the following information:

a. Scope of report.

b. Identification of items to be tested and airplane in which item will be installed.

c. References and definitions.

d. Purpose.

20.3.2.2.11.3 (Continued):

e. Location and date of test (buyer to be notified a minimum of 60 days prior to the test date).

f. Test procedure including listing of combustible materials.

20.3.2.2.11.4 Fire Containment Test Report: A report substantiating compliance with the requirements of this specification and applicable end item specifications shall be provided. It shall include:

a. A tabulation and description of the results of each test or analysis.

b. A statement that the items listed including those referenced:

- o Contain a fire by test, and that the effects on surrounding structure are considered.
- o Prevent waste material from falling out of stowage compartments.

c. Drawings, photographs, or sketches of the galley installation showing units listed.

d. Acceptance criteria indicating extent of damage to container and the surrounding structure and time of exposure.

20.3.2.2.12 Sanitary Construction Data: A letter of acceptance of sanitary construction for the galleys shall be obtained by the buyer from the U.S. Public Health Service prior to delivery. Format and procedures shall be as prescribed by the government offices concerned. This requirement is optional for non-U.S. carriers.

20.3.2.2.13 Acceptance Data: The supplier shall compile a check list, which identifies the galley completion status at time of delivery to the buyer or airframe manufacturer. It shall include status of each acceptance test and inspection requirement of Table 4.1.1-1. The check list shall include the following minimum information:

a. Name of acceptance event, e.g., drawing conformance check, gauge check, etc.

b. Title, number, and issue or revision date of specifications, drawings, defining the particular requirement(s).

c. Date of actual completion of acceptance event(s).

d. Title, number, and issue date of documentation describing results of event(s).

e. Remarks, if any, to clarify entry pertaining to any event.

20.3.2.2.14 Compliance Data: The galley manufacturer shall certify to the buyer that the galley equipment end items to be shipped have been inspected and tested and meet all the current requirements of the buyer's contract. The certification shall include a list of any deviations or exceptions with reasons and references, and a statement that data which substantiate the compliance are available for review by the buyer, airframe manufacturer, and government airworthiness inspectors. The compliance certification, signed by a quality control official of the equipment manufacturer, shall appear on or be attached to the packing sheet for each galley and transmitted by correspondence to the buyer and airframe manufacturer. These data and correspondence will be used to support final FAA certification and approval of other nations' aviation authorities of the airplane with installed galleys.

20.3.2.2.15 Weight Control Data: The equipment manufacturer shall submit a monthly weight status report to the buyer. It shall contain an actual weight breakdown of contract end items and all major components plus a total actual weight. The weight status report shall use the form shown in Figures 20.3.2-1 and 20.3.2-2 and shall include the following data:

a. Maximum guaranteed weight.

b. Previous weight status.

c. Current weight. This is the latest determination, including all changes from the last report and substantiating data for the changes. Submit sufficiently detailed sketches or drawings to allow an independent estimate of the change.

d. Current weight categorized as percent estimated, percent calculated and percent actual.

e. Amount current weight is over or under guaranteed weight.

20.3.2.2.16 Refrigeration System Data: There shall be definitive system interface data established for each galley refrigeration system. Data and specifications shall define all physical interfaces, performance, inputs and outputs at the interfaces of each major item such as chilled air supply unit and duct joint and cart inlet/outlet interfaces, and condenser air inlet/outlet.