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1. SCOPE

1.1 General

This SAE Aerospace Standard (AS) establishes the minimum design and performance requirements for galleys to be certified and installed in transport category airplanes.

1.2 Purpose

This standard applies to galleys installed in transport category airplanes.

1.3 Intended Use

This standard applies to galleys as its term defined in the glossary.

Airplane galleys are recognized as food storage and preparation areas as such may require evidence of compliance with specified national sanitary construction guidelines.

This standard does not address:

- a. Non-electrical galley insert equipment covered in AS8056 (in-flight meal carts and containers).
- b. Galley insert equipment, electrical/pressurized covered in AS8057.
- c. Requirements that are covered by national aviation regulations, pertinent U.S. Public Health regulations, and/or customized design details, which shall be covered by customer specific specifications for the subject equipment.”
- d. Built-in equipment that is part of the galley such as warming compartments, hot plates, etc.

However, references to these considerations are included as appropriate.

When the term “galley” is used in this standard, it refers to all food and galley equipment stowages and preparation facilities identified in [1.2](#), unless specifically identified otherwise.

1.4 Mandating and Recommendation Phrases

- a. **SHALL:** The word “shall” indicates a mandatory criterion; i.e., compliance with the particular procedure or specification is mandatory and no alternative may be applied.
- b. **SHOULD:** The word “should” indicates a criterion for which an alternative, including non-compliance, may be applied if it is documented and justified.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS-STD-401	Sandwich Constructions and Core Materials; General Test Methods
ARP577	Emergency, Instruction, and Information Placards - Internal and External
ARP4761	Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment
ARP8058	Thermal Design and Performance of Airplane In-Flight Food Storage Carts
AS1212	Electric Power, Aircraft, Characteristics and Utilization of
AS8049	Performance Standard for Seats in Civil Rotorcraft, Transport Aircraft, and General Aviation Aircraft
AS8056	Minimum Design and Performance of Airplane Galley In-Flight Carts, Containers, and Associated Components
AS8057	Minimum Design and Performance of Airplane Galley Insert Equipment, Electrical/Pressurized
AS39029	Contacts, Electrical Connector, General Specification for
AS50881	Wiring Aerospace Vehicle

2.1.2 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

14 CFR Part 1	Definitions and Abbreviations
14 CFR Part 25	Airworthiness Standards: Transport Category Airplanes
21 CFR Part 1240	Control of Communicable Diseases
21 CFR Part 1250	Interstate Conveyance Sanitation
AC 25-17A	Transport Airplane Cabin Interiors Crashworthiness Handbook
DOT/FAA/AR-00/12	Aircraft Materials Fire Test Handbook
HF-STD-001	The Human Factors Design Standard
MIL-STD-401	Sandwich Constructions and Core Materials, General Test Methods
MIL-STD-704	Aircraft Electric Power Characteristics
PS-ANM-25.853-01-R2	Flammability Testing of Interior materials (FAA Policy Statement)

2.1.3 U.S. Food and Drug Administration (FDA) Publications

Attachment 3 “Guidelines for Sanitary Construction of Aircraft Galleys and Galley Components” in U.S. FDA document “Guide to Inspections of Interstate Carriers and Support Facilities”

Public Health Service Publication No. 308, “Handbook on Sanitation of Airlines”

2.1.4 National Sanitation Foundation (NSF) Publications

Available from NSF International, P.O. Box 130140, 789 N. Dixboro Road, Ann Arbor, MI 48105, Tel: 734-769-8010, Toll Free (USA): 800-NSF-MARK, www.nsf.org.

NSF/ANSI 51 Food Equipment Materials

2.1.5 NASA Publications

NASA Technical Services, NASA STI Program STI Support Services, Mail Stop 148, NASA Langley Research Center, Hampton, VA 23681-2199, 757-864-9658, Fax: 757-864-6500, <http://ntrs.nasa.gov/>.

NASA-STD-3001 Vol 2 Human Factors, Habitability, and Environmental Health

2.1.6 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM C273 Standard Test Methods for Shear Properties of Sandwich Core Materials

ASTM C393 Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure

ASTM D1781 Standard Test Method for Climbing Drum Peel for Adhesives

ASTM D7249 Standard Test Method for Facing Properties of Sandwich Constructions by Long Beam Flexure

ASTM D7250 Standard Practice for Determining Sandwich Beam Flexural and Shear Stiffness

2.1.7 RTCA Publications

Available from RTCA, Inc., 1150 18th Street, NW, Suite 910, Washington, DC 20036, Tel: 202-833-9339, www.rtca.org.

RTCA DO-160 Environmental Conditions and Test Procedures for Airborne Equipment

2.1.8 AWS Publications

Available from American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33166-6672, Tel: 1-800-443-9353 or 305-443-9353, www.aws.org.

AWS D17.1 Specification for Fusion Welding for Aerospace Applications

2.1.9 EASA Publications

Available from European Aviation Safety Agency, Konrad-Adenauer-Ufer 3, D-50668 Cologne, Germany (for visitors and for mail over 1 kg) and Postfach 10 12 53, D-50452 Cologne, Germany (for mail 1 kg or less); Tel: +49 221 8999 000, www.easa.europa.eu.

AMC-20	General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances
CM-CS-004	Flammability Testing of Interior Materials
CM-CS-007	Evaluation of Aisle Width with Respect to Seat Installations
CM-ES-002	Electrical Wiring Interconnection Systems Instructions for Continued Airworthiness
CM-S-002	Application of CS 25.561(c)(2) 1.33 "Wear and Tear" Factor - Frequent Removal of Interior Structures
CM-S-009	Certification Memorandum, Loading Conditions for Occupant Safety in Cabin Interiors
CS-25	Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes
CS-26	Certification Specifications and Guidance Material for Additional Airworthiness Specifications for Operations
CS-Definitions	Definitions and Abbreviations Used in Certification Specifications for Products, Parts and Appliances
CS-ETSO	Certification Specifications for European Technical Standard Orders

2.2 Abbreviations

°C	Degrees Celsius
AC	Alternating Current
BL	Buttock Line
c.g.	Center of Gravity
CAS	Cabin Attendant Seat
CF	Constant Frequency
dB	Decibel
DC	Direct Current
EASA	European Union Aviation Safety Agency
FAA	Federal Aviation Administration (USA)
FAR	Federal Air Regulations (USA)
FCAA	Foreign Civil Aviation Authority
FDA	Food and Drug Administration (USA)
GAIN	Galley Insert Equipment

Hz	Hertz
ICD	Interface Control Document or Drawing
J	Joules
kg	Kilograms
kPa	Kilopascals
KVA	Kilovolt Amperes
l	Liters
L/min	Liters per Minute
LRU	Line-Replaceable Unit
lx	Lux (Lumens per Square Meter)
m	Meters
mL	Milliliters
mm	Millimeters
MVF	Material Variability Factor as defined in FAA AC 20-107B and EASA AMC 20-29
OEM	Original Equipment Manufacturer
psia	Pounds per Square Inch Absolute
psig	Pounds per Square Inch Gauge
SCFM	Standard Cubic Feet per Minute
VDC	Volts Direct Current
WF	Wide Variable Frequency

2.3 Definitions

2.3.1 Standard World Airlines Definitions

Airline industry standard definitions contained in “Airline Industry Standard World Airlines Technical Operations Glossary” (WATOG) shall apply for terms used in this specification which are not otherwise defined in the text or in [2.3.2](#).

2.3.2 Standard Galley Definitions

ACCEPTANCE TEST: A test conducted to verify that the operational and safety performance of each production unit conforms to its design and published technical data.

AIRPLANE PROVISIONS: The airplane structure, equipment, furnishings, and related hardware furnished by the airframe manufacturer as part of the airplane.

AIRFRAME MANUFACTURER: The manufacturer responsible for providing airframe structure and provisions for galleys in the airplane of the galley buyer or user. The terms airframe manufacturer, airplane/aircraft manufacturer, and original equipment manufacturer (OEM) are used interchangeably throughout this document.

ASSOCIATED COMPONENTS: Defined as both of the following:

1. Items such as drawers, trays, waste bin liners, or other similar components that are stowed in meal carts and/or galley compartments but are non-stationary parts thereof.
2. Items that need to meet 14 CFR Part 25 in order to be included as part of the airplane's type design.

BUTTOCK LINE (BL): A vertical fore and aft plane used for identifying inboard/outboard locations within the airplane.

CART: A movable enclosure on wheels designed for the purpose of transporting and storing various items used for cabin service activities. A meal cart is manoeuvred inside the cabin.

CERTIFICATION BASIS: The applicable regulations and mandatory type certificate holders requirements which are defined on the airplane type certificate data sheet (TCDS), issued by an airworthiness agency.

CONDITION MONITORING: The process of monitoring a parameter of condition in machinery (vibration, temperature, etc.), in order to identify a significant change which is indicative of a developing fault. The use of condition monitoring allows maintenance to be scheduled or other actions to be taken to prevent consequential damages and avoid its consequences.

CONFIGURATION: Relative arrangement of parts. The figure, contour, or pattern produced by a space arrangement of parts, assemblies, or structures.

CONSTANT FREQUENCY (CF): Designates AC equipment intended for use on airplane electrical systems where the primary power is from a constant frequency (400 Hz) AC system.

CONTAINER: A moveable enclosure (without wheels) designed for the purpose of transporting and storing various items used for cabin service activities. A container is typically carried by hand or in meal carts and is not typically removed from the galley work area during cabin service activities. Containers are also referred to as carriers, standard carriers, standard units, standard containers, etc.

CUSTOMER: The aircraft manufacturer, operator, or airline purchasing galleys, or an airplane containing galleys.

DESIGN APPROVAL HOLDER: A design approval holder is the holder of a type certificate or supplemental type certificate under which a galley is approved for aircraft installation.

DESIGN DEVELOPMENT TEST: Tests conducted to establish or verify design concepts for items which have not been proved by previous use.

EASILY CLEANABLE: Surfaces which are accessible without tools for hand cleaning, and of such material and finish and so fabricated that residue may be completely removed by normal cleaning methods.

EASILY REMOVABLE: Capable of being removed from its normally used or installed position without the use of tools.

FAILURE: An event or condition, occurring within an equipment item or system that prevents the equipment from performing its intended function or endangers passengers and/or crewmembers.

FAIL-SAFE: Provisions that maintain safety even when a failure occurs.

FIRE RESISTANT: The capacity to withstand the heat associated with fire at least as well as aluminum alloy.

FIRE RESISTANT MATERIALS: Materials as defined by 14 CFR § 25.853, Advisory Circular 25-17A, and Aircraft Materials Fire Test Handbook Chapters 2 and 10.

FULL SIZE MEAL CART: A meal cart that is typically stowed as a single item in a stowage compartment. Typically, a full size meal cart is approximately 30 to 35 inches (762 to 889 mm) deep.

GALLEY(S): Galleys are interior monuments on airplanes that serve and store food and beverages. Galleys also contain emergency equipment storage and anything else the flight attendants may need during the flight.

All galley hardware items furnished for installation on the airplane, exclusive of airplane provisions. This includes galley complex structure, decorative panels, ceilings, furnishings, lighting, galley units, modules, food, beverages, utensils, ovens, coffee makers, floor tie down fittings, refrigeration equipment, electrical, water, and drain system connections from the galley equipment to the airplane interface connectors.

GALLEY COMPLEX: A structurally integral installation of galleys at a designated galley envelope area within the airplane. A complex includes items such as one or more galley units, work space, partitions, curtains, walls, ceilings, lights, and structural attachment devices.

GALLEY ENVELOPE: The three-dimensional outside surface limits of the volume(s) within the airplane reserved for locating the galleys.

GALLEY INSERT: A mechanical component, used in conjunction with airplane food service that is not an integral part of the galley and is removable from the galley without tools or with the use of simple tools (e.g., trolley/cart, standard unit, container).

GALLEY INSERT EQUIPMENT (GAIN): Electrical equipment, used in conjunction with airplane food service, which is not an integral part of the galley and is removable from the galley without tools or with the use of simple tools (e.g., beverage maker, oven).

GALLEY INSTALLATION: An equipment/subsystem, used in conjunction with airplane food service, that is integral to the galley (e.g., galley potable water system, galley waste water system).

GALLEY UNIT: A major subsection of a galley complex, or an independent galley structure which houses various items such as ovens, food trays, coffee makers, refrigeration, liquor, and service items.

GROUND SERVICE: Airplane servicing operations during which rotatable galley equipment, such as containers, carts, modules, and similar inserts are unloaded from galleys on the airplane, transported to ground kitchens, washed and cleaned, stored, or recycled with food and supplies for installation in galleys ready for flight.

HALF SIZE MEAL CART: A meal cart that can be stowed as a single item or, in a full size compartment, can be stowed together with another half size meal cart. Typically, a half size meal cart is approximately 15 to 18 inches (381 to 457.2 mm) deep.

INTENDED FUNCTION: The activity equipment normally executes or provides.

INTERCHANGEABILITY: That quality which allows an assembly or part to substitute or be substituted for another and to meet physical, functional, and structural requirements. No alterations except designed adjustments are allowed to install the item.

INTERFACE: The fit and functional relationships of the equipment with the galley or with other structure (e.g., a meal cart and its stowage compartment).

INTERFACE CONTROL DRAWING (ICD): A drawing created for the purpose of communicating interface information.

PHYSICAL INTERFACE: The hardware physical relationship at the juncture between items designed, manufactured, or tested by different activities jointly responsible for the hardware. It includes dimensional geometric relationship, tolerances, materials, and finishes at the juncture.

FUNCTIONAL INTERFACE: The relationship between functions at the hardware physical interface, such as electrical voltage and current, fluid pressure and flow, temperature, acceleration, acoustic, and other environments.

PROCEDURAL INTERFACE: The matters related to successful conduct of the program for hardware which has physical or functional interfaces, such as design reviews, tests, inspections, approvals, government certification data preparation, schedules, and related procedural activities.

JOINT: The line of meeting of two or more pieces or parts of equipment.

LATCH: A retaining device (e.g., hand-operated quarter turn or a spring actuated latch for a door) which secures an item(s) during structural loading.

LOADED GALLEY WEIGHT: The weight of all galleys including maximum allowable weight of food, carts, beverages, and inserts galley service items.

LOOSE COMPONENTS: Items, such as brew cups, beverage servers, or other components not attached to equipment, which are stowed in the equipment and are part of the equipment part number.

LOOSE EQUIPMENT: Galley insert equipment that is moveable and stowed in galley compartments when not in use (e.g., toaster, skillet).

MAINTENANCE SIGNIFICANT: Maintenance items of equipment or components which are judged to be relatively the most important for safety, reliability, or economic impact.

MAXIMUM NORMAL OPERATING PRESSURE (MNOP): The maximum attainable pressure of the equipment's pressure system when all the equipment's components are functioning normally. For wet equipment connected and open to the airplane potable water system, the maximum airplane water system pressure determines the MNOP.

MEAL CART: A cart designed for the purpose of transporting and storing used and/or unused food tray set-ups. Provisions for interface with the galley refrigeration system may be provided in the meal cart. This type of meal cart is called an "air through" refrigerated meal cart.

MODULE: A subsection of a galley unit or complex that is easily removable and transferable to ground equipment for cycling through ground kitchens for cleaning and reloading with food or service items.

NON-OPERATING: The condition when the galley, with loaded equipment and inserts, is not used but remains installed in the airplane on the ground and the water system is filled, but without air conditioning or power, when the airplane is exposed outdoors with cabin closed for a period of time of 2 hours or more duration.

OBJECTIVE: A hardware requirement established for design to achieve optimum performance, minimum weight, or other technical criteria. The feasibility of meeting an objective or modifying the technical criteria to establish a firm requirement is subject to review. Renegotiation may be accomplished during development after analyses, test reports, and cost data are available which support a review to determine viability for manufacturing production, cost of development, or other program factors.

OPERATING: The condition when the galley and its equipment and inserts are used by cabin crew for food and beverage service and cleanup.

OPTION: A function capable of being included as part of equipment. It shall be fully developed and able to be incorporated without adverse effects.

PERIODIC TESTING: Testing conducted on each batch of material or product used to determine conformance to the process specification. When consistent conformance has been demonstrated, reduced testing may be implemented in accordance with a quality assurance sampling plan.

POTABLE WATER: Water meeting the requirements of the U.S. Environmental Protection Agency Drinking Water Regulations or the U.S. Food and Drug Administration Bottled Water Regulations and filled into the water storage system of an airplane by an external source, i.e., service truck or filling port at the passenger bridge.

PROCESS SPECIFICATION: A specification used to control manufacturing processes (such as bonding or welding) or materials (such as sandwich panels) that are dependent on preparation, application, and procedure. These specifications ensure repeatability of the process or material for which it is written.

QUALIFICATION TESTS: Tests which are accomplished on a sample galley configuration representative of production hardware, or on production hardware to establish to the extent practical under laboratory conditions, that the equipment complies with all the requirements of this specification.

RAIL ASSEMBLY: A device provided for beverage makers, water heaters, and air chillers that simplifies interfaces between the equipment and the galley and facilitates easy installation and removal.

RETAINING DEVICES: Any device such as a latch, stop, detent, guide, or other mechanical configuration used to retain items such as doors, drawers, meal carts, modules, containers, equipment items, or any other movable galley component.

ROTABLE INSERT: Insert equipment that can be readily removed during airplane turn-around without use of tools such as carts or standard containers.

SERVICE LIFE: The period of time after galleys are installed and introduced in operational service within which the article continues to fulfill its intended function as specified including structural, performance, and all safety requirements. This includes routine cleaning and servicing, with periodic inspection and maintenance, until repairs no longer physically or economically feasible.

SMOOTH: Free of pits, pinholes, cracks, crevices, inclusions, rough edges, and other surface imperfections detectable by visual and tactile inspection.

SPLIT LINES/JOINTS: Structural joints in that allow the galley to be disassembled into subassemblies to pass through the airplane door and/or be rotated within the airplane during installation or removal.

STANDARD UNIT: For the purposes of this document, the word "standard unit" is synonymous with "standard container."

STOWED: Placed and retained in a stowage location for taxi, take-off, landing, and turbulence.

TROLLEY: For the purposes of this document, the word "trolley" is synonymous with "cart."

TYPE CERTIFICATE DATA SHEET (TCDS): The certificate issued by the applicable airworthiness agency which defines the certification basis of the type design and relevant limitations.

TYPE DESIGN: All of the drawings and the specifications that show compliance with the certification basis of the original airplane and all of the data necessary to show that subsequent airplanes conform to the approved type design.

UNIT UNDER TEST (UUT): An equipment article, identical to a production unit, used for tests, or an equipment article that is a modified production unit, provided the modifications do not affect the test results.

WASTE BIN LINER: A separate item installed in either a waste meal cart or galley waste compartment, intended to assist in the easy removal of collected waste or for fire containment.

WASTE CART: A cart designed for the purpose of transporting and storing waste generated by cabin service.

WEIGHT: The weight terminology shall be defined and reported as follows:

- a. **GROSS WEIGHT:** The total weight of the galley with all compartments loaded to their placarded weight or maximum capacity if no placard is provided. This weight includes items for which provisions are provided and that are to be installed such as flight attendant seat, magazine rack, monitor, bassinet, etc.
- b. **EMPTY WEIGHT:** The maximum design empty weight consisting of weight of all the items in the design definition data (e.g., bill of material, drawings, and specifications).
- c. **MAXIMUM CAPACITY WEIGHT:** The weight of all equipment items and miscellaneous items at their loaded or full weight, as supported or restrained by the monument shell. This includes ovens, coffee makers, containers, carts, and emergency equipment.

WET AREA: A wet area is defined as an area that is exposed to liquids. A galley for the purpose of serving beverages, containing a water line or equipment (chiller, refrigerator, ice drawer, dry ice, etc.) that may leak or cause condensation, shall meet requirements for wet area. The airplane overhead area is also defined as a wet area due to moisture condensation.

WIDE VARIABLE FREQUENCY (WF): Designates AC equipment intended for use on airplane electrical systems where the primary power is from wide variable frequency (360 to 800 Hz) AC system.

3. REQUIREMENTS

3.1 General Requirements

3.1.1 Galley-to-Airplane Interfaces

The galley shall meet the interface requirements of the airplane it will be installed on. All galley interfaces to the airplane shall be defined in the interface control drawing (ICD).

3.1.1.1 Defined Envelopes

Maximum galley unit sizes to be installed is defined in terms of allowable envelope in the respective interface control document. All components shall be contained within the envelope except when documented on the ICD.

The standard interface specification and customized interface specification include all interface requirements, necessary clearances, and tolerances.

The interface specifications shall be provided by respective airplane OEM. Necessary galley contour drawings not covered by the ICD shall be prepared and provided.

3.1.1.2 Minimum Passageway and Assist Space

The regulatory agencies require that adequate aisles, passageways and attendant assist spaces be provided in order to allow the unobstructed evacuation of passengers in the event of an emergency.

No portion of the galley may protrude beyond the assist space or emergency exit/egress aisle. Refer to 14 CFR § 25.813 and § 25.815.

3.1.2 Galley Insert and Galley Insert Equipment (GAIN) Interfaces

The galley shall meet the interface requirements of the GAIN. All interface information needed to integrate the equipment in its installation shall be provided with the top assembly (general arrangement) drawing package.

The galley insert and GAIN installation shall meet physical interface, functional interface, and procedural interface requirements.

3.1.3 Installation and Removal

For ease of shipping and installation, galley shell structures shall be made up of components and subassemblies which will pass through a intended airplane doorway. Service lines (water lines, vent lines, electrical wiring) shall be completely installed within the galley subassemblies with access to easily mated connectors at the subassembly split lines. Galley insert, GAIN, and modules that are removed and installed during airplane ground service, shall meet size limitations for installing in galley shell structures as defined above, and shall be capable of being moved into galley position without interference or damage to airplane interiors, floors, and furnishings to the extent that these interfaces are defined herein. Suitable ground support equipment may be used for galley loading to meet this requirement.

The galleys shall be designed to pass through the entry door and rotated within the airplane interior without interference or damage. See [3.1.1.1](#) for defined galley envelopes.

3.1.3.1 Split Line Requirements

The following apply to major assembly “split” lines which are required to allow the major assemblies to pass through the airplane door or restricted areas for installation/removal:

- a. All split lines should be designed to ensure that the fasteners are not visible from the cabin/galley work area after installation. The split line fasteners (screws, connectors, etc.) should be marked in red except where the fasteners are visible after installation. In this case, the fasteners should be consistent with the decor or their natural color.
- b. All split line fasteners should be accessible when the galley assembly is installed in the airplane. Removal of other airplane components to gain access to split line fasteners should be minimized. Split line fastener system design strategy should consider minimizing installation/removal time.
- c. For ease of installation horizontal split lines should be designed not to have any protrusions. See [Figure 1](#).
- d. Galley split lines should be located to minimize the amount of sealing needed after re-assembly.
- e. Galley systems (attachments, plumbing, ventilation, electrical, refrigeration) shall be easy to join or separate at the split lines.

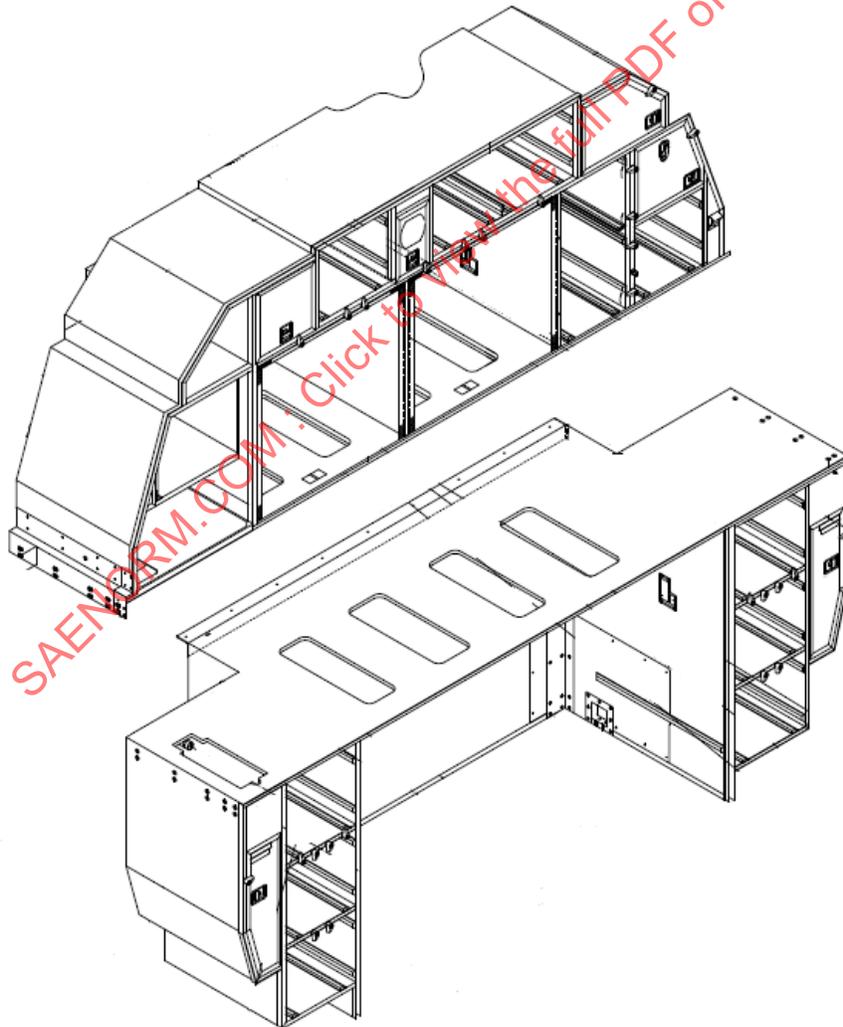


Figure 1 - Galley horizontal split line

3.2 General Construction

The methods of fabrication shall produce a consistently sound structure (i.e., 14 CFR § 25.605 and § 25.613). If a fabrication process (e.g., adhesive bonding, spot welding, or heat-treating) requires close control to reach this objective, a process specification shall be utilized.

Each part of the structure shall be suitably protected against deterioration or loss of strength in service due to any cause, including weathering, corrosion, disinfectant/cleaning agents, and/or abrasion, and have provisions for ventilation and drainage where necessary for protection. (Refer to 14 CFR § 25.609.)

3.2.1 Threaded Fastener Installation

Fastener installations shall be controlled by a process specification that includes, but is not limited to, the following:

- a. Procedures to ensure thread length is sufficient to fully engage the nut, including any locking feature. For permanent installed fasteners, thread-locking compound shall not be used.
- b. Procedures to apply torque in accordance with proper torque values.

3.2.2 Sealing Materials and Processes

Sealing within galley structure is required for leak prevention, corrosion, and FDA sanitary construction requirements per [3.2.8](#).

Sealants used in galley construction shall be non-shrinking, durable, resistant to cracking/loosening, smooth, easily cleanable, and non-absorbent. Additionally, sealants used on food contact surfaces shall be non-toxic.

The application of sealant shall be consistent, repeatable and controlled by a process specification that includes, but is not limited to, the following:

- a. Surface preparation of the area to be sealed.
- b. Control, preparation, and application of the sealant.
- c. Curing parameters with applicable tolerances.

3.2.3 Potting

When potting for installing inserts, or fabricating joints, the process operations shall be controlled by a process specification. These processes shall include, but are not limited to, the following:

- a. Surface preparation of the area to be potted.
- b. Control, preparation, and application of the potting compound.
- c. Curing parameters with applicable tolerances.

3.2.4 Bonding

The adhesive bonding processes used for all structurally significant joints shall be controlled by a process specification, which ensures production of a consistently sound structure. Processes shall include, but are not limited to, the following:

- a. Surface preparation of areas to be bonded.
- b. Control, preparation, and application of adhesives and primers.
- c. Curing parameters with applicable tolerances.

3.2.5 Welding

Welding shall comply with AWS D17.1 or equivalent.

3.2.6 Materials and Processes

The suitability and durability of materials used for parts shall conform to approved specifications such as industry or military specifications, or technical standards, taking into account the effects of the environmental conditions, such as temperature and humidity expected in service.

The methods of fabrication used shall produce a consistently sound structure. If a fabrication process requires close control to reach this objective, the process shall be performed under an approved process specification.

3.2.6.1 Material and Process Variability

See [3.3.3](#) for applicability during galley test.

3.2.6.2 Hazardous Materials

Prohibited material shall not be used. Material selection shall take into consideration of materials restricted or prohibited by law. Materials shall not render toxic any food or beverage with which they may come in contact. Contact local agencies for clarification of restrictions such as Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) for a list of banned hazardous materials if applicable.

3.2.6.3 Sandwich Panels

The mechanical properties of sandwich panels shall be controlled by process specification and the specification shall require periodic testing to assure conformance to the specification.

At minimum, the specification shall contain requirements for the following, per AMS-STD-401 (or equivalent):

1. Core shear or sandwich shear (refer to ASTM C273).
2. Sandwich flexure (refer to ASTM C393 and ASTM D7249).
3. Sandwich climbing drum peel (refer to ASTM D1781).

Surface finish of fiber-reinforced components shall be in accordance to controlled specification.

Aluminum honeycomb core shall be finished for corrosion resistance at the time of core fabrication.

3.2.6.4 Materials at Airplane Interfaces

All galley-to-airplane interfaces connections shall be designed to prevent galvanic corrosion with the airplane. Mechanical/electrical isolation to prevent electrolytic corrosion is an acceptable strategy.

3.2.6.5 Industry Standard Parts

A standard part is a part or material that conforms to an established industry or government-published specification.

Standard parts should be used where practical for design requirements.

3.2.6.6 Castings and Forgings

Castings and forgings shall be produced in accordance with an approved specification.

Castings shall be a minimum Class 3 per AMS2175 or equivalent, and shall be clean, sound, and free from blowholes, porosity, or surface defects. Imperfections may be acceptable if strength and serviceability are not impaired as a result.

All structural castings shall have a minimum casting factor of 1.5, unless a lower casting factor can be justified by inspection level requirements. Castings shall be inspected per 14 CFR § 25.621.

3.2.6.7 Forgings/Extrusions

Forgings and extrusions shall be of uniform condition, free from blisters, fins, folds, seams, laps, cracks, segregation, and other defects. Imperfections may be removed if strength and serviceability are not impaired as a result.

3.2.6.8 Storage and Shelf Life

Perishable Materials (e.g., prepreg, finishes, sealants, resins, adhesives and potting compounds) shall be controlled by a process specification, which shall define minimum strength properties, storage control, shelf life and re-test requirements of properties to assure that only acceptable material is used.

3.2.6.9 Environmental Protection

The Materials and components shall be suitably protected against deterioration or loss of strength in service due to any environmental cause. Selection and finishing of material (including fasteners), where dissimilar metals may be placed in contact, shall be per MIL-STD-889 (or equivalent).

Materials which are not inherently corrosion resistant should be finished with a protective treatment or coating, unless it is shown by experience that it is satisfactory without treatment. The use of protective coatings which could crack, flake, or chip during use or due to the specified environmental conditions shall be prohibited.

3.2.7 Finishes

Finishes at the interfacing area to the airplane and to galley insert and GAIN shall be defined on the interface control drawing.

Finishes (chemical treating, anodizing, powder coating, primer, paint, decorative laminate application, etc.) shall be controlled by a process specification that includes, but is not limited to, the following:

- a. Surface preparation of area to be finished.
- b. Control, preparation, and application of finish.
- c. Curing parameters with applicable tolerances.

3.2.8 Sanitation

The galley should meet U.S. Food and Drug Administration (FDA) requirements for sanitary construction in accordance with 21 CFR Part 1250, Attachment 3 "Guidelines for Sanitary Construction of Aircraft Galleys and Galley Equipment," FDA document "Guide to Inspections of Interstate Carriers and Support Facilities," and Publication Number 308 "Handbook on Sanitation of Aircraft" (<http://www.fda.gov/iceci/inspections/inspectionguides/ucm095485.htm>).

3.2.9 Compartments

Each stowage compartment shall be completely enclosed (14 CFR/CS § 25.787). A gap of 0.125 inch or less around the compartment door/drawer for operation of the compartment and manufacturing is acceptable. Carts and standard units with their own doors are considered to be their own enclosure. Therefore, if a galley stowage area is for these items and does not have a door installed, the compartment (i.e., five-sided recess) is considered to be completely enclosed. Fixed equipment such as ovens, beverage makers, etc., need not be installed in an enclosed compartment. The completely enclosed requirement does not apply to small magazine racks or literature pockets. Stowage compartments that retain an item and are limited by placarding to stowing that item only need not be enclosed. An example is a stowage compartment for folding trolleys which is placarded "Folding Trolley Only."

3.2.9.1 Divided Compartments

Horizontal dividers/shelves within miscellaneous stowage compartments shall be terminated such that the gap between the shelf and door is a maximum of 0.125 inch when emergency or electrical equipment is located in the lower compartment. Otherwise, the termination may provide a maximum gap of 1 inch without further strength substantiation.

3.2.9.2 Cart/Standard Unit Compartments

Compartments for carts and standard units should be equipped with bumper strips to minimize damage to the compartment caused by installation and removal.

Cart compartments without doors which utilize 1/4 turn type of latches shall have minimum of two latches. One latch shall retain the cart structure only. The other latch shall retain the cart structure including the cart door. Cart compartments without doors for half-size carts may need additional 1/4 turn type latches below the center of gravity of the cart to prevent escapement under emergency landing conditions. The necessity of these additional 1/4 turn type latches shall be coordinated with the installer.

For carts and standard containers, the galley retaining devices shall be located (placement) with engagement per the item insert ICD.

NOTE: Also see [3.2.11](#) for additional retaining device definition.

Each primary and secondary latch shall take the total load as described in [3.3.1](#) and [3.3.2](#). If fitted an intermediate latch, may be designed for the in-flight condition load cases only, with the exception of the two HS cart/container (two deep) (see [3.2.11.2](#)) and three HS cart/container configurations (see [3.2.11.3](#) and [3.2.11.4](#)).

There should be an intermediate latch between two half size carts/standard units, if they are stowed one behind another in a common compartment.

The intermediate latch does not need to be engaged at all times; situations might exist where the intermediate latch can be engaged only when the first cart is removed.

When more than one insert can be stowed in a compartment with turn latch retention, operating the turn latch should not release more than one unit.

For the compartments design, the gap dimensions between the inserts (like carts and standard container) and bearing surfaces of the compartment (e.g., rubstrips, bumpers, latches, etc.) shall adhere to installer-specified requirements. An example is shown in [Table 1](#).

Table 1 - An example of OEM allowable galley compartment clearance definitions

Inserts	Allowable Galley Compartment Clearance (mm)		
	Sidewall Each Side	Latch (Total)	Top
H/S cart*, F/S cart	8 max 3 min	10 max 5 min	14 max 6 min
F/S cart alternate instead of two H/S carts in the same compartment*	8 max 3 min	Up to 20** 5 min	14 max 6 min
Standard unit	8 max 3 min	10 max 5 min	14 max 6 min

NOTES:

For air over cooling, the gaps between carts and standard units and the sliding strips, bumpers, and compartment walls shall ensure sufficient cooling airflow.

* Shall use two latches on the shelf or workdeck and two latches on the sidewall panel to resist kick load of H/S cart. Valid for any compartment face direction (forward, side, aft).

** Each latch shall be qualified with 16 g static load to restrain under dynamic impact for gaps greater than 10 mm, up to 20 mm as maximum. Valid for any compartment face direction (forward, side, aft).

The sidewall and latch minimum gaps are recommended for proper cart handling. For rotatable inserts, the clearances are required for ease of installation and removal. The gaps shall be small enough to avoid dynamic impact loading on the retaining devices.

A retrieval mechanism should be incorporated in the compartments for the removal of containers and carts that are beyond reach.

3.2.9.3 Waste Compartments

All materials used in the construction of a waste compartments interior enclosure shall be fire resistant.

The capability of the waste compartment to contain those fires under all probable conditions of wear, misalignment, and ventilation expected in service shall be demonstrated by test. See [3.7.3](#).

The Waste Compartments shall be fully enclosed and sealed, with no openings or ducts large enough to provide sufficient air for combustion.

Provisions shall be made to prevent waste falling outside the waste containers.

A Waste compartment should not include systems such as electrical wire bundles or plumbing or conduits. When wiring or plumbing exist in the waste compartment, they shall be made of, or shrouded with, aluminum material at least 0.06 inch thick, or equivalent fire resistant materials. The penetrations of the compartment panels by wiring or plumbing shall be sealed with a fire resistant sealant or tested with no sealant installed.

3.2.9.3.1 Waste Compartment Design Features

Areas that are required to contain fire, in addition to being constructed of fire resistant materials, shall meet the following requirements:

- Design shall comply with 14 CFR/CS § 25.853(h).
- There shall be limited ventilation to the compartment. The compartment shall be enclosed on all sides with no openings or ducts large enough to provide sufficient air for rapid combustion.
- There shall be design features which guide the waste material from the waste chutes into the waste containers, preventing spillage outside the container.
- Waste flaps shall have no "finger holes," and shall be self-closing or shall be placarded to be closed when not in use (see [3.6.1.4](#), item c.).

- e. Waste compartments shall be capable of containing fire with the waste container in place.
- f. Compartments in which waste containers are stored shall not contain wiring, hoses, equipment, or accessories unless these items are of fire resistant materials or are suitably insulated against fire damage
- g. Waste containers shall contain any liquid introduced with the waste under normal operating conditions.
- h. Waste flaps should be self-closing. Waste flaps shall be marked per [3.6.1.4](#).
- i. The design of hinges, latches, and other moving parts (e.g., springs) shall consider service wear and tear to preclude degradation of fire containment capability. Multiple latches shall be used on doors for which fire induced warp or wear effects may degrade the fire containment capability. Hinges shall be durable and provide minimum air gap. Springs, such as those used on waste flaps, which are necessary to assure fire containment compliance, shall be redundant and shall have a fatigue life of 300000 cycles or greater and shall be easily replaceable.
- j. Unacceptable features: features proven by experience to be unreliable shall not be used. Examples include, but are not limited to:
 - 1. Tape;
 - 2. Hook and loop type fastening;
 - 3. Snaps or other attachment means that are easily fouled by waste;
 - 4. Bonded catch plates;
 - 5. Hollow core (pop) rivets;
 - 6. Seals bonded to structure without mechanical attachment or capture;
 - 7. Seals exposed to tear-out from repetitive insertion/removal of waste;
 - 8. Plates, doors and panels that exhibit "oil-canning" behavior due to insufficient stiffness.

3.2.9.4 Fixed Catering Equipment Compartments

Clearances required by heat generating equipment are usually specified on the equipment ICD and shall be adhered to.

In order to prevent any trash traps, the gaps around fixed equipment or other items shall not exceed 0.5 inch.

3.2.10 Drawers, Tables, and Pull-Out Tables

3.2.10.1 Drawers Shall Meet the Following Requirements

- a. Integrated drawers shall incorporate a positive locking mechanism for the closed position and a stop in the fully open position.
- b. Drawers, when loaded to design capacity, shall not have transverse or vertical movement or deformation during opening and closing which can cause binding or jamming.
- c. Drawers shall be removable without tools for cleaning or maintenance.

3.2.10.2 Tables

- a. Sliding tables shall be locked in the stowed position.
- b. Sliding as well as folding tables shall have double latches.
- c. Sliding tables shall be provided with a stop in the pull out position.
- d. Tables should be removable without tools for cleaning or maintenance.

3.2.11 Retaining Devices

Galley stowage compartments shall be designed such that the stowage compartment completely encloses its contents in accordance with 14 CFR/CS § 25.787.

3.2.11.1 Retaining Device Functionality

Loose and/or associated components of equipment, required to be retained or stowed separately from the equipment during taxi, take-off, turbulence, and landing, shall be shown and have their stowage requirements defined on the general arrangement drawing.

Retaining devices for loose and/or associated components and movable components shall be integral to galley structure.

No retaining device shall be capable of interfering with another retaining device, nor any component other than that which it is intended to retain.

Retaining devices should be simple to operate by a single motion.

Retaining devices should fail to the secure position. Functionality of retaining devices shall be verified by functional test in accordance with the galley acceptance test plan/procedure (ATP).

3.2.11.1.1 Visual Indication

Retaining devices shall have a visual indication of full positive engagement, which shall be self-evident by the device design or by integral indicators.

Latch fail indication is any means that permits clear visual confirmation that a latch is not properly engaged. In the case of a dual latching system, a single indication may serve for the two latches if it is ensured that the failure of either latch to properly engage will result in latch fail indication.

All latches, whether single or dual, shall include a latch fail indication.

3.2.11.1.2 Wear and Deterioration

Dual latching is a means of compliance to the wear and deterioration requirement. Where dual latches are installed, there is no need to further demonstrate wear and tear.

Consideration of wear and deterioration for single latches shall be substantiated by test evidence, or analysis based on test evidence, showing that latch operation as intended by the design will be maintained following a simulation of full service life, with an appropriate scatter factor. A design life of 20000 latch cycles may be used except if the regulatory agency finds the expected use of the aeroplane justifies more endurance substantiation. Demonstration of a 20000 cycle design life can be accomplished by submitting the latch to a 100000 cycle test representative of operational use and verifying after the test that the latch is still able to operate as intended and is capable of withstanding ultimate load without failure.

3.2.11.1.3 Cart Restraint Systems

Cart restraint fittings and retaining devices capable of restraining a fully loaded cart shall be provided in all cart storage positions. Design loads for restraints shall be consistent with orientation of the galley relative to airplane centerline; e.g., in-flight or take-off/landing.

3.2.11.2 Latch Requirements for Two Half Size (HS) Container Configuration

- a. Latch A shall take the total load of two HS cart per [3.3.1](#) and [3.3.2](#).
- b. Latch B shall take the forward in-flight and aft load of one HS cart per [3.3.1](#) and [3.3.2](#).
- c. Latching mechanism shall prevent load sharing.

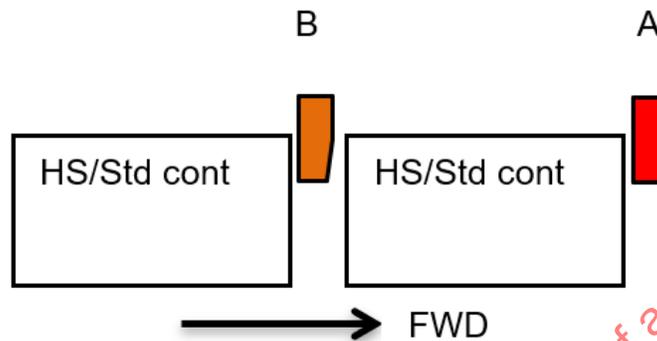


Figure 2

3.2.11.3 Latch Requirements for Three Half Size (HS) Galley Cart Configuration

- a. Latch A shall take the total load of two HS cart per [3.3.1](#) and [3.3.2](#).
- b. Latch B shall take the total forward load of two HS carts and aft load of one HS cart per [3.3.1](#) and [3.3.2](#).
- c. Latch C shall take the in-light load of one HS cart.
- d. Latching mechanism shall prevent load sharing.

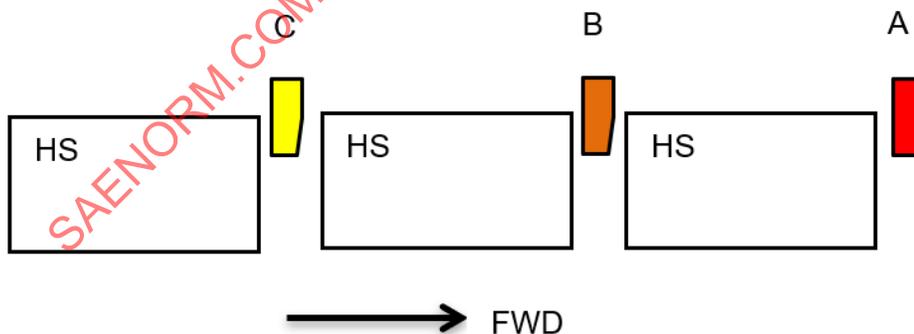


Figure 3

- e. Floor mounted or hidden cart retaining devices shall retain carts as secondary (redundant) retaining devices only.
- f. Cart parking locations shall hold the cart in its place under flight loads.

3.2.11.4 Latch Requirements for Three Standard Container Configuration

- a. Latch A shall take the total load of two standard containers per [3.3.1](#) and [3.3.2](#).
- b. Latch B shall take the total forward load of two standard containers and aft load of one standard container per [3.3.1](#) and [3.3.2](#).
- c. Latch C shall take the in-light load of one standard container.
- d. Latching mechanism shall prevent load sharing.

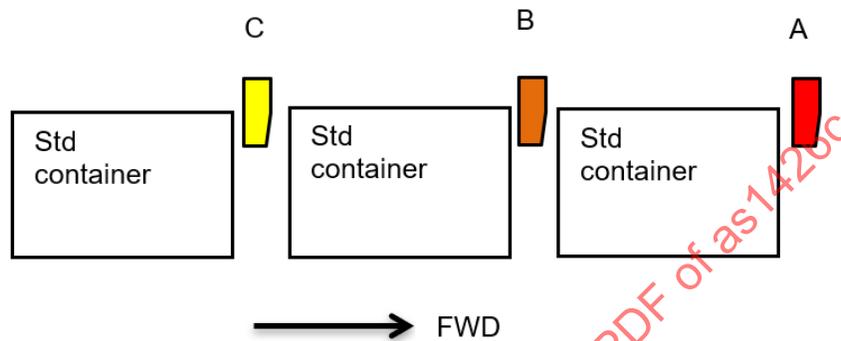


Figure 4

3.2.12 Sealing

Galleys shall have design features or sealing to prevent migration of water from counters and sinks to the bottom surfaces where leakage onto airplane floors could occur.

Confined areas, open panel cores, and cavities which are inaccessible to cleaning shall be permanently closed or potted and sealed.

3.2.13 Access Panels

Access panels are required to allow proper access for regular maintenance, cleaning, or inspection. Access panels may also be required to allow access for the installation of the galley into the airplane. Access holes shall be of sufficient size in order for the required task to be ergonomically performed. Access panels shall be removable with the use of common tools. In some cases, access panels shall be sealed after being re-installed. In lieu of sealing, a permanently attached gasket shall be acceptable. Access panels in waste compartments shall be permanently attached to the galley structure. Use of captive fasteners is preferred wherever dropped fasteners would create a hazard or recovery would be difficult.

3.3 Structural

3.3.1 General

The galley shall be designed for the worst-case loading for its intended application

3.3.2 Design Load Factors

Galleys shall be designed and demonstrated by test or appropriate analysis to withstand the ultimate loads determined by using the load factors in accordance with the airworthiness requirements and applicable flight loads. Emergency landing conditions according to 14 CFR § 25.561(b) as listed in [Table 2](#).

Each individual item of mass of the galley shall remain contained in its compartments under these loads.

Note that flight and landing loads can exceed emergency landing loads.

Each individual item of mass of the galley shall remain contained in its compartments under these loads.

Table 2 - Emergency landing conditions

Load Direction	Emergency Landing Conditions
Upward	3.0 g ⁽¹⁾
Forward	9.0 g
Sideways	3.0 g ⁽¹⁾
Downward	6.0 g ⁽¹⁾
Rearward	1.5 g ⁽¹⁾

⁽¹⁾ Increase these load factors as necessary for airplane model specific flight and landing loads.

NOTE: The lower (floor) and upper (overhead) structure stiffness applicable for the aircraft where the galley is intended to be installed shall be considered for calculation of interface loads and for verification of galley structure strength.

3.3.3 MVF Overload Factor

If a galley contains fiber-reinforced composite materials in its primary structure, it shall be demonstrated how material and process variability is addressed in order to show compliance with 14 CFR § 25.619. If a galley structure containing fiber-reinforced composite construction is substantiated by a single unit subject to ultimate load tests, the loads in [3.3.2](#) shall be multiplied by a minimum material variability factor (MVF) of 1.15 agreed with the certification authority to account for material and process variations.

3.3.4 Equipment Load Factors

Standard galley insert and GAIN and movable equipment loading requirements shall be as specified in the individual ICD of the equipment.

Movable equipment and inserts with placards defined in [3.6.1.1](#) item c. shall be capable of orientations in any horizontal direction unless it is limited by design or support provisions or appropriate placards as defined in the respective equipment ICD. Standard galley shell structures defined in [3.1.3](#) shall withstand load conditions applicable for the aircraft where the galley is intended to be installed. Load conditions should be found in airframe manufacturer's interface specification.

3.3.4.1 Attachment Fitting Load Factors

A fitting factor is to be applied to the ultimate loads at all attachments of the galley to the aircraft resulting from the highest flight and emergency landing loads for the aircraft type. The magnitude of the fitting factor depends upon the method of substantiation and independent verification of compliance is defined in 14 CFR/CS-25 § 25.625.

Unless the attachment strength is verified by limit and ultimate load tests in which actual stress conditions are simulated in the fitting and surrounding structures, the minimum fitting factor of 1.15 must be applied to the loads resulting from flight and emergency landing conditions.

In addition, some regulatory authorities have published detailed guidance regarding the need for a 1.33 "wear and tear" fitting factor, which may be applied to some galley installations. For example, refer to EASA Certification Memorandum EASA CM-S-002 Application of CS 25.561 (c)(2) 1.33.

3.3.4.2 Fitting Factor - Door Hinges, Latches, Removable Equipment Restraints, Safety Equipment Mountings (PBE, Fire Extinguishers, Oxygen Bottles, etc.) and the Galley Structure Adjacent to These Restraint Means

For the Malaysian CAA (refer to Malaysian Department of Civil Aviation Airworthiness Notice #47), the local attachment factor of 1.33 applies, in addition to the relevant prescribed inertia forces in [3.3.2](#) to door hinges, latches, and restraints that are part of the equipment structure, and to structure adjacent to the restraint means provided by the galley or interior furnishing.

The maintenance documentation provided by the galley manufacturer shall include thorough inspection requirements for the galley structure and all removable items of mass as appropriate to the design philosophy of the attachments. This shall include appropriate guidance, e.g., allowable damage limits, etc.

3.3.4.3 Adjacent Equipment Loads

Where equipment such as closets, storage compartments, magazine racks, attendant seats, bassinets, bustles, movie screens, curtains, and similar items are installed on or adjacent to galleys in a manner which requires supporting them from the galleys, structural attachment provisions and mounting hardware for this support shall be included in the galleys.

The galley-mounted attachment fittings and primary galley structure for such adjacent equipment shall be structurally substantiated using the full loaded weight of the equipment multiplied by the load factors of [3.3.2](#) and the attachment fitting load factors of [3.3.4.1](#).

For a galley-mounted cabin attendant seat (CAS) attachment fittings, substantiation of the strength of the attachment fittings to the dynamic loading specified by 14 CFR § 25.562 and TSO-C127 is required. CAS mounted to a galley wall shall be dynamically tested as a "seat system" (galley wall and CAS together) per below excerpt from AS8049.

"Seats mounted to a structure such as a structural bulkhead, galley, or lavatory, where integral structural members are used for attachment of the seat, need only be tested with the attachment fitting mounted to a rigid structure, in a manner equivalent to the production installation."

"Seats mounted to a structure, such as a structural bulkhead, galley, or lavatory, where no integral structural members are used for attachment, should be tested with the seat attached to segments of the mounting surface. These segments are typically 8 x 8 inch sections of the panel. These sections can, in turn, be mounted to a rigid structure."

3.3.4.4 Insert and Equipment Component Restraint and Loads

Insert components shall not provide galley structural shell load paths.

3.3.4.5 Service Connector Loads

Galley wiring and plumbing that interfaces with airplane service connections shall have sufficient slack and flexibility to prevent loading of the airplane/galley connections.

Slack shall allow for three or more replacements without damage to susceptible electrical harnesses.

3.3.4.6 Assist/Abuse Loads

Galley structure, doors, drawers, panel edges, and other galley supported projections in working area shall be capable of withstanding random "assist/abuse" loads which may be caused by personnel or occupants grasping, pushing, or pulling during in-flight turbulence, galley servicing, or emergency evacuations. This load shall apply at the midpoint of travel for drawers, overhead stowage doors, and pull out tables.

EASA Certification Memorandum CM-S-009 provides the loading requirements which is limited to safety and airworthiness related abuse loads only.

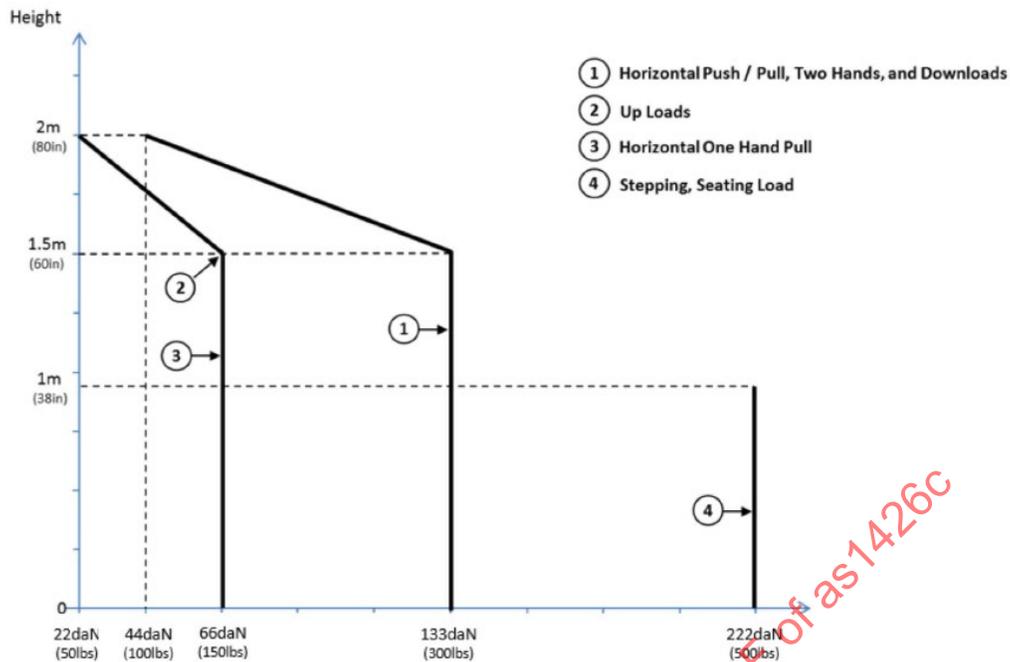


Figure 5

Table 3 - General concentrated loads

	0 to 150 cm Above Floor daN	At 200 cm above floor (Linear Reduction Between 150 cm and 200 cm) daN	Concentrated Load Application Area
Pushing	133	44	10 x 10 cm
Horizontal pull, one hand	66	22	10 x 10 cm
Horizontal pull, two hands	66 to 133*	44	10 x 10 cm
Up	66	22	10 x 10 cm
Down	88 to 133*	44	10 x 10 cm
Seating or stepping	133 to 222*	N/A (up to 100 cm)	Seat 30 x 30 cm Step 10 x 20 cm

* The appropriate value in the range must be selected considering the design of the specific feature. For example, glass panels exposed to a seating or stepping load will have to withstand 222 daN (refer to AMC 25.603(a)).

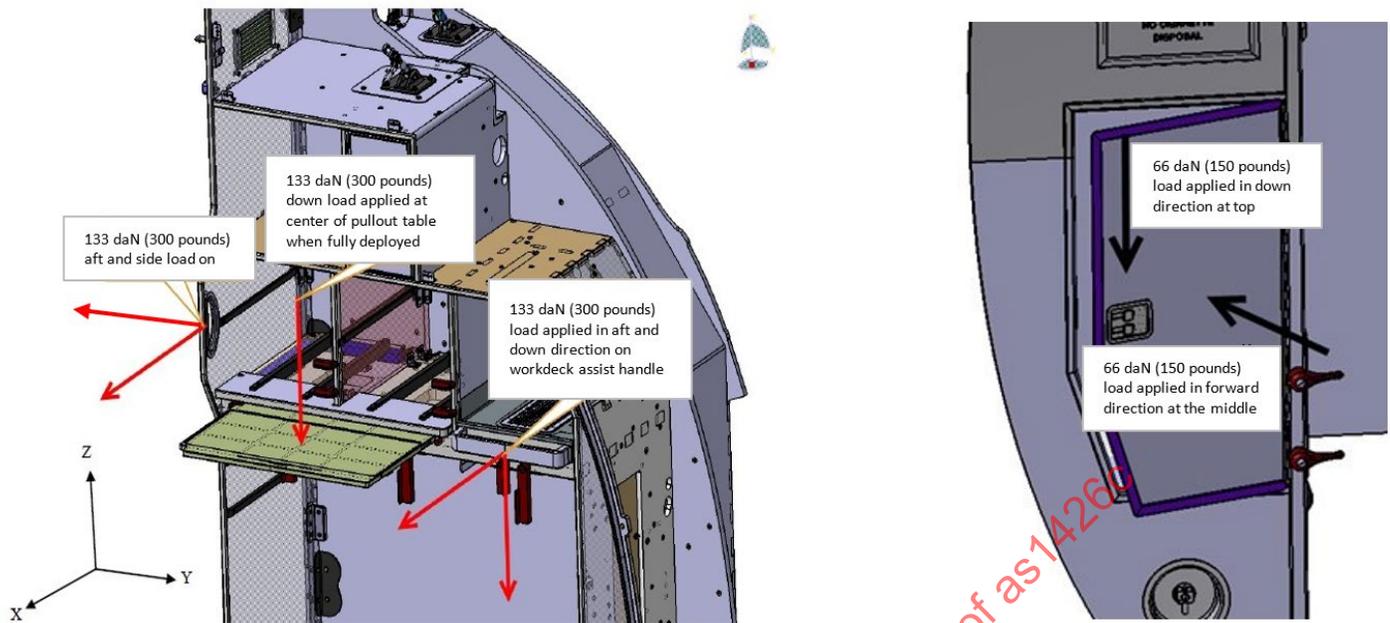


Figure 6

3.3.4.7 Rapid Decompression Load

Loads arising from rapid decompression defined by 14 CFR/CS § 25.365(e) and (g) shall be taken into account when designing and testing the strength of the galley.

The effect of internal pressure on the strength of compartment doors, hinges and latches during a sudden decompression shall be determined.

Reasonable design precautions must be taken to minimise the probability of parts of the galley from becoming detached and injuring occupants while in their seats during a rapid decompression.

3.3.5 Weights

3.3.5.1 General

Weight shall be a design element and shall be controlled during galley design and development by the responsible parties via an agreed development process.

3.3.5.2 Galley Gross Weight

Galley gross weight is the weight of the galley as installed in the aircraft with all compartments loaded to their placarded maximum weight, including all equipment inserts, carts, food, beverages, and all service items.

The galley gross weight shall be documented and provided in the galley manufacturer's instructions for continued airworthiness documentation.

In addition the load carrying capability for items such as provisions that are mounted to the galley shall be included in the document, including: attendant seats and attendants, bustles, baby bassinets, magazine racks, emergency equipment, literature pockets, carts when attached to the exterior of the galley, or any other extraneously installed or load imposing item.

3.3.6 Retaining Device Loads

Forces generated by hard landings, turbulence, crash, flight loads, ground loads, vibration, or the weight of the retaining device itself, shall not cause the retaining device to release.

For stowage compartments, the strength of doors, hinges, and retaining devices shall be compatible with the maximum contents weight, at the critical load distribution, under ultimate loading conditions (including the local attachment factor). Under the most critical loading, stowage compartments shall not release their contents due to door deflection.

Retaining devices, latches, and provisions (i.e., attachment fittings and associated structure) for equipment mounted on galley/interior furnishings such as attendant seats, observer seats, storage compartments, magazine racks, bassinets, and similar items shall be structurally substantiated using the gross weight of the equipment multiplied by the load conditions and in-flight conditions as specified in [3.3.2](#).

3.3.6.1 Primary and Secondary Latches

Depending upon the arrangement of cabin attendant seats within the aircraft cabin and the national airworthiness requirements of the state of registration of the aircraft, additional restraint devices (dual latching devices or equivalent) may be required to retain all items of mass in the galley or stowage compartment under the inertia loads specified as part of the airplane type certification basis.

If this requirement is applicable, doors on galleys, stowage compartments, or serving carts located near flight attendant seats, shall incorporate additional restraint devices that are demonstrated to be reliable and that secure in a positive manner.

If the primary latching devices fail, the additional restraint devices shall be designed to retain all items of mass under the inertia loads specified as part of the airplane type certification basis. In addition, the relative stiffness of the door structure shall be evaluated for possible adverse effects on the latch engagement.

Engineering drawings shall specify the minimum latch engagement that is compatible with the flexibility of the structure.

Loose components and associated equipment that can by its motion during severe turbulence cause injury to occupants shall be restrained by a reliable retaining device or be placarded to require stowage during taxi, take-off, turbulence, and landing.

Secondary retaining devices and load paths shall meet all structural requirements for primary devices so that either device is capable of independently restraining the insert.

Double latches (primary and secondary) or equivalent shall meet the requirements of 14 CFR/CS-25 § 25.789. Each latch shall take the total load as described in [3.3.2](#).

The retaining devices for an item of mass shall have a visual indication of full positive engagement which shall be evident by the latch design or by integral indicators per AC 25.785-1B and EASA CS-25, Section AMC 25.787(b).

A double-ended turn latches shall be capable of restraining the maximum weight of both compartments simultaneously.

Retaining devices for bottles and glasses shall be provided in the galley to ensure that the bottles keep in place during turbulence if not stowed in a closed compartment. An additional restraint is recommended.

To enable stowage in a "two deep" configuration within the same compartment, half size carts and containers and the respective retaining devices shall meet the strength requirements described in AS8056 Figure 2 for inertia loads imparted from a minimum of one additional HS cart or container, respectively, of at least the same maximum weight for a HS cart.

3.3.7 Deflection Requirements

Galleys shall not deflect and produce a permanent set that can impede egress spaces per 14 CFR § 25.561(d).

In addition, the galley shall not deflect so as to impose load on any adjacent items (passenger seats, overhead bins, other interior furnishing units, etc.) when subjected to the load conditions specified in [3.3.2](#).

As a minimum, deflection measurements in the loading direction at ultimate load and after removal of test load shall be recorded in the test report or structural analysis report for any locations where load share is likely, and at the following locations:

3.3.8 Forward Load Condition

Unit with upper support(s):

- Forward inboard and forward outboard vertical edges at 40 inches from base of unit.
- Forward inboard and forward outboard top corners of the unit.

Unit without upper support(s):

- Forward inboard and forward outboard top corners of unit.

3.3.8.1 Side Load Condition

Unit with or without upper support(s):

- Forward inboard and aft inboard edge at top of unit.

3.3.8.2 Door Deflection

Galley and interior furnishing doors and drawers shall not deflect so as to allow compartment contents to escape.

3.4 Electrical Systems

3.4.1 General

It is an FAA/EASA requirement that wiring diagrams of the galley electrical systems (including inserts/LRUs) shall be created. Wiring installation drawings shall be created for each galley in order to satisfy the EWIS requirements defined in 14 CFR/CS §25.1701 to § 25.1729.

All electrical parts in the galley shall be qualified for the environment of the specific airplane type. See [3.10](#).

3.4.2 Power Supply (AC/DC)

3.4.2.1 AC Power Supply

The airplane supply voltage supply will normally be 115 VAC constant frequency (CF) or wide variable frequency (WF).

3.4.2.2 DC Power Supply

If not provided by the airplane, DC power shall be generated within the galley if needed.

3.4.3 Power Consumption

- a. The galley manufacturer shall create an electrical load analysis showing the electrical power consumption for each phase and each supply route.
- b. The load analysis shall be included in the installation instructions and limitations. The galley manufacturer shall demonstrate that each power requirement is within the airplane manufacturers' limits for each supply in every applicable airplane.
- c. Power input quality, normal and abnormal operation. The galley shall operate from the power supplied specific of the airplane type, as defined for the aircrafts where the galley is intended to be installed.
- d. Power quality limits may generally conform to RTCA DO-160G Section 16 Category A(CF) or A(WF) or MIL-STD-704, but must be as defined by the applicable limits for each supply.
- e. All items of AC equipment that are rated at more than 1 kVA (maximum steady state consumption) shall be supplied with three-phase 115/200 VAC power.
- f. Inrush current: The maximum current demanded (inrush included) by the equipment shall not exceed 67% of the nominal current of any electrical power source that may supply this equipment on the airplane, with the voltage at the supply source terminals between 100 VAC and 130 VAC and at any supply frequency if VF supply. The maximum instantaneous current demanded by the equipment shall not exceed 22 A peak.
- g. Phase balance: Items of equipment supplied with three-phase AC current shall have loads balanced between the three phases. The difference, in VA, between the most heavily loaded and most lightly loaded phases shall be within the limits specified for the aircrafts where the galley is intended to be installed.

3.4.4 EMI and Lighting Strike

The galley shall be shown and independently verified to conform to the EMI and lightning strike requirements specific to the airplane type, as defined for the aircrafts where the galley is intended to be installed.

3.4.5 Wiring

- a. The design of all electrical wiring interconnection systems (EWIS) within a galley shall be demonstrated and independently verified to be in compliance with 14 CFR/CS-25 § 25.1701 to § 25.1723, inclusive, and § 25.1729.
- b. Equipment wiring shall be segregated into separate bundles taking into account the category of the transmitted signals, e.g., power supplies, data bus and radio frequency transmissions, control signals, monitoring signals, emergency and normal signals, etc.
- c. All galley wiring shall conform to wire types and specifications for the aircrafts where the galley is intended to be installed.
- d. Wire bundles: Individual cables shall be identified to ensure continued airworthiness in service. Color coding of equipment cables within an electrical equipment enclosure is a recommended practice, but all wires external to electrical equipment shall be identified with wire numbers such as those defined by A4A iSpec 2200.
- e. Wire marking shall be achieved by means of a non-aggressive process to minimize the risk of damage to the cables.
- f. Cable protection: Cable protection shall be provided at all points where chafing is likely to occur; bend radii shall not be less than ten times the bundle diameter. Where equipment is supplied with wiring in conduits, particular care shall be taken to avoid risk of fluid contamination.
- g. Cable crossing shall be avoided wherever possible. Cable bundles shall be constructed to avoid tangling of cables. Ensure that, for any tied cable bundle composed of a constant number of cables, the variation in diameter is limited to 10% of its nominal diameter. Sufficient cable shall be provided to enable at least two reconnections to be made at the cable ends.
- h. Cable bundles shall contain only cables of compatible types.

- i. Airplane electrical interfaces: Electrical connections shall be made using the type certificate holders standard items. The equipment connector pin allocation shall take into account signal levels, environmental protection, and segregation requirements.
- j. Connectors and polarization of connectors shall be as specified for the aircrafts where the galley is intended to be installed.
- k. All wiring within each galley shall be designed and tested to the specific dielectric and insulation resistance requirements for the aircrafts where the galley is intended to be installed.
- l. All wiring shall be adequately supported throughout its length. A sufficient number of supports shall be provided to meet the requirements for the aircrafts where the galley is intended to be installed.
- m. Personal electronic device (PED) charging installations shall meet requirements for the aircrafts where the galley is intended to be installed.
- n. Signal interface connector types shall conform to the requirements for the aircrafts where the galley is intended to be installed.
- o. All electronic system interfaces shall be verified by electrical and functional test as part of the galley acceptance test procedure (ATP).
- p. The shielding of any CAN bus cables within the galley shall be connected to the equipment case ground at both ends of each cable.
- q. Power feeder and power wiring: If two power feeders/power wires from two different power sources (AC and DC, AC1 and AC2, DC1 and DC2, etc.) feed a single galley, separate connectors are required for each power source. A minimum of a quarter inch separation shall be maintained between the feeders/wires or both feeders/wires shall be individually sleeved with approved separation sleeving. This physical separation or sleeving shall be required from the airplane/galley interface connector to the galley distribution circuit breakers.
- r. Wire bundles in galleys shall be located at least three inches away from water supply lines and be installed above the water supply lines wherever possible. All wires and wires bundles shall be 6 inches away from gaseous oxygen lines.
- s. Connectors shall be used for all split-line galley installations (horizontal and vertical), including ceiling panels. Receptacles shall be mounted on brackets and plugs shall be loose. Connector identification shall be associated with the split-line galley section that contains the wire bundle when the galley is disassembled—not the section to which the connector is connected when in final galley assembly on the airplane. Connectors located in wet areas shall be environmentally sealed and contain nylon sealing rods (filler rods) in all unused cavities (empty grommet holes), including unused coax cavities.
- t. Connector keying: Multiple connectors in the same area shall be suitably keyed or sized to prevent inadvertent cross mating. Where panels or modules are physically interchangeable, but not functionally interchangeable, the connectors shall be suitably keyed or sized to prevent inadvertent cross-mating.
- u. Wiring installation practices shall conform to the requirements of this document (protection, identification, separate grounds, etc.) and AS50881.
- v. Drip loop/drip shield: Where there is a possibility of water, moisture or condensation traveling down wire bundles to electrical equipment entry points or connections, drip loops shall be provided before the bundle enters the insert/equipment. The drip loop low point shall be a minimum of three bundle diameters below the low point of the entry or connection.
- w. Conduits and protective tubing shall be vented by holes to prevent moisture entrapment. Conduits shall have no more than 75% of the cross sectional area occupied by wires. When conduit is installed with open end upward, the open end shall be sealed with sealing compound as applicable to prevent the entrance of foreign material.

- x. Moisture proof splices: For the purpose of wire splices only, the entire galley unit shall be considered a “wet area.” It is required that all wire splices be accomplished with an integrated moisture-proof splice installation and installed per an approved process specification.
- y. Stowage of excess wires/wire bundles: All excess wires/wire bundles shall be tied securely into parent bundle or clamped and/or tied securely at one end of wire bundle. Do not allow wire/wire bundle contact with structure or adjacent wire/wire bundle.

3.4.6 Electrical Control Panel

In accordance with 14 CFR/CS-25 § 25.1357 and § 25.1360, adequate circuit protective devices shall be provided to protect “live” items against wiring faults or serious malfunction, hazardous contacts and injury to crew, passengers and servicing personnel.

- a. The failure of any control device or control circuits within the Galley shall result in power deactivation of the affected galley power circuit.
- b. Every galley shall incorporate a main power switch that removes all power to that galley. The design of the main power switch shall conform to the specifications for the aircrafts where the galley is intended to be installed.
- c. All electromagnetic devices (coils, relays, inductors, actuators, pumps, motors, etc.) shall be fitted with protection devices selected to ensure that transient voltages do not damage any sensitive control or switching circuits.
- d. The selection and rating of protection devices shall be in accordance with the requirements for the aircrafts where the galley is intended to be installed.
- e. Single-phase circuit breakers shall not be used to protect three-phase loads.
- f. All circuit breakers, fuses, and switches for the galley shall be mounted on a centralized panel in an easily accessible location. Circuit breakers shall not be used as control switches. If circuit breakers are concealed, their location shall be identified by placards and access shall be possible without the use of tools.
- g. If the circuit of a galley insert equipment (GAIN) is energized, an indicator in conformity with the color convention for the aircrafts where the galley is intended to be installed shall illuminate.
- h. If the galley contains inserts (GAIN) with built in test equipment (BITE) functionality, the galley shall comply with the BITE interface requirements for the aircrafts where the galley is intended to be installed.
- i. The electrical power distribution inside the galley shall be distributed to balance power demands across the three phases of the power supply.
- j. If the galley insert equipment (GAIN) do not have their own control switch, there shall be one located on the galley electrical control panel.
- k. If DC power is required within a galley, all DC powered or controlled devices shall have a return wire isolated from ground and of a size compatible with the maximum DC return current to the transformer rectifier unit (TRU).
- l. The installation of transformer rectifier units (TRUs) or transformers within the electrical control panel is not permitted.
- m. Common failure modes between DC and AC circuits shall be avoided.
- n. If power outlets are required in the galley, the wiring shall be in accordance with the specifications for the aircrafts where the galley is intended to be installed. The power outlets shall be placarded with the output voltage and frequency.

- o. If two power feeders/wires from two different power sources feed a single control panel, adequate protection (separate connectors, barriers that are physically segregated, clamped and color coded, etc.) shall be installed to ensure that feeder/wire shall not inadvertently be connected to the other feeder/wire. The quarter inch separation requirement may be relaxed for power wiring that is protected by a 5 A or smaller size circuit breaker for AC circuit (2.5 A or smaller for DC).
- p. AC neutrals and DC returns associated with one power source feeder/wire shall be separated from all other different power source feeders/power wires.

3.4.7 Grounding and Bonding

- a. Each item of galley insert equipment (GAIN) shall be electrically bonded to prevent the accumulation of electrostatic charges, to prevent electric shock in case of internal short circuits and to ensure that the maximum protection is maintained against the effects of EMC and to minimize the possibility of radiation from the equipment.
- b. Each item of equipment with an at least partly conductive surface shall be provided with means to allow the effective and durable electrical bonding to the A/C structure.
- c. The materials used for each electrical bonding point shall be selected such as to reduce to a minimum the potential for corrosion over the equipment or A/C life. In particular, the galley manufacturer shall demonstrate that the specified bonding resistance on the unit will be maintained even after an equipment removal from the airplane and return to service.
- d. With regard to non-electrical equipment with an at least partly conductive surface, the relevant applicable electrical bonding requirements are specified below.
- e. The resistance between any point on the equipment housing and the dedicated bonding surface and any point on the equipment housing and connector bonding pin (if applicable) shall not exceed 20 m Ω . This value is reduced to 10 m Ω for equipment powered or supplied with flammable liquids or gas.
- f. A wired connection shall be provided between each galley insert equipment (GAIN) and a terminal in the supply connector to provide a fault current path to the A/C structure. The current rating of this conductor shall accommodate the largest fault current expected for the equipment.
- g. Electrical power supply returns: For each primary supply input (e.g., 28 VDC, 115 VAC single-phase) a return conductor shall be provided inside the galley. This does not apply to three-phase AC supply input.
- h. Static ground wires are required when galley wiring includes power wiring, which is above 1.25 VAC or 5 VDC in a wet area and 30V AC or DC for dry areas. Static ground wires are required for all conductive bond surface points including galley insert equipment (GAIN), control panels, equipment mounting brackets/shelves, metallic sinks/sink decks, metallic waterlines (supply, drain, or spigot), and all metallic structure and work tables. Any metal, which could be contacted by a flight attendant, maintenance person, or passenger that could be shorted to power wiring, shall be grounded.
- i. Static grounds shall not be terminated at an AC or DC ground point. To provide for personnel protection in the event of an electrical fault, a maximum static bonding resistance of 0.0175 Ω in wet areas and 0.030 Ω in dry areas from any conductive bond surface points on the galley to primary airplane structure is required.
- j. The static grounding and bonding system shall be designed to safely carry the maximum fault current generated. The fault current would be carried for the time necessary to trip the airplane or galley circuit breakers or ELCUs. This means that static grounding and bonding wires and contacts shall be at least as large as the power input wires and contacts, but resistance requirements take priority in sizing static ground wires.
- k. All terminations for static ground wires/jumpers shall be identified with a ground reference designator or FIN number. (Each end of a ground wire shall have a reference designator). Continuous metal strips shall have reference designators for each stud/termination on the strip that a ground wire/jumper is attached to and/or two metal strips attached by a stud for faying surface bond. Note that the screw/stud is not part of ground/bond path.

- l. Galley main bonding path: An electrical bond between the galley primary structure and the airplane structure shall be provided to establish the required electrically conductive path between the conductive structures of the galley and the airplane. This bond is referred to as the galley main bonding path and the resistance shall not exceed 0.0025 Ω for all galleys.
- m. Galley insert equipment (GAIN) bonding path: The galley manufacturer shall provide an electrical conductive path from the various relevant galley insert equipment (GAIN) to the galley main static ground stud for galleys/closets/partitions/stowages/crew rests. This conductive path is defined as the galley insert equipment (GAIN) bonding path. The resistance value is measured from the designated static ground point or interface on the insert to the galley main static ground stud. The resistance value shall be of 0.010 Ω or less for wet areas and 0.0225 Ω or less for a dry area. Note: The insert rail assembly is considered part of the galley—not part of the galley insert equipment (GAIN).
- n. The galley shall have an electrical conductive path between the various relevant galley conductive structural elements and the galley main static ground stud. The relevant conductive structural elements are those which galley wiring may come into contact with (sinks, counter tops, moulding, etc.) and inadvertently provide a path for an electrical fault to occur due to an installation failure, wire abrasion, etc. This conductive path is referred to as the galley structure bonding path and shall have a resistance value of 0.010 Ω or less. Bonding of conductive structural elements within the galley to create an electrically homogeneous unit may be done by faying surface bonds or by bonding jumpers or wires.
- o. Galley water line and drain line bonding path: All metallic water supply lines shall be bonded to the conductive galley structure through metallic clamps (in addition to cushion support clamps or brackets) or by installation of a sufficient number of bonding jumpers at intervals such that the bonding resistance between any conductive point of the water supply line and the galley main static ground stud shall be 0.015 Ω or less. At least two bonding points shall be installed for each continuous water supply line. One of these bonding points shall be located as close as feasible to the point of exposure to regular personal contact (i.e., faucet, sink deck, etc.). Special care shall be taken to ensure bonding of these lines in composite structure galleys. This conductive path is referred to as the galley water line bonding jumper and shall have a resistance value of 0.010 Ω or less.
- p. All bonding procedures shall be controlled by approved process specifications.

3.4.8 Lighting

- a. Galleys shall be equipped with sources of artificial light capable of providing at least 215 lx on all areas of work surfaces. Lighting fixtures shall be designed and installed such that breakage will not contaminate food.
- b. All lighting fixtures and equipment shall be designed and qualified for reliable operation, under applicable airplane environment throughout the life of the airplane.
- c. The lights above the work counters shall be controlled by on-off switches on the electrical panel or light assembly. The galley area lighting should have dimming capability (e.g., off dim bright, off bright dim, etc.).
- d. LED lighting shall have integral circuit protection to prevent circuit board tracks from overheating due to an internal short circuit condition or contain circuit tracks that are capable of handling fault currents. Upstream galley circuit breaker trip curves shall be accounted for when analyzing possible fault currents.
- e. Lighting shall meet the temperature requirements of [3.8](#).

3.5 Mechanical Systems

Functionality of galley water supply system and water drain system shall be verified by functional test in accordance with the airplane manufacturer's requirements as part of the galley acceptance test plan/procedure (ATP). See Section [4](#).

3.5.1 Water Supply System

The requirements in this section are applicable only to galleys that have a water supply system.

3.5.1.1 Interface Locations

Galleys shall have water connections to the airplane as specified in applicable airplane specification.

3.5.1.2 Operating Conditions

The galley potable water system shall be designed that no hot water backflow from the GAINs to the water faucet/spigot can occur during normal operating conditions.

Minimum normal operating pressure: 10 psig per equipment specification or as applicable for the aircrafts where the galley is intended to be installed.

Maximum normal operating (filling) pressure: 30 psig or as applicable for the aircrafts where the galley is intended to be installed.

Proof pressure: 1.5 x maximum normal operating (filling) pressure or as applicable for the aircrafts where the galley is intended to be installed.

Burst pressure: 2.0 x maximum normal operating pressure or as applicable for the aircrafts where the galley is intended to be installed.

3.5.1.3 Freeze Protection

After draining by gravity, the water system shall be capable of withstanding freezing without permanent damage, or shall have fail-safe freeze protection design features to prevent permanent distortion or failure.

3.5.1.4 Interface Fittings and Shutoff Valves

Each galley unit shall have a water supply shutoff valve, easily accessible and operable without tools during flight, to isolate the unit from the airplane water source. Each shutoff valve within a compartment or behind an access panel shall be identified by a placard indicating valve location and operating direction for shutoff.

3.5.1.5 Water System Arrangement

- a. All portions of the galley water system shall be installed in a position which ensures complete draining by gravity flow when using a single drain valve when vented to air at the highest point(s) in each galley complex or unit. Venting and draining shall not require tools.
- b. Water supply lines shall not be routed through any cold zones where freezing temperatures may be present on the aircrafts where the galley is intended to be installed unless additional freeze protection is provided.
- c. The water system shall be arranged to prevent water leakage (from failed water faucets, valves, or other fittings and joints) from migrating outside the allowable envelope applicable for the aircrafts where the galley is intended to be installed.

3.5.1.6 Materials

Materials in direct contact with potable water shall be corrosion resistant, impervious, non-toxic, non-absorbent, resistant against bacteria, suitable for use with super-chlorinated water and cleaning agents/disinfectants, and shall not impart objectionable taste to water.

3.5.1.7 Potable Water System Sanitation

The potable water system design and construction shall conform to the sanitation requirements of [3.2.4](#). The water system shall not be connected directly into any piping, valves, or containers which are connected to the airplane drainage system.

3.5.1.8 Water Faucets

Water faucets or spigots shall be self-venting, self-draining and self-closing at all system normal operating pressures. Faucets shall be located above liquid collection devices.

Minimum water faucet flow rate: 1.7 L/min at 25 psig.

Maximum water faucet flow rate: 2.5 L/min at 44.5 psig.

The self-drain faucet shall be opened if the system pressure is 0 psig (0 mbar).

3.5.1.9 Supply and Drain System Separation

The water supply system shall be arranged to provide sufficient separation between supply and drain lines to prevent contamination of the supply system.

- a. Supply lines must be routed to prevent dripping water from the drain system from falling onto the supply system at any flight attitude.
- b. Openings in the supply system such as faucets and drain valves shall be separated from the top level of the sink/sump by at least 1 inch.

3.5.1.10 Water Supply Damage Protection

- a. Water supply lines that may experience flexing during installation of the galley or the galley insert equipment (GAIN) shall be corrosion resistant steel braid-covered hoses.
- b. Protective shrouds shall be provided for all water supply lines that may be damaged during normal operation.
- c. Water supply lines shall be supported to prevent contact with adjacent structure at all flight attitudes and when exposed to the vibration environment of [3.10.5](#).

3.5.2 Water Drain System

3.5.2.1 Drain Connection Locations

Connections for waste drainage of liquids into the airplane water drain system directly from galley liquid collecting sources such as sinks and coffee makers shall be provided as defined in the applicable ICD.

3.5.2.2 Design Pressure

The galley waste water system shall be designed to withstand following operating pressure: 0 to -10 psig

The galley waste water system shall be designed to withstand following negative proof pressure: -12.7 psig.

The components of the galley waste water system shall be designed to withstand overpressure: 10 psig.

3.5.2.3 Screening

Drain system openings accessible to foreign matter shall be screened. Screens shall prevent passage of solid particles larger than 2.0 mm (0.08 inch) diameter. Screens shall be capable of being cleaned in place or shall be removable using tools.

3.5.2.4 Drain Arrangement

All portions of the galley drain system shall be installed in a position which ensures gravity drainage with all flight and ground attitudes specified in the ICD.

Backflow from a plugged drain shall not spill into inaccessible areas or outside of the galley structure. Backflow in the drain system shall be immediately visible to the cabin crew. Backflow from a plugged drain should first occur in a sink.

3.5.2.5 Materials

Materials in direct contact with waste water shall be corrosion resistant, impervious, non-toxic, resistant against bacteria, with a surface condition which prevent the collection of dirt, suitable for use with super-chlorinated water, and resistant against cleaning agents/disinfectants.

3.5.2.6 Drain Sizes and Construction

- a. The waste water drain line and all fittings shall be sized to drain the maximum flow rate of the equipment that it is draining.
- b. Minimum drain size from compartments, coffee makers, and refrigeration chillers shall be per the specifications applicable for the aircrafts where the galley is intended to be installed.
- c. Sharp bends, mitered joints, and kinks shall be avoided in drain lines. The minimum bend radius for flexible drain lines shall be no less than 2.5 times the drain line inside diameter.

3.5.2.7 Liquid Collecting Devices

Liquid collecting devices shall be provided for all faucets, beverage maker compartments, and air chillers. Liquid collecting devices shall be provided for valves, water filters, and drain strainers that are installed in locations where leakage would not be easily accessible for cleanup.

Liquid collecting devices shall drain at all flight and ground attitudes as applicable for the aircrafts where the galley is intended to be installed. Water from faucets shall fall into liquid collecting devices at all flight and ground attitudes specified in the ICD.

The minimum flow rate of the liquid collecting device shall equal the sum of the maximum flow rates of all water sources flowing into the liquid collection device with no differential pressure in the drain system.

When a water faucet is the only water source, the minimum flow rate of the liquid collecting device shall be two times the maximum flow rate of the faucet.

Collecting devices shall drain at standard cruise attitude of the airplane. In order to avoid contamination, there shall be an air gap between the drain system and any compartment containing food or ice.

3.5.2.8 Drain System Damage Protection

- a. Protective shrouds shall be provided for all drain lines that may be damaged during normal operation.
- b. Drain lines shall be supported to prevent contact with adjacent structure at all flight attitudes and when exposed to the vibration environment of [3.10.5](#).
- c. Drain lines shall not be routed through any cold zones where freezing temperatures may be present that are identified for the aircrafts where the galley is intended to be installed unless additional freeze protection is provided.

3.5.3 Ventilation

Where applicable heat and moisture-generating equipment shall have suitable ventilation to prevent temperature increase from affecting adjacent structure or equipment.

3.5.3.1 Exhaust Ventilation

Airplane air conditioning systems shall provide ventilation, temperature, and odor control of galley areas as applicable for the aircrafts where the galley is intended to be installed.

3.5.3.2 Equipment Ventilation

Heat generating equipment such as ovens, coffee makers, water boilers, and refrigeration units shall have suitable ventilation to prevent temperature increase from affecting adjacent structure or equipment as defined in the specific ICD of the equipment.

3.5.3.3 Individual Air/Area Heat

The attendant work area can be provided with an individual air outlet installed in the galley if an interface will be provided in the airplane. It shall be adjustable to modulate the quantity and direction of the airflow. Provisions shall be intended to switch off the individual air in case of fire.

3.5.4 Refrigeration (Air Over/Air Through)

The refrigeration system should be designed as air over or air through system (for definitions, refer to ARP8058 3.1.2 and 3.1.3).

The system should cool the contents (e.g., drinks, food) stowed inside the galley (e.g., in carts, standard units, or miscellaneous compartments) to meet thermal performance criteria as stipulated in ARP8058. (Note: Additional national authority requirements for food safety may be applicable.)

The design should consider the heat load and the operational ambient conditions.

The chilled air should be generated by an air chilling unit mounted inside/on the galley or nearby airplane structure. If the chilled air needs to be distributed to individual compartments, an insulated duct system should be designed and installed to meet the required performance criteria. The duct system shall meet the static pressure requirements identified on the air chiller's ICD.

The air chilling unit should use the ambient air as a heat sink or be connected to a central airplane cooling system.

For performance and ergonomic reasons, the leakage of chilled air should be minimized. Condensation should be controlled by usage of insulated materials and dedicated drip pans where required.

3.6 Placards

3.6.1 General

In accordance with the applicable regulations, the equipment shall be marked using materials and/or processes that will ensure legibility during its lifespan. Acceptable means of attaching placards shall be adhesive bonding and/or fastening with rivets or screws.

When the entire back face of the placard is bonded to the structure, edge sealing is not required. Placards that are attached only with rivets or screws may require their edges sealed to meet the applicable public health standards.

Caution, information, instruction, and special emphasis placards shall be in English language only and shall be conspicuous and worded in mandatory "command" English. They shall be clearly visible and designed such that the cabin staff can easily read and understand the wording. They shall be readable without removal of installed equipment.

Caution, information, instruction, and special emphasis placards shall be greater than 37 x 14 mm; the lettering shall be a minimum of 4 mm high.

When certification requirements are not involved, non-English languages may be used.

Placards shall be bilingual (English and foreign language) if required by national regulations for placards conveying a written warning, instruction or information to passenger. If pictograms are used, requirements shall be met per ARP577.

Placard terminology shall be consistent within a specific airplane. Within each airplane, the nomenclature shall be applied consistently.

Marking location, style, and wording may be consistent with the applicable cabin placard design guide, provided this meets airworthiness legibility requirements and shall be consistent for each shipset of galleys installed in the same cabin arrangement.

The location part number and wording of all placards shall be shown on the galley or stowage interface control document.

3.6.1.1 Specific Requirements for Placards

- a. Each galley shell shall have at least one general area placard that reads "CLOSE AND LATCH ALL DOORS, DRAWERS, LOOSE ITEMS, AND SHELVES DURING TAKE-OFF, TURBULENT WEATHER, AND LANDING" located in a conspicuous place.
- b. Required general area placards shall be visible to the crew from any vantage point in the work area. Use of multiple sets of area placards may be necessary to satisfy this requirement. Attention should be devoted to ensure these placards are not obscured by open doors (e.g., compartment, oven, etc.). If it is impossible to meet this requirement, it is allowable to install a "CLOSE AND SECURE IMMEDIATELY WHEN NOT IN USE" placard on the door in question.
- c. Movable equipment and structures having inherent design limitations restricting use in certain locations or orientations shall have placards installed defining the limitations. Movable equipment includes doors, drawers, modules, containers, functional equipment items, and any other movable or removable item.
- d. Doors or movable items that can restrict emergency crossover aisles or the entrance door areas shall be placarded "DOORS (DRAWERS, SHELVES, ETC.) MUST BE CLOSED AND/OR LATCHED (STOWED AND LATCHED) DURING TAXI, TAKE-OFF, LANDING, AND TURBULENCE" or similar wording.
- e. Each electrical outlet location shall be placarded to identify specific usage and voltage available and AC or DC identification.
- f. Each galley compartment and drawer shall have a unique compartment number which shall be identified on a conspicuous surface with a placard (e.g., 1A01). When a compartment is designed for multiple item stowage (e.g., double-deep standard container compartments), one number shall be sufficient to identify the entire compartment. For each compartment and/or drawer, a unique compartment number shall be assigned, which shall be defined on the interface control drawing.
- g. Where circuit breakers, controls, or valves are hidden from normal view, a placard is required indicating the location.
- h. Each circuit breaker shall be clearly identified with the same description as the electrical equipment supplied. Sequences of circuit breakers shall be logically identified with respect to the electrical equipment installed (e.g., Oven 1, Oven 2, etc.). Each electrical bonding point shall to be clearly identifiable. A "HIGH VOLTAGE INSIDE" placard shall be located at the front side of any electrical control panel with control and distribution for AC power.

3.6.1.2 Weight Limit Placards

- a. Each galley or galley complex shall be placarded with a gross weight and an empty weight. The placarded gross weight shall be greater than or equal to the sum of all compartment capacities (as structurally substantiated and placarded), the empty weight and incidental equipment (e.g., top mounted chillers and magazine racks).
- b. Weights shall be in imperial (pound) and/or metric (kilogram) units applied consistently throughout the airplane's interior system. Compartments shall use, as a minimum, the same weight unit nomenclature as the corresponding inserts.
- c. Each galley shell and each compartment, shelf, stowage position within the galley shall have a placard stating "MAXIMUM WEIGHT OF CONTENTS XXX LBS," "MAX INSERT WEIGHT XX LBS," and similar wording. Weight units may be in pound or kilogram units, or dual units if requested.
- d. Each compartment, drawer, and stowage position (e.g., oven, coffee maker, and shelves within a compartment) coat rail, sliding or folding-table shall have a placard stating "MAXIMUM CAPACITY X LB (Y KG)" or equivalent wording. The use of the words "LOAD LIMIT" shall always have a qualifier (e.g., "SHELF LOAD LIMIT," "FLOOR LOAD LIMIT"). For each fixed equipment stowage compartment (e.g., oven, boiler, etc.) that requires a weight limit placard, the weight limit value shall be equal to or greater than the gross weight of the fixed equipment. The galley shall not have placards that reduce the stowage capacity of the fixed insert (e.g., max oven capacity 20 pounds).
- e. Multiple compartments behind a single door shall be placarded by either of the following methods:
 1. Each separate compartment shall have an individual weight placard that is clearly visible and is specific and adjacent to the area that it controls.
 2. A single placard specifying "TOTAL COMPARTMENT LOAD LIMIT X LB (Y KG)" or equivalent will be placed on the compartment door. Locating the placard on the inside of the door is usually preferable. If this method is used, then each load bearing area shall be substantiated to carry the total compartment load.
- f. Weight limit placards shall be located where they are not obscured while the compartment is being loaded (e.g., high and on the sidewall near the work face or on the inside of a door). The placard shall be visible without additional movement beyond that required for loading the compartment. If multiple items (e.g., containers) are stowed in one compartment, the weight placard (for the entire compartment weight) may be covered by the last item stowed, but shall remain visible until the last item is stowed.
- g. If the compartment's placarded weight capacity is less than the cart (excluding folding carts which have no stowage capacity) or container's placarded gross weight, each unit with compartments designed for stowing carts or containers shall be placarded in the general area as follows: "THE GROSS WEIGHT OF ANY CART OR CONTAINER, OR THE COMBINED GROSS WEIGHTS OF ANY CARTS OR CONTAINERS WHEN STOWED TOGETHER, MUST NOT EXCEED THE PLACARDED MAXIMUM CONTENTS WEIGHT OF THE COMPARTMENT WHERE STOWED."
- h. If a compartment is accessible from two sides, respective separate doors, a maximum capacity placard shall be installed at each door.
- i. If the maximum permitted weight of two half size meal carts in a single compartment exceeds the max allowable weight of a full size meal cart, an additional weight placard for full size meal cart is required.
- j. Certified configuration shall be clearly identified. For example, "ALL CARTS OR NO CARTS MUST BE INSTALLED FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING."
- k. Standard containers are not required be placarded with a maximum gross weight. When standard containers are not placarded with a maximum gross weight, their maximum weight limit is solely controlled by the galley compartment weight limit placard. For this situation, the galley compartment load limit shall not exceed the maximum weight of the standard container.

- I. Compartments designed for the stowage of coats (coat closets) shall be placarded by either of the following methods:
 1. Specific controls for coat closet features that may bear weight:
 - i. Each coat rail shall have a placard stating "RAIL LOAD LIMIT X LB (Y KG)" or equivalent wording and located so that it is visible with coats hanging on the rod or rail.
 - ii. A "FLOOR LOAD LIMIT X LB (Y KG)" placard shall also be added to the closet and located so that it will not be obscured by stowed items.
 - iii. If the coat closet has multiple compartments behind the closet door in combination with a coat rail and/or floor stowage, each feature (e.g., the floor, rail, and compartment) the compartments behind a single door shall be placarded.
 - iv. If the coat closet does not have multiple compartments but has a coat rail(s) and floor stowage and the closet has two closet doors, it will be necessary to install two sets of placards such that a paired set remains visible when either door is open. Also, to preclude misunderstanding, these placards shall contain the word "TOTAL." The coat rail shall have a placard stating "TOTAL RAIL LOAD LIMIT X LB (Y KG)" or equivalent wording and another placard stating "TOTAL FLOOR LOAD LIMIT X LB (Y KG)" or equivalent.
 2. For a single door coat closet, one load limit placard may be placed on the closet door. The preferred location is on the inside of the door as long as it cannot be obscured by the items stowed in the closet. If the coat closet utilizes two doors, it will be necessary to locate a load limit placard which contains the words "TOTAL COMPARTMENT LOAD LIMIT X LB (Y KG)" or equivalent on each door so that one placard remains visible when either door is open. If this method for single or double closet doors is used, each load-bearing component (e.g., coat rail, floor, closet door) shall be substantiated to the total load.
- m. Emergency equipment stowed within the galley area shall be suitably labelled as defined. "NO STOWAGE" or "EMERGENCY EQUIPMENT ONLY" placards are required for spaces which are reserved for emergency equipment only.
- n. In case of mixed compartments (emergency equipment and miscellaneous stowage) behind one door, the emergency equipment should have a separate sub compartment which is easily accessible when total compartment is filled with items such as clothes etc. A "NO STOWAGE" placard is required for the emergency sub compartment. The intent is that emergency equipment shall not be blocked by the stowage section.
- o. Emergency equipment items provided with galleys, which are not part of general airplane emergency equipment, shall be placarded. Weight limit placards are required in stowage compartments that are dedicated to stowage of items such as emergency equipment, IFE equipment, wheel chairs, and folding carts. To preclude the stowage of miscellaneous items, these dedicated stowage compartments shall also be placarded for their intended use, for example, "EMERGENCY EQUIPMENT ONLY," "FOLDING TROLLEY ONLY," "VIDEO EQUIPMENT ONLY" or equivalent wording.
- p. Weight limit placards are not required on magazine stowages (e.g., magazine racks and literature pockets) that are not fully enclosed (e.g., compartment with no door). When the magazine stowage compartment is fully enclosed, a load limit placard is required unless it is restricted to "MAGAZINE STOWAGE ONLY" (or equivalent wording) to preclude it from being considered a miscellaneous or general use stowage compartment. When a magazine stowage compartment is not fully enclosed and has a load limit placard, an additional placard is required restricting it to "MAGAZINE STOWAGE ONLY" or equivalent wording.
- q. Waste compartments shall have a placard stating "MAXIMUM CAPACITY X LB (Y KG)" or equivalent wording. The load limit of each waste compartment shall be determined by multiplying the nominal volume of the waste container times the waste density. The waste density should not be less than 0.004 lb/in³.
- r. For electronic equipment installed in a galley, including IFE equipment, a unique equipment identification index number shall be affixed per the approved system installation definition. Required electronic equipment identification placards shall be defined on the interface control drawing.
- s. Each water shutoff valve and drain valve shall be placarded or marked to clearly identify its function.

- t. Water shutoff and drain valves shall be placarded indicating the direction of valve opening and closing. The placard shall be on or near each valve.
- u. Any other special items (e.g., drain strainers) that are stored or accessible through or behind access panels shall be identified with a placard.
- v. Pull-out tables that have not been substantiated to the applicable abuse loads shall have a load limit placard that is conspicuous when the table is deployed.
- w. Load limit placards in compartments shall be installed in a manner that placards can be seen and are legible when the access doors to the compartment are opened or installed equipment is removed, respectively (e.g., not on the backside of the compartment).

3.6.1.3 Warning Placards

- a. A placard reading “CLOSE AND SECURE ALL _____ AND SECURE LOOSE ITEMS FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING” or equivalent shall be installed on each unit face where doors, drawers, tables, or shelves are installed.
- b. The following applies to doors, drawers, tables, etc., that are not spring loaded closed or otherwise self-closing. Only the word door is used below but the requirements apply to doors, drawers, tray tables, etc. These requirements do not apply to spring loaded closed or self-closing doors, drawers, tables, etc.:
 1. A compartment door that could interfere with the opening of the emergency exit shall have a special emphasis placard installed on or very near the door that reads “CLOSE AND SECURE FOR TAXI, TAKE-OFF, AND LANDING” or equivalent wording that includes the words “taxi, take-off, and landing.” This placard should be visible with the door in any open position.
 2. A compartment door that is potentially injurious but does not interfere with the opening of the emergency exit shall have a special emphasis placard installed on or very near the door that reads “CLOSE AND SECURE IMMEDIATELY WHEN NOT IN USE” or equivalent words that require immediate closing. This placard should be visible with the door in any open position.
 3. A compartment door that could interfere with the opening of an emergency exit and is considered to be potentially injurious during flight shall have both special emphasis placards installed on or very near the door that read “CLOSE AND SECURE IMMEDIATELY WHEN NOT IN USE” and “CLOSE AND SECURE FOR TAXI, TAKE-OFF, AND LANDING,” respectively. It is acceptable to combine the wording on one placard such as “CLOSE AND SECURE IMMEDIATELY WHEN NOT IN USE AND FOR TAXI, TAKE-OFF, AND LANDING.”
 4. If a compartment door can block the visibility of a required placard or “No Smoking Fasten Seat Belts” sign during opening, then a placard that reads “CLOSE AND SECURE IMMEDIATELY WHEN NOT IN USE” shall be installed on or very near the door and visible with the door in any open position.
- c. For compartments designed to accommodate standard containers or half size meal carts installed in row and in one compartment, all load limit placards shall be installed in the front part of the compartment.
- d. When more than one container or insert can be stowed in a compartment, the compartment shall be placarded “_____ MUST BE STOWED IN PAIRS” or equivalent. The placard shall be visible until the last insert is installed. This placard is not required when the compartment has been additionally substantiated for single insert stowage. However, if additional or special restraint devices are required for single insert stowage, placarded instructions for the operation of these restraint devices shall be required if operation is not obvious.
- e. If compartments are not designed for both Full Size and Half Size Meal carts, a placard “FULL SIZE MEAL CART ONLY” or “HALF SIZE MEAL CARTS MUST BE STOWED IN PAIRS” or “TWO HALF SIZE MEAL CARTS MUST BE INSTALLED” is required. If each compartment of one galley is capable to accommodate the same carts like all other compartments, no extra placard is required.

- f. If half-size carts are included in the airplane interior configuration, then full-size cart compartments not substantiated for half-size cart stowage shall be placarded “FULL SIZE CART STOWAGE ONLY” or equivalent. Placard shall be visible prior to installing the cart.
- g. Surfaces that are not designed or intended to be used for stowage may be, but are not required to be, placarded “NO STOWAGE” per FAA AC25-17A Appendix 14. Examples of such surfaces are table tops, side wall ledges and thick bumpers or refrigeration ducting installed in galley cart compartments. If for some reason a compartment intended for stowage is placarded “NO STOWAGE,” the compartment is acceptable with or without a weight limit placard installed.
- h. “NO STOWAGE” placards are required in emergency evacuation paths if a stowed item would become hazardous to the evacuees.
- i. Compartment shelves, corners etc. which are not certified with a weight limit placard shall be labelled with “NO STOWAGE DURING TAXI, TAKE-OFF, TURBULENCE, AND LANDING.”
- j. Items requiring special stowage instructions shall be placarded adjacent to, or on, inserts as required. Example: “BREW HANDLE MUST BE DOWN FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING” or equivalent, when required to restrain coffee pot and brew cup. Example: “HOT CUP MUST BE STOWED IN A COMPARTMENT FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING” when the hot cup position is not substantiated to applicable loads.
- k. Loose equipment (e.g., toasters and skillets) should be placarded with “THIS ITEM MUST BE STOWED IN ITS COMPARTMENT FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING.”
- l. Stowage compartments without doors that are designed for a specific function or non standard use shall be placarded restricting the compartment to the function (e.g., “FOLDING TABLES ONLY,” “HALF CARTS ONLY,” “SALES CART ONLY”).
- m. A cart bay capable of retaining more than one cart and only substantiated by test or analysis with all carts installed shall be placarded “ALL CARTS OR NO CARTS MUST BE INSTALLED FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING” or equivalent. A single placard may be located with the general area placard. If less restrictive loading is desired, a placard may be located on the counter edge above each relevant cart bay.
- n. Stowage compartments designed for a specific function shall be placarded identifying the compartment’s function (e.g., “VIDEO EQUIPMENT”).
- o. Doors which can be slid and then stowed open so that either they are flush with surrounding surfaces or their physical presence is not apparent, shall have a special emphasis indicator that is visible when open. Effective methods used for this purpose include, but are not limited to, special emphasis indicators of contrasting color or a placard, “CLOSE AND SECURE FOR TAXI, TAKE-OFF, TURBULENCE, AND LANDING” or equivalent. Special emphasis indicators or placards shall call attention to these doors when they are in the open position.
- p. Compartments designed for multiple uses, for example, full size carts and trash compactors, or trash compactors and waste carts and which have devices (e.g., bumpers, restraints) designed to be engaged or disengaged depending on which optional part is installed, shall have placards near the device that clearly indicate which position the device is to be in for each optional part. Multiple placards will be necessary if placards are obscured when the device is positioned. Additionally if the device is in a partially hidden area, such as the back wall of a cart compartment, a placard on the work face shall clearly state the device position for the optional parts (e.g., “FOLD DOWN BUMPER MUST BE DOWN FOR WASTE CART”).

- q. When waste carts are included in the type design and the waste cart has a top mounted waste flap(s) that would allow the cart to be stowed with the flap open, the following is applicable. Whether or not a galley is intended to be used to stow waste carts, a placard reading “WASTE CART LIDS MUST BE CLOSED IMMEDIATELY WHEN NOT IN USE” or equivalent shall be installed on each galley. This placard shall be installed next to or included as part of the general area placard described in 3.6.1.1, and at any other cart stowage locations where the general area placard is not visible. This placard may be installed but is not required on galleys that do not have the capability to stow carts. This placard is necessary to preclude FAA pickups for the condition that a waste cart with its waste lid or flap open could be partially stowed such that the cart’s waste flap placard “CLOSE IMMEDIATELY WHEN NOT IN USE” is obscured. This creates the potential that the cart is likely to be fully stowed with its waste flap open. It is acceptable to have this placard on galleys even if there are no waste carts on type design or the condition does not exist.

NOTE: This placard is not required when the waste cart is stowed in a compartment with doors or when the waste cart has a side waste flap with or without top mounted waste flaps.

- r. Units whose shelves do not provide fully enclosed stowage for items during taxi, take-off, and landing (such as open shelves on bar units used to display beverage bottles/glasses) shall be designed such that items placed on these shelves are visible and able to be reached by a fifth percentile female. Assist steps or other unique methods to meet to the visibility and reach requirements are acceptable. Units with “open shelves” shall have instruction placards to instruct the crew that the loose items shall be stowed for taxi, take-off, and landing.

When items on open shelves are visible and able to be reached by a fifth percentile female without the use of a step or other unique method, the placard instructions may be included as part of the galley general area placard.

When items on the open shelves are not visible or are not reachable by a fifth percentile female without the use of a step or other unique method, the placard instructions shall be provided as a special emphasis placard on or near the shelves. Additionally, if the use of the step or other unique method is deemed not simple or not intuitive, instructions for using the step or other unique method shall also be provided.

3.6.1.4 Waste Compartment Placards

- a. Markings indicating no cigarette disposal shall be included on or adjacent to all waste flaps. Waste compartment flaps shall be permanently marked with the words “NO CIGARETTE DISPOSAL” as per 14 CFR/CS-25 § 25.791. A graphic symbol for “No Cigarette Disposal,” per FAA AC25-17A Appendix 2 Figure 5, may be used in lieu of or in addition to text. If the graphic is used the circle and slash shall be red. The text and graphic representation of the cigarette and tray shall optically contrast with the background such as to be easily visible. The cigarette, smoke and the receptacle should be black on a natural, brushed metal flap or white if on a black anodised flap. Waste flaps can be permanently marked by engraving, by placards permanently attached by rivet, or by placards bonded in place.
- b. Waste flaps that are not self-closing shall be placarded on the lid to be visible when open, stating “CLOSE WASTE OPENING WHEN NOT IN USE.”
- c. The “NO CIGARETTE DISPOSAL” and “CLOSE WASTE OPENING WHEN NOT IN USE” markings shall be visible when the waste flap is open if the waste flap is not self-closing.
- d. When the waste compartment design requires a waste container to be installed, a permanent marking or placard requiring the installation of the waste container shall be included on or near the outside of the door. This permanent marking or placard design shall contain the words “WASTE CONTAINER MUST BE INSTALLED.” Permanent markings and placards shall be positioned between the waste compartment upper door latch and the upper corner on the latch side.
- e. Waste compartments utilizing waste containers with wheels that are narrow enough to be pushed down the passenger aisles shall bear a permanent marking or placard on or near the outside of waste compartment door. This permanent marking or placard design shall contain the words “WASTE CONTAINER MUST REMAIN INSTALLED FOR TAXI, TAKE-OFF, FLIGHT, DESCENT, AND LANDING.” A total of two placards shall be installed, one on each opposite end and in a visible location near the top of the waste container.

- f. If a waste compartment includes maintenance access features to provide access to items that are located outside of the waste enclosure but are accessed from inside the waste enclosure on a routine basis, all access features shall include permanent marking or a placard on or near the access feature containing the words "ACCESS PANEL MUST BE REINSTALLED."
- g. If sealant is used around the perimeter of the access feature, a permanent marking or placard shall be included on or near the access feature requiring that the access feature be resealed after installation. The permanent markings or placards shall contain the words "ACCESS PANEL MUST BE RESEALED AFTER REINSTALLATION."
- h. Placards that are installed completely inside the galley waste compartment are not required to be fire resistant.

3.6.2 Coat Hooks Placard Visibility

Coat hooks and surrounding placards shall be located such that when a typical jacket or coat is hung on the coat hook, placards required for certification are not obscured.

3.6.3 Identification Placards

Each galley or stowage shall be fitted with an identification placard, which shall be readable without removal of fixed installed parts. The identification placard shall be permanently fixed to the structure by suitable adhesive and/or mechanically fastened.

The identification plate shall include as a minimum:

- Galley manufacturer's name or trademark
- Galley assembly part number
- Date of manufacture
- Any other data required by the design approval holder

All loose components shall be legibly and permanently marked with a part number.

The galley manufacturer part number shall never exceed more than 15 digits in total and shall conform to the following rules:

- No blank space between characters
- No dash (-) between letter and figure or vice-versa
- Never use letters "O," "I," or "X," which may be confused with zero, one, and the multiplication sign

3.7 Fire Protection

3.7.1 Fire Properties

- a. Materials and their construction shall meet the applicable requirements of 14 CFR/CS § 25.853 when tested per Appendix F, Parts I, II, IV, and V.
- b. Electrical wiring and cables shall meet the applicable requirements of § 25.1713(c), when tested per Appendix F, Part I.
- c. FAA policy statement, PS-ANM-25.853-01-R2, or the latest revision should be used as means of compliance.

3.7.2 Flame Propagation

Thermal and acoustic insulation materials shall meet the applicable requirements of 14 CFR/CS § 25.856 when tested per Appendix F, Part VI.

3.7.3 Fire Containment

Waste receptacles shall meet the requirements of 14 CFR/CS § 25.853(h).

3.7.3.1 Containment Areas

Galley features that shall contain fire to prevent propagation to other areas shall include, but are not limited to, the following:

- a. Waste containers and waste container stowage compartments, including chutes.
- b. Receptacles used to store used towels, napkins, disposable plastic, and paper products.
- c. Waste chutes to integrate waste carts with a waste flap located on the galley countertop.

3.8 Safety

Galleys shall meet the general requirements for airplane safety governed by EASA and FAA requirements plus the additional requirements specified herein.

3.8.1 Personnel Handholds

Galleys shall have suitable handholds for attendant use during flight turbulence. Such holds shall have smooth contours and shall be shaped to prevent finger entrapment. Handholds should be easily accessible and visible.

3.8.2 Mechanical Hazards (Sharp Edges, Corners, Protrusions, Hold Open Devices)

To minimize injury potential to occupants and damage to the airplane cabin, galleys shall be constructed without sharp corners, sharp edges, projections or other potential mechanical hazards. The equipment's design should meet NASA-STD-3001 Volume 2, Section 9.3.1.

All movable components of galleys—such as hinged doors, drawers, fold-down shelves, pull-out compartments, removable modules, and wheeled carts—which, when loose, constitute a potential aisle obstruction or personnel injury hazard, shall have positive latching provisions which meet the requirements of [3.2.11.1](#).

3.8.3 Human Factors

Galley design should, in general, take into consideration the relevant guidance in FAA HF-STD-001 and NASA-STD-3001 Volume 2.

3.8.4 Maximum Temperature Design Requirements

- a. Installations of GAINS or other heat-generating components in the galley shall be designed to prevent external surfaces of the galley, GAIN, or heat generating component that may be handled or contacted by personnel in a prolonged manner from exceeding operating temperatures of 120 °F (49 °C) in normal operation in an ambient temperature of 68 °F (20 °C). The use of galley surfaces for stabilization during turbulence shall be considered when evaluating if a surface may be contacted for a prolonged period.
- b. Installations of GAINS or other heat-generating components in the galley shall be designed to prevent external surfaces of the galley, GAIN, or heat generating component with the possibility of momentary contact, but not intended to be handled or contacted by personnel in a prolonged manner from exceeding operating temperatures of 140 °F (60 °C) in normal operation in an ambient temperature of 68 °F (20 °C) (refer to MIL-STD-1472F).
- c. Installations of GAINS or other heat-generating components in the galley shall be designed to prevent all surfaces of the galley from exceeding 160 °F (71.1 °C) in an ambient temperature of 68 °F (20 °C).

3.9 Footstep

If a folding galley footstep is installed that may fail and cause an obstruction in an emergency exit path, the mechanism shall be shown to have a service life of at least 100000 cycles with a realistic step load applied when deployed. Alternatively, the folding footstep shall have dual, redundant latches to secure it in the folded position for take-off and landing.

3.10 Environmental Conditions

The galley shall function normally and without degradation under the environmental conditions experienced by the galley and airplane throughout its service life, which should include operating and non-operating and ground survival conditions.

The supplier shall justify (by test or analysis or a combination of test and analysis) that the galley complies with these environmental requirements.

RTCA DO160 Section 1 identifies the documents that can be used to define the acceptance criteria. These criteria are supplementary to the pass/fail criteria defined in the individual test requirements. Acceptance criteria shall take full consideration of galley function during the test.

In this sub-chapter the test requirements are covered individually, however, it may be more realistic to combine tests such as, e.g., temperature, humidity, and pressure. If this is the case, then the acceptable pass/fail criteria shall be identified in the test procedures.

Environmental testing used as evidence of compliance with environmental requirements shall only be carried out on test configurations which fulfill the production build standard.

Test sets, simulators and support equipment designed to represent other elements of the system around the unit under test shall be designed in such a way as to ensure that during environmental testing any error or upset that occurs can only be due to the unit under test.

For all qualification tests, the components shall be installed as in normal airplane operation, if not otherwise defined.

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Table 4 - Environmental design requirements - RTCA DO-160G

Environmental Requirement	RTCA Section Reference	Applicable Category or Guidelines	Test Conditions	Remarks
Temperature and Altitude, RTCA/DO-160G, Section 4.0				
Ground Survival Low Temperature	Section 4.5.1	Category A1	-67 °F (-55 °C)	(1)(2)
Short-Time Operating Low Temperature	Section 4.5.1	Category A1	-40 °F (-40 °C)	(2)
Operating Low Temperature	Section 4.5.2	Category A1	5 °F (-15 °C)	(2)
Ground Survival High Temperature	Section 4.5.3	Category A1	185 °F (85 °C)	(1)(2)
Short-Time Operating High Temperature	Section 4.5.3	Category A1	158 °F (+70 °C)	(2)
Operating High Temperature	Section 4.5.4	Category A1	131 °F (55 °C)	(2)
In-Flight Loss of Cooling	Section 4.5.5	Category Z		(3)
Altitude, Decompression, and Overpressure, RTCA/DO-160G, Section 4.6				
Steady State - Altitude	Section 4.6.1	Category A1	15000 feet (4600 m) 8.3 psia (57.2 kPa)	
Decompression	Section 4.6.2	Category A1	50000 feet (15240 m) 1.68 psia (11.60 kPa)	
Overpressure	Section 4.6.3	Category A1	-15000 feet (-4600 m) 170 kPa	
Temperature Variation, Section 5.0				
Temperature Variation	Section 5.3.1	Category C	-67 °F (-55 °C) 185 °F (85 °C)	(2)(4)
Humidity, Section 6.0				
Humidity	Section 6.0	Category A		(2)
Operational Shocks and Crash Safety, Section 7.0				
Operational Shocks	Section 7.2	Category A		(5)
Crash Safety	Section 7.3	Category B		(6)
Vibration, Section 8.0				
Operational Vibrations	Section 8.2.1.1	Category S (acc. to Table 8-1 Airplane Type 2, Test Curve B3)		(7)
Explosive Atmosphere, Section 9.0				
Explosive Atmosphere	Section 9.0	Not applicable	Not applicable	
Waterproofness, Section 10				
Waterproofness	Section 10.3.2	Category W		
Fluids Susceptibility, Section 11				
Fluids Susceptibility	Section 11.4.1	Category F		(2)(8)
Sand and Dust, Section 12				
Sand and Dust	Section 12	Not applicable	Not applicable	
Fungus Resistance, Section 13				
Fungus Resistance	Section 13.5	Category F		(2)(9)
Salt Fog, Section 14				
Salt Fog	Section 14.3.6	Category S		(2)
Magnetic Effect, Section 15				
Magnetic Effect	Section 15.3	Category A		(10)
Power Input, Section 16				
Power Input	Section 16	See 16.2 of RTCA		
Voltage Spike, Section 17				
Voltage Spike	Section 17.4	Category A		
Audio Frequency Conducted Susceptibility - Power Inputs, Section 18				
Audio Frequency Conducted Susceptibility	Section 18	Not applicable	Not applicable	

Environmental Requirement	RTCA Section Reference	Applicable Category or Guidelines	Test Conditions	Remarks
Induced Signal Susceptibility, Section 19				
Induced Signal Susceptibility	Section 19	Not applicable	Not applicable	
Radio Frequency Susceptibility (Radiated and Conducted), Section 20				
Radio Frequency Susceptibility	Section 20.6.2			
Emission of Radio Frequency Energy, Section 21				
Emission of Radio Frequency Energy	Section 21	(11)		
Lightning Induced Transient Susceptibility, Section 22				
Lightning Induced Transient Susceptibility	Section 22	(11)		
Lightning Direct Effects, Section 23				
Lightning Direct Effects	Section 23	Not applicable	Not applicable	N/A
Icing, Section 24				
Icing	Section 24.4	Category B		
Electrostatic Discharge, Section 25				
Electrostatic Discharge	Section 25.5	Category A		

Remarks:

- (1) Non-operating condition.
- (2) Tests performed on a coupon level would be considered as an acceptable means of showing compliance.
- (3) Applicable for active cooling.
- (4) Test conditions of RTCA DO-160G Sections 4.5.1 and 4.5.3 to be used.
- (5) Operational shocks fixed orientation, for crash safety compliance may be shown via static testing, refer to AR/CS25.561.
- (6) To be performed under maximum gross weight conditions.
- (7) Standard random vibration shall take into account minimum and maximum weight conditions.
- (8) Classification of test fluids shall be defined by the customer or as applicable for the aircrafts where the galley is intended for installation.
- (9) Not applicable for fungus-inert materials.
- (10) The distance for deflection of DC shall be less than 1 m.
- (11) The applicable Category shall be specified as applicable for the aircrafts where the galley is intended for installation.

Pass/fail criteria:

- a. Equipment shall not present an unsafe condition, during, and after test.
- b. Equipment shall pass the ATP after the test.
- c. There shall be no immediate and/or long-term effect(s) on the physical characteristics of the material.

3.10.1 Temperature

- a. The galley systems (excluding the potable and waste water systems): Shall operate without failure at any temperature between 5 °F and 131 °F (-15 °C and +55 °C). The potable water and waste water systems shall operate without failure between 32 °F and 131 °F (0 °C and +55 °C). (See [3.5.1](#) for water system operation and freeze protection.)
- b. Non-operating and ground service: The system shall operate without failure when stabilized at operating temperature after being exposed to the following ground survival extremes -67 to +185 °F (-55 to +85 °C).

3.10.2 Pressure/Altitude

- a. Operating: The system shall operate without failure at pressure altitudes from -1000 to +15000 feet and shall withstand sudden decompression to 50000 feet pressure altitude, as applicable for the aircrafts where the galley is intended to be installed.
- b. Overpressure: The galley shall operate without failure after exposure to the cabin overpressure of -15000 feet.

3.10.3 Humidity

Galleys shall withstand the following humidity conditions without degradation of materials or performance:

- a. Operating: Relative humidity from 5 to 95% within operating temperature of [3.10.1](#) and operating pressure of [3.10.2](#).
- b. Non-operating and ground service: Relative humidity from 0 to 100% with condensation within non-operating temperature of [3.10.1](#) and non-operating pressure of [3.10.2](#).

3.10.4 Shock and Crash Safety

Galley shell structure and parts subject to shock loads and damage from mobile equipment impact or personnel inflicted forces, shall meet the requirements of this specification without release or jamming of retaining devices and without structural failure or deformation which renders the equipment non-operational when subjected to the ground service and flight operating shock conditions encountered during a service life of 60000 operating hours or 20000 flights.

3.10.5 Vibration

The fully loaded galleys shall not be subject to jamming or release of compartment latches and retaining devices and shall not generate noise exceeding levels of [3.10.13](#), and shall operate without failure after exposure to vibrations as applicable for the aircrafts where the galley is intended to be installed.

3.10.6 Waterproofness

A galley that is installed in a location where it is subjected to falling water due to the result of condensation in the course of normal airplane operations is identified as Category W. Galley systems and equipment subjected to falling water shall be tested to show compliance to the drip proof test procedure as per RTCA DO-160G Section 10.

3.10.7 Fluids Susceptibility

Materials used in the galley construction shall withstand the deleterious effects of fluid contaminants. Fluid susceptibility tests shall only be performed when the materials will be exposed to areas where fluid contamination could be commonly encountered, i.e., cleaning agents, disinfection agents, drinks, extinguishing agents, potable water, as per RTCA DO-160G Section 11. Tests performed on a coupon level would be considered as an acceptable means of showing compliance.

3.10.8 Fungus Resistance

All materials used in the construction of galleys shall be substantiated as compliant with RTCA DO-160G Section 13, Category F. Tests are performed on coupons. Materials which can be substantiated as having no nutrients which support fungal growth may be accepted without test.

3.10.9 Salt Fog

Not applicable.

3.10.10 Sand and Dust

Not applicable.

3.10.11 Magnetic Effect

The test determines the magnetic effect of the galley and is mainly intended for finding or proving the closest distance to compasses or compass sensors at which the unit is allowed to be installed. Category A per RTCA DO-160G shall be given to the equipment as the requirement.

3.10.12 Electrical Requirements

The galleys shall be capable of meeting performance requirements specified herein and in referenced specifications when subjected to conditions of Paragraph 16 of RTCA DO-160.

3.10.13 Noise/Acoustics

The galley itself and its attachments shall be designed in such a manner that there is minimal rattling, vibrations, or unpleasant noises during taxi, take-off, turbulence, and landing.

The galley itself and its attachments shall be designed to emit minimal noise during operations without adding unnecessary weight.

Vibrating equipment (e.g., equipment containing compressors, larger motors or fans, etc.) mounted to the galley structure shall be mounted decoupled, i.e., with a resilient mounting.

The noise requirements for the galley apply only to the galley itself and all noise sources attached to the galley, e.g., ACUs, air extraction, fresh air supply/individual air, GWDU, and similar equipment.

The requirements are not applicable for galley insert equipment (GAIN) or other equipment not fixed to the galley (refer to AS8056 and AS8057 for these types of equipment).

3.11 Maintainability

3.11.1 Interchangeability

Galley assemblies and parts bearing the same part number shall be functionally, physically, and structurally interchangeable. Any assembly or part, which is modified so as to affect interchangeability, shall be assigned a new part number, and shall be requalified to meet the requirements of Section 4.

3.11.2 Design Features

Design features should be allow for ease of maintenance. All components which require routine servicing or maintenance should be serviceable or removable without moving the unit from its installed position.

Access openings into compartments shall be provided with close-fitting, hinged or removable covers or panels. See 3.2.9. The quality of accessibility shall be in relation to the frequency of the need to get access to the affected item. Table 5 summarizes access requirements for maintenance activities:

Table 5

Servicing/Daily Activities		Access possible without tools, e.g., quick released latches, hinged doors/panels with a latch.
Line Maintenance		Access possible through doors/panel fitted with captive type quick release fasteners. Doors/panels remain attached to A/C.
Heavy Maintenance		Access possible through doors/panels fitted with captive type quick release fasteners. All captive fasteners in the same panel shall be identical.
Unscheduled Maintenance	MMEL components LRUs/components with low MTBUR	Access possible through doors/panels fitted with captive type quick release fasteners.
	Other components/equipment	Access possible through doors/panel fitted with captive type quick release fasteners. Doors/panels remain attached to A/C.

3.11.3 Decorative Panel Maintainability

Galley walls which have a decorative surface finish, or decorative laminate may have provisions for optional removal of panels for maintenance or overhaul convenience.

3.12 Reliability

Galleys should be designed to fulfill their intended function over the expected operational service life.

3.13 Service Life

The service life of galleys should be the same as that of the aircrafts where the galley is intended to be installed.

For example, service life for short haul, single aisle galleys might be 60000 flight hours, 36000 flight cycles, or 20 years—whichever occurs soonest.

And the service life for long haul, twin aisle airplane galleys might be 150000 flight hours, 30000 flight cycles, or 30 years—whichever occurs soonest.

See [2.3](#) for the definition of the operationally useful service life.

3.14 Instructions for Continued Air Worthiness

3.14.1 Continued Airworthiness

Maintenance instructions shall be provided that allows the equipment to be kept airworthy. The maintenance instructions shall account for the detrimental effects of wear and rough handling during typical operation.

If scheduled maintenance of components and interfaces is recommended or required, these should be accessible for in-situ inspection and maintenance.

The maintenance concept for the equipment may be “CONDITION MONITORING.” Scheduled maintenance such as water filter replacement shall be provided per maintenance instruction.

Fatigue life limited parts shall be avoided.

Components with identical functions and characteristics shall be fully interchangeable both mechanically and electrically.

System installation design shall provide direct visual and manual accessibility to all units connection points (electrical as well as for fluids) for inspection, connection/disconnection with the unit installed.

All joints, terminals, connections, unions, etc., shall be positioned to allow access with standard tools without risk of damage to the adjacent components, structure, or cables.

To avoid maintenance errors, the design shall make it impossible to make cross connections between electric systems, potable water system, and waste water system.

The galley and its components shall be installed such that damage or hazards are improbable during servicing/maintenance.

Size, position, or orientation of mounting points shall be such that incorrect installation leading to bad connection or reduced clearance to adjacent systems and structure is not possible.

For components that are subject to degradation through wear, loss of consumable or loss of performance, the maintenance instructions shall state the limits at which the component shall be removed from service and restored (or the limit at which the consumable shall be replenished). Limits shall be stated specific to:

- Wear
- Aging
- Leakage
- Loss of function/performance

- Smell
- Cleanliness
- Appearance
- Disinfection
- Damage limits
- Any mandatory replacement time of EWIS components

Ensure to evaluate the fluids specified in the CMM for fluid susceptibility. Tests performed on a coupon level would be considered as an acceptable means of showing compliance.

The maintenance instructions shall be included in a component maintenance manual in conformity with ATA iSpec 2200 in order to maintain the galley or stowage in conformity with its approved type design data. The CMM shall include, as a minimum, the following sections:

- Title page
- Record of revisions (ROR)
- Record of temporary revisions (RTR)
- Service bulletin list (SBL)
- List of effective pages (LEP)
- Table of contents (including optional list of illustrations and tables) (TOC)
- Introduction
- Description and operation
- Testing and fault isolation
- Schematic and wiring diagrams
- Disassembly
- Cleaning
- Inspection/check
- Repair
- Assembly
- Fits and clearances
- Special tools, fixtures, equipment, and consumables
- Illustrated parts list
- Special procedures