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Superseding AS1426A

Standard Galley System Specification
Part I, Performance, Design, Development

RATIONALE

This document was made noncurrent in 2005. The document is "not fit for use." See ARP695 for current standards.

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1.0 SCOPE

1.1 General

This specification (Part I) covers the performance, design, development and test requirements for the standard galley system. The galley equipment comprising the standard system includes standard containers, carts (trolleys), modules, ovens, refrigerators, coffee makers, water boilers, hot jugs, and related items; and several standard configurations and sizes of galley shell structures with internal arrangement options. Standard tray and entree dish envelopes are also defined, allowing variations for user styling and shape within related equipment space provisions.

1.2 Intended Use

This specification is intended to be used as a general standard for industry use for design and construction of air transport galley equipment and inflight food service systems.

1.3 Supplemental Documentation

Where requirements of the buyer, airframe manufacturer or equipment manufacturer exceed the scope of, or are different from the requirements of, this specification, the changes shall be defined in supplemental documentation by mutual agreement between the interested parties.

2.0 APPLICABLE DOCUMENTS

The documentation listed below, of the revision and issue dates shown, form a part of this specification to the extent stated where referred to herein. Where no revision or issue date is shown, the latest revision or amendment issued and in effect on the date of buyer's invitation for bids shall apply.

2.1 Government Documents

Document No.	Rev.	Issue Date	Title
Federal Aviation Regulations (FAR) Part 25 (New) Part 21.93		Feb. 1, 1965	Airworthiness Standards: Transportation Category Airplanes (New), Aviation Regulations, U.S. Federal Aviation Agency
Federal Aviation Regulations Part 121			Certification and Operations: Domestic, Flag and Supplemental Air Carriers and Commercial Operators of Large Aircraft
(No number)		Sept., 1975	Guidelines for Sanitary Construction of Aircraft Galleys and Galley Components, Food and Drug Administration
MIL STD 490		Oct. 30, 1968	Specification Practices

2.2 Society of Automotive Engineers Publications

Document No.	Rev.	Issue Date	Title
AS 1212		1971	Electric Power, Aircraft, Characteristics and Utilization of
AS 1428		TBD (See 6.4.3)	Electrical Requirements for Standard Galleys
AS 1430			Tray
AS 1431			Drawer
AS 1433			Cart, Tray/Drawer-Types A, B
AS 1434			Cart, Beverage
AS 1435			Cart, Waste
AS 1437			Carrier, Tray/Drawer
AS 1440			Shell, Galley-Types A, B
AS 1445			Module - Types A, B
AS 1447			Restraint, Floor Fixed - Type A
AS 1448			Restraint, Floor Retractable - Type B
AS 1449			Restraint, Counter, Quarter Turn - Type C
AS 1451			Dish and Rack
AS 1454			Oven - Types A, B
AS 1455			Standard Galley Refrigeration System Specification.
AS 1456			Refrigerator/Freezer - Types A, B, C
AS 1457			Refrigeration Unit Chilled Air - Types A, B
AS 1461			Coffee Maker - Types A, B
AS 1462		TBD	Water Boiler - Types A, B

2.2 Society of Automotive Engineers Publications (Continued)

Document No.	Rev.	Issue Date	Title
AS 1463		TBD (See 6.4.3)	Water Cooler
AS 1464		↕	Liquid Container - Types A, B
AS 1465		TBD	Hot Cup

2.3 Other Publications

Document No.	Rev.	Issue Date	Title
ANSI S1.11		May 4, 1966	Octave, Half-Octave and Third Octave Band Filter Sets U.S. of America Standards Institute
ANSI S1.13		July 14, 1971	Method for Measurement of Sound Pressure Levels
ASTM-E-162		Sept. 1976	Surface Flammability of Materials Using a Radiant Heat Energy Source
ATA 100			Specification for Manufacturer's Technical Data Air Transport Association
DO-160		Dec. 1976	Environmental Conditions and Test Procedures for Airborne Electrical/Electronic Equipment and Instruments. ARINC Report N.413A
MS33586(ASG)			Metals, Definition of Dissimilar
WATOG		Jan. 1979	Airline Industry Standard World Airlines Technical Operations Glossary

3.0 REQUIREMENTS

3.1 System Requirements

3.1.1 Standard End Items

3.1.1.1 End Item Listing

The standard galley system shall consist of the standard end items listed below.

STANDARD END ITEM LISTING

REQUIREMENTS PARAGRAPH	NOMENCLATURE	END ITEM SPECIFICATION NO.
3.3.1	Tray	AS 1430
3.3.2	Drawer	AS 1431
3.3.3	Cart (Trolley)	
3.3.3.1	Cart, Tray/Drawer - Types A, B	AS 1433
3.3.3.2	Cart, Beverage	AS 1434
3.3.3.3	Cart, Waste	AS 1435
3.3.4	Carrier, Tray/Drawer	AS 1437
3.3.5	Module - Types A, B	AS 1445
3.3.6	Dish and Rack	AS 1451
3.3.7	Oven - Types A, B	AS 1454
3.3.8	Refrigerator/Freezer - Types A, B, C	AS 1456
3.3.9	Refrigeration Unit Chilled Air - Types A, B	AS 1457
3.3.10	Coffee Maker - Types A, B	AS 1461
3.3.11	Water Boiler - Types A, B	AS 1462
3.3.12	Water Cooler	AS 1463
3.3.13	Liquid Container - Types A, B	AS 1464
3.3.14	Hot Cup	AS 1465
3.3.15	Restraint, Cart	
3.3.15.1	Restraint, Floor Fixed - Type A	AS 1447
3.3.15.2	Restraint, Floor Retractable - Type B	AS 1448
3.3.15.3	Restraint, Counter, Quarter Turn - Type C	AS 1449
3.4.1	Shell, Galley - Type A	AS 1440
3.4.2	Shell, Galley - Type B	AS 1440

3.1.1.2 Standard End Item Requirements

Type descriptions and major dimensions for the standard equipment and shell end items listed above in 3.1.1.1 shall be as defined in 3.3 and 3.4 of this specification. Detailed requirements for each are contained in the corresponding end item specifications listed above which are part of this specification.

3.1.1.3 Modular Size Relationship

Figures 3.1.1-1 and 3.1.1-2 illustrate the modular relationship for standard equipment. The equipment insert items shall be geometrically related subdivisions of the shell volume.

3.1.1.4 Meal Capacity

The standard galley system meal capacity per unit shall be as follows:

	No. of Meals (Full-Size Trays)
Tray Cart - Type A	28
Tray Cart - Type B	14
Oven, Double - Type B	56
Oven, Single - Type A	28
Tray Carrier - Type A	7
Tray Carrier - Type B	4
Refrigerator - Type A	56
Refrigerator - Type B	56
Refrigerator - Type C	112

Other capacities shall be determined by the internal unit dimensions established by standard units above, and standard variations of capacities achieved by difference in pitch of stored dishes or trays.

Meal capacity of standard galley shells shall be determined by the specific arrangements of standard components within shells.

3.1.2 Standard Galley Operating Systems

Each standard galley operating system shall conform to a standard system flow chart which broadly identifies the food preparation, transport, and in-flight service in a closed-loop flow sequence. The chart also shall identify the major types of galley hardware, including the passenger service dishes and trays, drawers and racks, carriers or carts, modules, ovens, refrigerators, and galley shells.

3.1.3 Standard Galley Airplane Interface Provisions

Standard galley airplane interface provisions shall correspond to the standard galley shell envelope dimensions, structural attachments, and the electrical, water, air conditioning, lighting, and similar system connections defined by end item specifications listed in 3.1.1.1.

3.2 General Requirements

3.2.1 Government Regulations

3.2.1.1 Federal Aviation Adminstration Regulations (USA)

Galleys shall meet requirements of the Federal Aviation Administration (FAA), Federal Aviation Regulations (FAR) Part 25, "Airworthiness Standards," and Part 121 "Certification and Operations: Domestic, Flag and Supplemental Air Carriers and Commercial Operators of Large Aircraft," and applicable amendments. This specification shall apply for detailed application of airworthiness requirements within constraints of the standard design and FARs.

3.2.1.2 Food Service Regulations (USA)

The galleys shall, subject to airworthiness regulations and critical design requirements, follow guidelines of the Food and Drug Administration (FDA) contained in Publication "Guidelines for Sanitary Construction of Aircraft Galleys and Galley Components (FDA/USPHS)."

3.2.1.3 Other Government Regulations (non-USA)

Where other non-USA government regulations are applicable to the standard galleys in addition to or instead of the USA regulations listed above, the buyer shall notify the airframe manufacturer as to the government officials or personnel having jurisdiction for identification of applicable requirements. Any requirements affecting airframe/galley interface and general airworthiness which may be more stringent than this specification or the subsidiary end item specifications of 3.1.1.1 shall be identified as exceptions and shall be defined in the airframe manufacturer's interface specification and in the buyer's galley system specification.

3.2.2 Environments

3.2.2.1 General

The standard galley system shall withstand the environments specified by the airframe manufacturer's standard airplane model galley interface specifications, and the operating, non-operating and ground service environments specified below without failure.

Galley equipment such as ovens, coffee makers, refrigeration units and boilers shall withstand environments specified in their respective individual specifications listed in 3.1.1.1.

3.2.2.2 Temperature

	Minimum	Maximum
a. Operating - The system shall operate without failure at temperatures of: (See 3.2.6.1 for water system operation and freeze protection)	-15°C (+5°F)	+55°C (+131°F)
b. Non-Operating and Ground Service - The system shall operate without failure when stabilized at operating temperature after being exposed to temperatures of:	-55°C (-67°F)	+85°C (+185°F)

3.2.2.3 Pressure

a. Operating - The system shall operate without failure at cabin pressure of:	75.26 kPa (8,000 ft)	101.32 kPa (sea level)
b. Non-Operating and Ground Service - The system shall operate without failure after exposure to cabin pressure of:	18.93 kPa (40,000 ft)	105.07 kPa (-1,000 ft)

3.2.2.4 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 3.2.2.2 and operating pressure of 3.2.2.3.

b. Non-Operating and Ground Service

Relative humidity from 0% to 100% with condensation within non-operating temperature of 3.2.2.2 and non-operating pressure of 3.2.2.3.

3.2.2.5 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 3.2.2.7, and shall operate without failure after exposure to airplane vibrations specified by the airframe manufacturers standard airplane model galley interface specification(s).

3.2.2.6 Shock

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 60,000 operating hours or 20,000 flights.

3.2.2.7 Noise

3.2.2.7.1 Acoustic Level

Generated noise radiating from the installed galleys when measured 3 feet from the galley face adjacent to the noise producing item(s) with all galley equipment and noise producing items including drains installed and operating simultaneously, shall not contain discrete tones, and shall not exceed octave band sound pressure levels as follows:

MAXIMUM ACOUSTIC LEVELS

OCTAVE BAND CENTER FREQUENCY (Hz)	SOUND PRESSURE LEVEL (dB re 20 Micro Pascals)
63	75
125	73
250	71
500	68
1,000	62
2,000	57
4,000	52
8,000	50
OVERALL	79

Galley drains shall conform to the above noise requirements when airflow at the airplane/galley drain interface is 400 liters per minute (1.33 cubic feet per minute sea level standard).

A discrete tone is defined as a narrow frequency band sound that exceeds the arithmetic average of the sound pressure levels in adjacent 1/3 octave bands by 6dB.

3.2.2.8 Food Residue and Cleaning

3.2.2.8.1 Food and Beverage Contamination

When subject to food and beverage contamination, the galley and galley equipment shall not etch, pit, crack, nor have other structural, visual, or performance deterioration. The following areas of the galley are included:

(1) Primary structural support walls and partitions of galley shells.

(2) Floor attachment structure and fittings.

(3) Stowage and waste container compartment interiors.

(4) Work counters and splash panels.

(5) Coffee maker, boiler, oven, refrigerator compartments.

(6) Hinges, latches, retention devices and associated mounting structure.

(7) Cart and module floor restraint devices (tiedowns, brakes).

(8) Galley and floor drain lines

Food and beverage contamination is defined as the residual accumulation and harmful products including fungus due to routine food and beverage service spilling, splashing, and condensation in susceptible areas. The following foods and beverages are included:

(1) Coffee, tea

(2) Soft drinks

(3) Citrus juices

(4) All alcoholic beverages

(5) Wet food (cooking juices, gravy, soup)

(6) Milk

(7) Ice cream

(8) Grease and water vapor condensation

3.2.2.8.2 Cleaning

All sections of galley shells, including primary structural walls and attachment fittings, shall withstand regular sanitary cleaning by water hand wash and periodic high-pressure spray with commercial detergent in the humidity conditions of 3.2.2.4 as encountered in airline operations without detrimental effect on the galley structure or performance requirements herein.

Carts, tray carriers, modules and other removable insert items regularly subjected to ground kitchen automatic washer cleaning shall withstand regular steam cleaning and dishwasher conditions.

3.2.3 Configuration

3.2.3.1 General Configuration and Location

Galley shell locations and airplane installation configuration shall be as defined in the applicable airplane model galley interface or system specification and drawings. (See Appendix II)

3.2.3.2 Envelope

For ease of shipping and installation, galley shell structures shall be made up of components and subassemblies which will pass through a 80 x 180 cm (32 x 72 inch) airplane doorway with 152 mm (6 in.) radius corners. Those galley subassemblies and components which are suitable only for use on airplanes having 105 x 180 cm (42 x 72 inch) doors with 152 mm (6 in.) radius corners shall be limited to that larger size. 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 inserts, carts, 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.

3.2.3.3 Tolerance

Overall external dimensions of each galley unit shall be maintained within 3.175 mm (± 0.125 inch). Attachment fittings and fasteners which interface with the airplane or adjacent storage cabinets, bassinets and related items shall be within aircraft manufacturer's interface tolerances.

3.2.3.4 Galley 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.

3.2.3.5 Retaining Devices

3.2.3.5.1 General

Retaining devices are defined as any device such as latch, stop, detent, guide, and other mechanical configurations used to retain or restrain items such as doors, drawers, carts, modules, insert containers, equipment items, and any other movable or removable galley item or contents. Retaining devices shall meet the following requirements:

3.2.3.5.2 Items Requiring Retaining Devices

Retaining devices shall be provided to position and retain each loose or movable galley item which can by its motion cause personnel injury or which can impede emergency evacuation from the airplane.

3.2.3.5.3 Visual Indication

There shall be positive visual indication of proper full engagement and latched condition of a retaining device self evident by latch design or integral indicator feature. This requirement does not apply to cart floor tie down attachments of the "mushroom" type which have mechanical "feel" latching features.

3.2.3.5.4 Retaining Device Loads

The device shall remain in locked position and provide restraint without failure, while restraining maximum design loads.

3.2.3.5.5 Primary and Secondary Latches

When a single latching, retention or fastening device failure, or when improper latching or failure to latch by an attendant, can cause release of a removable item or contents thereby directly endangering personnel or causing evacuation route or emergency action obstruction, there shall be a redundant (secondary) latching or retaining device. Secondary devices and load paths shall meet all the structural requirements for primary devices so that either latch is capable of independently restraining the entire load. The following items shall have redundant latching or fasteners under the above conditions:

a. Carts

b. Modules

c. Containers

d. Doors

e. Drawers

f. Folding equipment

g. All other insert or movable items where conditions above apply.

Modified or additional latching if required to provide conformance of standard end items listed in 3.1.1.1 to the above (redundancy) requirements shall be identified in the buyer's galley specifications and drawings, and in the airframe manufacturer's interface specification and drawings where galley/airplane interface is affected.

3.2.3.6 Other Galley Configuration Features

3.2.3.6.1 Drawers (Attached to Galleys)

Drawers shall meet the following requirements:

a. Fixed installation and removable insert 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.

3.2.3.6.2 Tables (Attached to Galleys)

Tables shall meet the following requirements:

a. Each pullout and folding table shall incorporate a positive locking mechanism to ensure that it remains in closed position.

b. In pulled out or folded out position, a stop or device shall be used to limit opening to the intended configuration. No positive locking device shall be used for this purpose which may jam or become inoperative.

3.2.4 Structure

3.2.4.1 General

Each standard galley shell structure shall act as a single structurally integral assembly capable of transmitting all galley loads into the airplane structure at floor, side and upper attachment interfaces. Carts shall be independently supported by floor structure except where shell structure is specifically designed to accept cart loads. Decorative panels, modules, inserts, furnishings and electrical, water, vent and drain service lines within galley envelope shall be supported by galley primary structure.

3.2.4.2 Weight

3.2.4.2.1 General

Weight shall be a design element and shall be controlled during standard galley design and development by the responsible parties through procedures of Appendix II.

3.2.4.2.2 Loaded Galley Weight

Loaded galley weight including all equipment inserts, carts, food, beverages and service items shall be as specified in the standard equipment end item specifications listed in 3.1.1.1. In addition to the end item loaded weights, the load carrying capability for weight of items not chargeable to galley weight but attached to the galley shall be included in end item specifications, including: attendant seat and attendant, bustle, bassinet, magazine rack, emergency equipment, literature pocket, carts when attached to the exterior of the galley, or any other extraneously installed or load imposing item.

3.2.4.3 Attachments

Galleys shall be attached to the airplane by attachment fitting interface configurations as defined in applicable end item specifications listed in 3.1.1.1.

3.2.4.4 Loads

3.2.4.4.1 Equipment Load Factors

Standard galley insert and movable equipment loading requirements shall be as specified in the individual end item specification listed in 3.1.1.1.

Movable equipment and inserts defined in 3.3 shall be capable of orientation in any horizontal direction unless it is limited by design or support provisions or appropriate placards as defined in the respective equipment end item specifications listed in 3.1.1.1.

Standard galley shells defined in 3.4 shall withstand load conditions specified in the airframe manufacturer's interface specification and AS 1440.

3.2.4.4.2 Attachment Fitting Load Factors

Fittings which attach galleys to airplane structure, and immediate attach structure within the galley interfacing with support fittings shall withstand the loads of Paragraph 3.2.4.4.1 multiplied by the following fitting factors:

FACTOR	FWD	AFT	UP	DOWN	LATERAL
Static Load Test	1.33	1.0	1.0	1.0	1.0
Stress Analysis	1.33	1.15	1.15	1.15	1.15

3.2.4.4.3 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.

Curtain supports shall support 91 kg (200 pounds) load. Loads of attached items shall be included in overall galley loads.

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 Paragraph 3.2.4.4.1 and the attachment fitting load factors of 3.2.4.4.2.

3.2.4.4.4 Insert and Equipment Component Restraint and Loads

Insert components shall not provide galley structural shell load paths. The galleys shall be certified operable with any or all removable inserts removed.

3.2.4.4.5 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 of a damage susceptible electrical line.

3.2.4.4.6 Assist Loads

Galley structure, doors, drawers, panel edges, and other galley supported projections in working area shall be capable of withstanding random "assist" loads of 135 kg (300 pounds) which may be caused by personnel grasping, pushing, or pulling during in-flight turbulence or galley servicing. This load shall apply at the midpoint of travel for drawers, overhead stowage doors, and pull out tables.

3.2.4.5 Cart Structural Requirements

3.2.4.5.1 Cart Restraints

Cart restraint fittings and retaining devices capable of restraining a fully loaded 113kg (250-pounds) cart shall be provided in all cart storage positions. Cart restraints shall be as defined in 3.3.15. Design loads for restraints shall be consistent with orientation of the galley relative to airplane centerline, e.g. in-flight or take off/landing.

3.2.4.5.2 Cart Wheel Loads

Airplane floor loads resulting from service cart wheels shall not exceed 28.1 kg (62.5 pounds) per wheel at 1.0g. Cart wheels shall have a minimum diameter of 7.5 cm (3.0 inches).

Each wheel, when supporting 28.1 kg (62.5 pounds), shall have a minimum contact area of 3.0 sq. cm (.46 square inch) on a hard surface.

3.2.4.5.3 Cart Restraint System

The mechanism on each cart which mates with the cart tie down fitting defined in Paragraph 3.3.15.2 and 3.3.15.3 shall prevent the cart from overriding the tie down when the latching mechanism is held in the release position during forward engagement.

3.2.4.5.4 Cart Protection Requirements

Requirements shall be as specified in the individual end item specification listed in 3.1.1.1.

3.2.5 Electrical Systems

3.2.5.1 General

The electrical design, construction and performance of standard galleys shall be in accordance with AS 1428, "Electrical Requirements for Standard Galleys." Power requirements and standard interconnections between the galleys and the airplane wiring shall be as defined in standard end item specifications listed in 3.1.1.1. The equipment shall conform to requirements of AS 1212 "Electric Power, Aircraft, Characteristics and Utilization of."

3.2.5.2 Power Supply

3.2.5.2.1 AC Power Supply

The galleys shall be capable of operating with three phase, four wire, Y-connected (ground neutral), 400 cycle, 115/200 volt AC power.

3.2.5.2.2 DC Power Supply

The galleys shall be capable of operating with DC power at 28 volts, negative ground for control loads, where DC power is required.

3.2.5.2.3 Environmental Conditions

The galleys shall be capable of meeting performance requirements specified herein and in referenced specifications when subjected to conditions of Paragraph 16 of DO-160 Environmental Conditions and Test Procedures for Airborne Electrical/Electronic Equipment and Instruments.

3.2.5.3 Electromagnetic Interference

Galleys shall comply with the electromagnetic interference requirements specified in AS 1428, "Electrical Requirements for Standard Galleys" when subjected to conditions of Paragraph 19.5.1 and 20.0 of DO-160.

3.2.5.4 Electrical Control Panels

The electrical control panels shall be organized and located within the galley to present plainly identified controls, indicators, or audible signals in a logical arrangement relative to the connected equipment and human factors requirements. Indicator lights shall be on when an equipment circuit is energized. Where equipment requires both AC and DC power to operate, indicator lights shall not illuminate unless

both circuits are energized. Control switches shall be provided to allow selective on-off control of each electrical equipment item in the galley. These control switches shall be located on the galley control panel or, in the case of insert components, they may be on the insert. Circuit breakers shall not be used as control switches.

Wording and style of lettering for common control and indicator functions shall be the same for common elements of each shipset of standard galleys.

3.2.5.5 Work Lighting

Work lighting, when incorporated within galleys to supplement general airplane lighting provisions shall meet the general electrical requirements of 3.2.5.1 through 3.2.5.4. General and work lighting shall provide combined white galley illumination minimum light levels as follows:

	lx	ft candles
Floor Level	53.8	(5)
Counter Level	107.6	(10)
Control Panel	215.2	(20)

3.2.6 Mechanical Systems

3.2.6.1 Water

3.2.6.1.1 Water Supply Provisions

3.2.6.1.1.1 Service Locations

Galleys shall have water connections as specified in applicable end item specifications listed in 3.1.1.1.

3.2.6.1.1.2 Operating Conditions

Galleys shall be capable of operating with conditions at the airplane water supply connector as follows:

	MINIMUM	MAXIMUM
Temperature	1.7°C (35°F)	38°C (100°F)
Pressure	1.38 kPa (20 psig)	241 kPa (35 psig)
Flow	1.9 lpm (.5 gpm)	5.7 lpm (1.5 gpm)

3.2.6.1.2 Design Pressure

The water piping system within galleys shall withstand 862 kPa (125 psig) internal pressure. The water system shall also be capable of withstanding freezing without permanent damage, or shall have fail-safe freeze protection design features to prevent permanent distortion or failure.

3.2.6.1.3 Pressure Relief

Equipment capable of any malfunction which could cause excessive pressure buildup, such as coffee makers and boilers, shall have a pressure relief device.

3.2.6.1.4 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.

3.2.6.1.5 Water System Arrangement

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.

3.2.6.1.6 Materials

Materials in direct contact with potable water shall be corrosion resistant, non-toxic suitable for use with super-chlorinated water, and which will not impart objectionable taste to water.

3.2.6.1.7 Water System Sanitation

Water system design and construction shall conform to the sanitation requirements of Paragraph 3.2.7. The water system shall not connect directly into any piping, valves or containers which are connected to the airplane drainage system.

3.2.6.2 Drains

3.2.6.2.1 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 galley end item specifications listed in 3.1.1.1.

3.2.6.2.2 Design Pressure

Galley waste water drain lines that empty into the airplane water drain system shall be capable of withstanding an internal pressure of 345 kPa (+50 psig) and -69 kPa (-10 psig) without permanent rupture or permanent distortion. Drain lines shall also be capable of withstanding water freezing without permanent damage or shall have fail-safe freeze protection design features to prevent permanent distortion or failure.

3.2.6.2.3 Screening

The galley drainage system shall employ screens which will prevent passage of solid particles larger than 2.0 mm (.08 inch) equivalent diameter and toothpick-shaped objects into the airplane drainage system. Screening devices shall be capable of being cleaned in place and shall be removable as a ground servicing operation only.

3.2.6.2.4 Drain Arrangement

All portions of the galley drain system shall be installed in a position which ensures gravity drainage with airplane cruise and taxi attitudes specified below. Collecting devices shall drain with standard cruise attitude of the airplane of 2 degrees nose up and taxi attitude of 1 degree nose down. There shall be an air gap between the drain system and any compartment containing food or ice. There shall be no direct potable water system connection into a drain line or fitting.

3.2.6.2.5 Waste Compartment Drainage

Galley compartments for waste containers shall have means for containment or drainage of overflow and leakage of liquids from the container.

3.2.6.2.6 Materials

Materials in the galley drainage system shall be resistant to corrosive action from super-chlorinated water, detergents and biochemical attack.

3.2.6.2.7 Drain Sizes and Construction

Interior surfaces of drain tubing and fittings shall have bend radius and smoothness which prevents the accumulation of waste materials. Minimum bend radius shall be 2.5 diameters. Mitered bends are not acceptable. Minumum inside drain diameter from sinks shall be 2.25 cm (.9 inch) I.D. Minimum drain size from compartments, coffee makers, refrigeration chillers, shall be 1.1 cm (.44 inch.)

3.2.6.2.8 Galley Sinks and Sumps

Sinks or sumps shall be of such dimensions and location that they will drain at all normal flight attitudes. Water from all faucets shall fall into sinks and sumps at all flight attitudes from 5 degrees nose down at 15 degrees nose up.

Sinks shall have a minimum drain rate of .95 liters per minute (58 cubic inches per minute) while the aircraft attitude is 4 degrees nose up. Sinks shall contain a minimum volume of one standard coffee server full, 1.53 liters (93 cubic inches) of liquid at 10 degrees nose up attitude when the drain is stopped.

3.2.6.3 Environmental Air

3.2.6.3.1 Cabin Environment

The galleys shall meet the requirements of this specification while in the cabin air environments of 3.2.2 herein.

3.2.6.3.2 Exhaust Ventilation

Aircraft air conditioning systems shall provide ventilation, temperature, and odor control of galley areas as specified in the airframe manufacturer's interface specification and drawings. Galley requirements for ventilation shall be as specified by applicable end item specifications listed in 3.1.1.1.

3.2.6.3.3 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.

3.2.6.4 Refrigeration

Galley refrigeration systems shall conform to the requirements of this specification and the additional requirements of AS 1455 "Standard Galley Refrigeration System Specification" when the refrigeration system is installed in a standard galley or on the airplane as an integrated system.

3.2.7 Sanitation

3.2.7.1 Food and Drug Administration (FDA) Requirements

Galleys shall comply with FDA requirements of 3.2.1.2 herein.

3.2.7.2 Sanitation Design Features

Galleys shall have the following sanitation design features in those areas subject to food, beverage, and waste handling, contact, storage and sanitary cleaning:

a. The galleys shall permit ease of access to interior areas for cleaning with conventional cleaning equipment using water and commercial cleaning detergent with brushes, sponges, and cloths.

b. Inaccessible pockets, open crevices, upturned channels, recesses or sharp corners shall be avoided to preclude vermin and bacteria propagation. Where inaccessible areas, pockets and traps cannot be avoided, they shall be potted or sealed off.

c. Work counters and all other areas of the galley subject to water condensation or penetration and food handling or storage shall be sealed as specified in 3.2.3.4.

d. The galley equipment shall be capable of being effectively cleaned by the cleaning detergents and processes used in normal ground kitchen operations when subjected to the environment of 3.2.2.8.

e. In food storage areas, galley counters, and other areas subject to food spillage, all corners formed by the three planes shall have a minimum spherical radius of 1.0 cm (0.375 inch).

The above features shall be used where applicable within restraints imposed by structural airworthiness, safety and other requirements of this specification.

3.2.7.3 Waste Chutes

Waste chutes shall be suitably located and of minimum size to freely pass champagne bottles of 110 mm 4.33 in diameter and 305 mm 12.0 in length. Deflector surfaces shall ensure that waste will enter the waste container. Waste chute closure doors shall be self closing to meet fire containment requirements of 3.2.9.4, or shall be placarded as specified in 3.2.8.2 (g).

3.2.8 Placards

3.2.8.1 General

General warning placards, emergency placards, weight placards and crew instruction placards shall be mounted or applied on conspicuous locations and shall be readable from normal work positions. Warning and weight placards applicable to an individual compartment or shelf shall be easily readable from the position of the person inserting the stowage. Each placard shall have a unique part number visible on its face.

3.2.8.2 Specific Requirements for Placards

a. Movable equipment and structures having inherent design limitations restricting use in certain locations or orientations shall be placarded with limitation conditions.

b. Doors, or movable items that can restrict emergency crossover aisles shall be placarded "STOW AND LATCH CLOSED DURING TAKEOFF, TURBULENT WEATHER, AND LANDING" or similar wording.

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.", or similar wording, or KG units (non U.S.)

d. Emergency equipment items provided with galleys, which are not part of general airplane emergency equipment, shall be placarded.

e. Each galley shell shall have at least one (1) placard that reads essentially, "CLOSE AND LATCH ALL DOORS, DRAWERS AND SHELVES DURING TAKEOFF, TURBULENT WEATHER AND LANDING," located in a conspicuous place.

f. Manually operated waste chute closure doors or lids shall be placarded on the lid to be visible when open stating: "CLOSE WASTE OPENING WHEN NOT IN USE."

g. Each electrical outlet shall be placarded to identify specific usage and voltage available and AC or DC identification.

h. If stowage compartments which are "accessible to and intended for passesngers" are designed for a specific stowage function, they may be labeled "(Name of Item) STOWAGE ONLY" and no weight placarding is required.

i. The galley manufacturer shall assign each galley compartment and drawer a unique compartment number which shall be identified on a conspicuous surface with a placard. When a compartment is to include multiple numbers of inserts, separate numbers shall be used for each insert location.

j. Water system placards shall be as specified in Paragraph 3.2.6.1.4.

k. Placards and placard installation for airworthiness requirements shall be subject to FAA approval.

3.2.8.3 Language on Placards

All warning and emergency placards shall be worded in mandatory, i.e., "command" English language, or bilingual English and foreign language. Other language may be used instead when airworthiness requirements are not involved. Weights shall be in metric (KG) and English (LB) units.

3.2.8.4 Placard Location, Style and Wording

Location, part number and wording of all required placards shall be shown on a separate placard installation drawing. All placards, unless otherwise stated in this specification, shall be installed in a manner which can be easily read by persons standing in the galley work area.

Placard location, wording and style of lettering shall be consistent for each shipset and customer block of galleys.

3.2.8.5 Placard Attachment

All placards shall be securely fastened to the mounting surface, and edges shall be sealed for sanitation.

3.2.9 Safety

3.2.9.1 General

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

3.2.9.2 Personnel Hazard Safety Features

3.2.9.2.1 Projections

Galleys shall incorporate such safety design features as rounded external corners, flush fittings and minimum projections. External corner radii in location formed by two planes shall be 6.3 mm (.25 in) minimum radius.

3.2.9.2.2 Component Retention

All movable components of galleys, such as hinged doors, drawers, fold-down shelves, pull-out compartments, removable modules, wheeled carts, which when loose constitute a potential aisle obstruction or personnel injury hazard, shall have positive latching provisions which meet requirements of 3.2.3.5 herein.

3.2.9.2.3 Personnel Hand Holds

Galleys shall have suitable hand holds for attendant use during flight turbulence. Such holds shall have smooth contours and shall be shaped to prevent finger entrapment.

3.2.9.2.4 Floor Surface

Floor surface in galley work areas shall have friction characteristics which reduce personnel slippage on spilled liquids and food.

3.2.9.3 Fire Properties of Materials

3.2.9.3.1 General

All materials used in galley construction shall be self-extinguishing or fire resistant and shall conform to the requirements of FAR 25.853, FAR 25.855 and Amendment 32.

3.2.9.3.2 Self-Extinguishing Materials

Self-extinguishing materials are defined as those materials which will burn while subjected to an ignition source, but will extinguish upon ignition source removal.

3.2.9.4 Fire Containment

3.2.9.4.1 Containment Areas

Areas which shall contain fire to prevent progagation to other areas shall include (but are not limited to) the following:

a. Meal carts

b. Waste carts and waste cart stowage compartments, including chutes

c. Waste containers and waste container stowage compartments, including chutes

d. Receptacles used to store used towels, napkins, disposable plastic and paper products

e. Ovens and oven vents

3.2.9.4.2 Fire Resistant Materials

Those galley areas that are required to contain a fire shall be made of fire resistant materials. When applied to sheet or structural members, "fire resistant" material means material which will withstand heat at least as well as aluminum alloy in thicknesses appropriate for the purpose for which it is to be used.

3.2.9.4.3 Fire Containment Design Features

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

a. Design shall comply with FAR 25.853(d)

b. 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.

c. There shall be design features which guide waste material from waste stowage chutes into waste containers preventing spillage outside the container.

d. Waste chute doors and access lids shall have no "finger holes", and shall be self-closing or shall be placarded to be closed when not in use (see 3.2.8.2(g)).

e. Waste container or waste cart stowage compartments shall be capable of containing fire without the waste container or cart being 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.

3.2.10 Styling, Decorative Materials and Finishes

3.2.10.1 General

Appearance, workmanship, and service life of decorative materials and finishes of the galleys shall be equal to the air transport industry standards for cabin interiors, within restraints imposed by the technical design requirements of this specification.

3.2.10.2 Optional Colors, Finishes and Materials

Visible parts and areas of standard galleys which have controlled options for colors, materials and finishes shall conform to the applicable standard equipment end item specification listed in 3.1.1.1 and the buyer's specifications for selected options.

3.2.11 Materials, Processes and Standard Parts

3.2.11.1 Material and Process Selection

Galley materials and processes shall be selected to withstand the conditions of 3.2.2.8 encountered in areas of food and beverage preparation, handling, and storage, and to meet the structural, fire protection and other requirements of this specification.

3.2.11.2 Materials at Airplane Interfaces

Galley metallic surfaces which intimately interface with airplane metallic surfaces shall be within the same galvanic series group as defined in MS33586 (ASG) "Metals, Definition of Dissimilar."

3.2.11.3 Standard Parts

Standard parts shall be used where practical for design requirements. They shall be selected in the following order of preference;

1. Parts and components recognized as industry standards for galleys as defined by this specification, and referenced subsidiary specifications.

2. AN, MS, and NAS standard parts including bolts, nuts, screws, rivets, bearings.

3. Other parts commonly used and recognized by the aircraft industry.

4. Manufacturer's standard parts.

3.2.12 Maintainability

3.2.12.1 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 4.0.

3.2.12.2 Identification of Product

The following information shall be marked on a readily visible placard or surface of each major unit of a galley using materials and/or processes that will ensure legibility during the life span of the galley.

a. Nomenclature of unit

b. Manufacturer's name

c. Manufacturer's part number

d. Manufacturer's serial number, including date or coding for year and month of manufacture

e. Gross weight (loaded with equipment, inserts, food and beverages)

Each part other than standard nuts, bolts, etc. shall be marked with a permanently fixed part number.

Location for manufacturer's name plate or any decorative symbol "logo" shall be on the galley work face surface or in a readily accessible compartment in the galley work area where it can be readily seen after the galley is installed in the airplane, but not easily visible to passengers.

3.2.12.3 Decorative Panel Maintainability

Galley walls which have decorative surface finish, or decorative laminate shall have provisions for optional removable panels for maintenance or overhaul convenience.

3.2.12.4 Major Assembly (Split) Joints

The following requirements shall apply to major assembly "split" joints to allow the galley major assemblies to pass through the airplane door or restricted areas for installation and maintenance:

a. Screws and fasteners for final installation shall be marked in red, and at least 5% excess shall be furnished.

b. Disassembled major sections shall remain rigid or have temporary support provisions for ease of assembly at joints.

c. Split joint sealing shall be accomplished during installation in the airplane.

3.2.13 Reliability

Reliability of standard galley end items shall be as specified in the end item specifications listed in 3.1.1.1.

3.2.14 Service Life

Service life of galleys shall be as specified below. See 6.2 definition of the operationally useful service life. TBD flight hours shall be considered equal to one calendar year.

a. Galley structure such as support walls and fittings, panels, doors, counter shelves, latches shall have a service life of 15 calendar years when subjected to regular operational usage and cleaning.

b. Galley wiring and plumbing systems including switches, connectors, valves, couplings shall have a service life of 10 years, or shall be repairable by replacement of parts using only simple hand tools.

c. Removable and non-load bearing partitions, decorative panels and decorative trim items on carts, modules, and galley walls, 3 years.

d. Functional equipment such as coffee makers, ovens, carts, refrigeration, 5 years.

e. Insert containers, drawers, 2 years.

3.3 Standard Galley Equipment

The following paragraphs cover only general system related and overall dimension requirements for standard galley equipment end items. Detailed requirements for standard equipment end items are covered by the applicable end item specifications listed in 3.1.1.1.

3.3.1 Tray

3.3.1.1 General

The standard trays shall provide support for food and beverage articles for preset passenger meals. There shall be four tray sizes: full, 2/3, 1/2, and 1/3, having the same width for interchangeable use in the standard tray carrier and cart.

3.3.1.2 Tray Configuration

The standard tray shall have a conventional turned up lip with dimensions as shown in Figure 3.3.1-1.

The standard preset tray envelope with service items shall be suitable for use with internal dimensions of tray carts, tray carriers, and tray modules defined in specifications listed in 3.1.1.1.

3.3.1.3 Optional Configurations of Trays

Standard tray dimensions are defined in this specification as a basis for overall standard system definition in relation to other standard elements such as tray carriers, carts and modules. The using airline buyer also may have its unique tray configuration, color and decorative designs in the standard tray dimensions. Other shapes, dimensions and decorative features are optional for the buyer, provided they are compatible with standard carrier, cart or module internal dimensions.

3.3.2 Drawer

The standard drawer shall provide stowage and handling for beverage cans, wine bottles, and other large service items not included on the preset trays. Drawers shall fit the standard tray runners on tray carts, tray carriers, and modules so that either trays or drawers or combination of these can be carried in standard carts, carriers, and modules.

Ventilating holes shall provide air circulation in drawers used in refrigerated carts and carriers.

Standard drawer dimensions shall be as shown in Figures 3.3.2-1 and 3.3.2-2. Other shapes, dimensions and decorative features are optional if compatible with standard containers, carts, or modules.

Drawers shall conform to specification AS 1431.

3.3.3 Cart (Trolley)

Standard service carts (trolleys) of various types shall have the modular size permitting use interchangeably in undercounter galley shells and cart modules. External decorative design of carts shall be variable as desired by each airline. Carts shall conform to applicable end item cart specifications listed in 3.1.1.1.

Each cart which uses the "mushroom" restraint system shall have a restraint (tiedown) mechanism that interfaces with a mushroom-shaped device on the floor. Release of a dead man type parking brake from contact with the floor shall be actuated by partial rotation of the cart handle. Further rotation of the handle shall release the cart restraint mechanism from the floor mounted mushroom fitting.

An alternate configuration standard parking brake mechanism shall be foot pedal operated from either end of the cart.

An alternate wheel configuration shall have six wheels, with two located at mid-cart length without swivel casters.

Cart general requirements shall be as specified in AS 1433.

3.3.3.1 Cart, Tray/Drawer - Types A, B

The standard tray/drawer cart shall be capable of carrying preset trays for individual passenger service, or standard drawers. Tray/drawer carts shall conform to AS 1433. External dimensions and capacity of tray carts shall be the same, but different design features related to method of refrigeration and pitch of support runners shall distinguish the several standard configurations of carts. Each drawer shall occupy two 60 mm tray pitch spaces. The full-size Type A cart shall accept two vertical columns of trays or drawers, and the Type B half-size cart shall accept one column. Figure 3.3.3-1 shows the dimensions and capacities for standard tray/drawer cart Types A (full) and B (half-size).

Carts shall have one of the following refrigeration options:

Configuration Block	Refrigeration/Freezing Method
-000	None
-100	External compartment chilled air or plate
-200	Through circulation chilled air
-300	Internal plate/thermosyphon/dry ice
-400	Internal dry ice direct cooling

Refrigeration requirements shall be as specified in AS 1455 and its subsidiary refrigeration specifications.

Dry ice refrigerated carts shall have provisions in the top of the cart for dry ice pellets or blocks with cooling of trays by natural convection within the cart.

The chilled air refrigerated tray cart shall have two chilled air vents and provisions for interface directly with chilled air supply and return ducts in the galley shell when installed in the galley.

The tray/drawer cart shall accept drawers capable of holding soft drink cans stored upright, wine bottles, and liquor miniatures. The cart top shall hold two drawers set up with items for service.

3.3.3.4 Cart, Beverage

The beverage cart shall contain nozzle and pressure apparatus for direct dispensing from beverage bottles. Devices on top shall dispense miniatures and various service items and lower drawers are used for waste.

Figure 3.3.3-2 shows standard beverage cart dimensions.

Beverage carts shall conform to AS 1434.

3.3.3.5 Cart, Waste

The standard waste cart shall have a removable waste container and external decorative appearance for use under counter top waste opening with waste guide skirt, or at satellite parking locations in passenger areas during meal service.

Figure 3.3.3-2 shows standard waste cart dimensions.

Waste carts shall conform to AS 1435.

3.3.4 Carrier Tray/Drawer

The standard tray/drawer carrier shall hold and transport preset trays or standard drawers or combinations of trays and drawers. Carriers shall have design features to permit handling when loaded by one person. Tray runners shall have the same vertical pitch spacing as runners in tray carts.

Dimensions of Type A carriers shall be equal to one-fourth cart size modular increments allowing for relevant shelf structure and spacing, to allow capability of using either carriers or carts with the same standard galley shell. Two carriers stacked on supporting shelves shall occupy the same vertical space as a cart. Two carriers shall be the same depth as one cart. Four carriers shall occupy one cart space in a standard shell. Carrier external dimensions shall be the same for either single-wall or insulated double-wall construction. Both types shall have internal tray supports that accommodate standard trays or drawers.

External dimensions of Type B carriers shall be modular increments of the upper galley shell height and shall permit stacking three carriers, with relevant shelf structure and spacing of Figures 3.4.1-1 and 3.4.2-1 within the total above counter shell height.

The combination of three carriers and one Type A drawer stacked vertically and two deep, with relevant structure and spacing shall occupy the same below counter space as one cart.

The combination of one Type A and one Type B carrier stacked, with relevant support structure and spacing shall also be within the total above counter shell height of Figures 3.4.1-1 and 3.4.2-1.

The standard carrier dimensions shall be as shown in 3.3.4-1.

Tray/drawer carriers shall conform to AS 1437.

3.3.5 Module - Types A, B

Standard modules shall provide for transporting, handling, and onboard stowage of standard trays, drawers, or general storage items.

The standard module, Types A and B, shall have modular dimensions related to combinations of two or three standard carts. They shall be capable of being used singly or in various combinations to occupy space equivalent to two or more carts in galley shells specified in 3.4. Width shall permit module passage through wide-body airplane passenger doors. The Type A modules shall pass through standard body airplane 34-inch-wide doors.

Modules shall have one of the following refrigeration options:

Configuration Block	Refrigeration/Freezing Method
-000	None
-100	External compartment chilled air or plate
-200	Through circulation chilled air
-300	Internal plate/thermosyphon/dry ice
-400	Internal dry ice direct cooling

Module requirements shall be as specified in AS 1445 and AS 1455 system refrigeration specification.

3.3.6 Dish and Rack

3.3.6.1 Dish and Lid

The standard dish with or without lid shall be capable of holding individual entree servings, prepared frozen for reconstituting in flight, or prepared in a chilled state for reheating in-flight.

When set up on trays, dish with lid height shall be accommodated on the tray setup within clearance height between tray supports in carts and carriers.

Size, material, color, detail design, and styling of the dish may be specified by the using airline buyer within the space, heat transfer, and other requirements of AS 1454 Oven, Types A, B; and AS 1456 Refrigerator/Freezer, Types A, B, C.

Dishes and lids shall conform to AS 1451.

3.3.6.2 Rack, Dish

The standard dish rack shall hold dishes with lids for handling, heating and cold storage in ovens, refrigerators and freezers. The envelope limits and number of dishes capacity for the basic dish rack unit equivalent to a single oven rack capacity shall be as shown in Figure 3.3.6-1. Various optional configurations and size combinations of rack, or rack tray combinations within the confines of the basic envelope space may be defined by requirements of the using airline buyer within the space, heat transfer, and other requirements of AS 1454 Oven, Types A, B; and AS 1456 Refrigerator/Freezer, Types A, B, C.

Dish racks shall conform to AS 1451.

3.3.7 Oven - Types A, B

Type A and B ovens shall be capable of heating precooked, chilled, or frozen food to serving temperature. The Type A and B oven control panel shall be capable of independent installation either horizontally on top of the oven or vertically at either side for efficient space utilization. One oven shall occupy the same vertical space as two Type B carriers stacked with relevant clearances. Insulation and design of the oven shall provide capability for use of the oven as a non-cooled storage compartment for chilled or frozen food for limited flight times.

The oven shall have one of the following heating options:

Configuration Block	Heating Method
-100	Warming
-200	High Temperature Convection
-300	Conduction
-400	Microwave

The standard oven dimensions shall be as shown in Figures 3.3.7-1 and 3.3.7-2. Internal space and designs shall accept the dish rack envelope shown in Figure 3.3.6-1.

Ovens shall conform to AS 1454.

3.3.8 Refrigerator/Freezer - Types A, B, C

The refrigerator/freezer, Types A, B, C, shall be capable of storing frozen or chilled entrees in entree dishes carried in dish racks. It shall be capable of use in above counter installations or below counter.

The refrigerator/freezer shall have one of the following refrigeration options:

Configuration Block	Refrigeration/Freezing Method
-100	Self-contained compressor unit
-200	Through circulation chilled air
-300	Internal plate/thermosyphon/dry ice
-400	Internal dry ice direct cooling
-500	Internal plate/circulating refrigerant external unit

General refrigeration requirements shall be as specified in AS 1455 and its subsidiary refrigeration specifications.

The refrigerator, Types A, B, C, dimensions are shown in Figures 3.3.8-1, 3.3.8-2 and 3.3.8-3. Internal space and design shall accept the dish rack envelope shown in Figure 3.3.6-1.

Refrigerator/freezers shall conform to AS 1456.

3.3.9 Refrigeration Unit, Chilled Air - Types A, B

The refrigeration unit, Types A, B - Chilled Air, shall be capable of installation in the upper portion or on top of the above counter shell. Chilled air is conveyed from the unit to tray carts or modules by multiple air supply and return ducts.

The Type A unit capacity shall be 2,800 BTU/hr and the Type B unit shall be 6,000 BTU/hr.

General refrigeration requirements shall be as specified in AS 1455.

Refrigeration Unit, Types A and B dimensions shall be as shown in Figure 3.3.9-1.

Refrigeration units shall conform to AS 1457.

3.3.10 Coffee Maker - Types A, B

The coffee maker, Types A and B, shall brew an individual server quantity of coffee directly into a coffee server. A water reservoir with electrical heating elements shall provide water at brewing temperature to coffee in a 67.3 gram

(2.38 ounce) can in the Type A coffee maker, or a filter bag 108 x 133 mm (4.25 x 5.25 inch) size in the Type B. Dimensions of the Type A and B coffee makers shall be as shown in Figure 3.3.10-1.

Coffee makers shall conform to AS 1461.

3.3.11 Water Boiler - Types A, B

The water boiler, Type A, shall be capable of automatically supplying hot water (190°F).

Dimensions of the water boilers shall be as shown in Figures 3.3.11-1 and 3.3.11-2.

Water boilers shall conform to AS 1462.

3.3.12 Water Cooler

The water cooler shall dispense water from a potable water source at a chilled temperature. Dimensions of the water cooler shall be as shown in Figure 3.3.12-1.

Water coolers shall conform to AS 1463.

3.3.13 Liquid Container - Types A, B

3.3.13.1 Liquid Container Type A (Hot Jug)

The liquid container Type A (Hot Jug) shall be a rectangular food container with top lid and electrical heating provisions. A spigot shall provide liquid drawoff. Internally, the bottom shall be sloped toward the drawoff spigot.

Dimensions of the Type A containers shall be as shown in Figure 3.3.13-1.

Liquid containers, Type A shall conform to AS 1464.

3.3.13.2 Liquid Container Type B (Cold Jug)

The liquid container Type B (Cold Jug) shall be a container similar to the Type A Hot Jug except that it shall have no electrical heater.

Dimensions of the Type B container shall be as shown in Figure 3.3.13-1.

Liquid containers, Type B shall conform to AS 1464.

3.3.14 Hot Cup

The hot cup shall be capable of warming or quick heating of small quantities of liquids.

A self-resetting temperature switch shall prevent overheating in event of cup operation when dry.

Dimensions of the hot cup configuration -1, 1 liter, and -2, 2 liter capacity shall be as shown in Figure 3.3.14-1.

Hot cups shall conform to AS 1465.

3.3.15 Restraint, Cart

3.3.15.1 General

Cart restraint shall be provided by galley compartment configurations or retention devices or combinations of appropriate means which satisfy the general system requirements for aircraft environments in 3.2.2, for retention devices in 3.2.3.5 and the structure requirements of 3.2.4. Cart restraint device configurations which are standard (but not mandatory) are defined below.

3.3.15.2 Restraint, Floor Fixed - Type A

The fixed floor restraint shall provide for cart tiedown in under counter and other locations where a fixed projection above floor level can be used. The standard fixed restraint shall be as shown in Figure 3.3.15-1.

Fixed floor restraints shall conform to AS 1447.

3.3.15.3 Restraint, Floor Retractable - Type B

The retractable floor restraint shall be capable of providing cart tiedown in aisles and doorways temporarily during meal service. After use, the tiedown shall be retractable to a position flush with the floor surface to permit unobstructed foot traffic during emergency evacuation or normal passenger boarding and deboarding. The retractable restraint shall withstand flight loads. The standard retractable restraint shall be as shown in Figure 3.3.15-2.

Retractable floor restraints shall conform to AS 1448.

3.3.15.4 Restraint, Counter, Quarter Turn - Type C

The quarter turn latch shall be capable of restraining loads of carts, containers or modules in conjunction with the appropriate design of galley shell structure to meet structural requirements of 3.2.4. A standard quarter turn latch configuration for carts shall be as shown in Figure 3.3.15-3.

Quarterturn counter restraints shall conform to AS 1449.

3.4 Standard Galley Shells

The following paragraphs cover standard galley shell end items which are part of a standard galley system. Detailed requirements for standard galley shells are as specified in the shell end item specifications noted.

3.4.1 Shell, Galley - Type A

The standard shell, Type A, shall be a general-purpose rectangular structure to enclose standard carts, modules, and galley equipment. Widths shall differ by increments of one cart width up to seven carts.

The above counter portion shall have fixed and removable partitioning as required for structural integrity and to house ovens, coffee makers, refrigerators, hot cups, and stowage compartments in several standard optional arrangements.

Structural attachment of the Type A shell to airplane shall be accomplished at selected points at the bottom of the sidewalls, backwall, and in the top structure.

Standard shell Type A shall have dimensions as shown in Figure 3.4.1-1.

Standard shells Type A shall conform to AS 1440.

3.4.2 Shell, Galley - Type B

The standard shell Type B (left Hand) and (right hand) shall be a general purpose shell structure for use at airplane sidewall locations. The rectangular portion shall be similar to the Type A shell, but the portion adjacent to the airplane sidewall shall be unique to each particular airplane configuration. Dimensions shall be as shown in Figure 3.4.2-1. Configuration of the portion which interfaces with the airplane sidewall shall conform to the airframe manufacturer's interface control specification.

Standard shells Type B shall conform to AS 1440.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Test and Inspection Program

4.1.1 Test and Inspection Tabulation

Quality assurance shall be accomplished by a program of design development tests, qualification tests and analyses, and acceptance functional tests with appropriate inspections and engineering reports. Tests, inspections, and analyses shall be conducted in accordance with test requirements, methods, and procedures as listed in Table 4.1.1-1.

4.1.2 Design Deveopment Tests

The equipment manufacturer(s) shall conduct design development tests as necessary to establish and verify that new design concepts and configurations for galleys, galley components or design features meet the requirements of this specification.

4.2 Qualification Tests, Inspections and Analyses

4.2.1 General

4.2.1.1 Test Hardware

Qualification tests and inspections shall be conducted on a complete galley configuration of representative pre-production, or production hardware. Components and materials previously subjected to tests or operating conditions which equal or exceed the requirements of this specification will not require testing, provided test reports, and analysis data substantiating the requirements and conforming to Paragraph 20.2 are furnished and approved.

4.2.1.2 Qualification by Similarity

A new or changed galley shell structure or equipment configuration similar to one which has previously been tested, or one which has been subjected to severe or long duration operating conditions, may be qualified by similarity using previous test or operating data. In such cases, equivalent test reports, applicable drawings of both configurations, and an analysis justifying the similarity of the two configurations, shall be submitted for qualification approval in accordance with Paragraph 20.2.

4.2.2 Pre-Qualification Acceptance Tests and Inspections

Prior to conducting qualification tests, the qualification test galley equipment shall be inspected to verify conformance to the configuration requirements of Paragraph 3.2.3 and shall be subjected to the acceptance tests and inspections listed in Table 4.1.1-1. These tests and inspections shall be repeated after qualification tests.

4.2.3 Environmental Qualification

4.2.3.1 General

Each galley complex including insert components shall be analyzed during development to establish predicted behavior when subjected to the environments of Paragraphs 3.2.2 through 3.2.2.8. Critical components (such as latches, mechanisms, doors, moving items, coffee makers, ovens, refrigeration units) which are predicted through analysis, or are known from experience, to be a possible source of failure, deterioration or out of tolerance condition due to environment, shall be tested in the applicable induced environmental conditions caused by equipment operation. The environmental analysis or critical component tests shall demonstrate that the equipment complies with requirements below. Electrical and electronic equipment shall also meet the environmental test or analysis requirements of 3.2.5.2.3 which are more stringent than below.

4.2.3.2 Temperature

	Requirements
a. Operating	3.2.2.2(a)
b. Non-operating	3.2.2.2(b)

4.2.3.3 Pressure

	Requirements
a. Operating	3.2.2.3(a)
b. Non-operating	3.2.2.3(b)

4.2.3.4 Humidity

	Requirements
a. Operating	3.2.2.4(a)
b. Non-operating	3.2.2.4(b)

4.2.3.5 Vibration

Those critical components, latches, and portions of galley structure selected by the analysis of Paragraph 4.2.3.1, or by experience for vibration qualification shall be subjected to vibration tests to demonstrate compliance with Paragraph 3.2.2.5.

4.2.3.6 Shock

Those critical components, latches, and portions of galley and mobile component structure selected by the analysis of Paragraph 4.2.3.1 or by experience for shock qualification shall be subjected to impact tests at locations and directions which simulate the effects of service use of mobile items. Test plan or analysis shall identify representative items and proposed test conditions to demonstrate compliance with 3.2.2.6

4.2.3.7 Noise

Tests shall be conducted with a representative assembled galley complex, with typical functional inserts and components and associated enclosure walls, ceilings and furnishings. Air shall be exhausted from galley equipment vent and drain connections at maximum flow rates. Operating components such as ovens, refrigeration units, vent dampers and other potential noise sources shall be operated to establish maximum noise levels. Acoustic instrumentation shall meet the requirements of American Standards Institute ANSI S1.13, Method for Measurement of Sound Pressure Levels; and ANSI S1.11, Octave, Half-Octave, and Third Octave Band Filter Sets.

4.2.3.8 Food Residue and Cleaning

Representative components, portions of structure, and materials selected by the analysis of Paragraph 4.2.3.1 or selected by service experience shall be subjected to accelerated environmental tests using representative food residues and fungus at temperature and humidity conditions of Paragraphs 3.2.2.1 and 3.2.2.4, and to representative cycles of cleaning as defined by the test plan. The list of selected items shall be included in the applicable test plan(s). Behavior of the test items shall demonstrate compliance with Paragraph 3.2.2.8.

4.2.4 Configuration Inspection

4.2.4.1 Envelope

The galleys shall be inspected for conformance to Paragraph 3.2.3.2.

4.2.4.2 Sealing

Galley units which incorporate counters with lips or an integral floor or compartments having liquid trapping features shall be tested to verify that they are watertight. The surface shall be covered with water containing a wetting agent to the lip height or a minimum depth of one-half inch for a period of one hour. There shall be no evidence of leakage.

4.2.4.3 Retaining Devices

The galley equipment shall be inspected for verification of all retaining devices. Each device shall be inspected and operated to verify satisfactory operation to the requirements of Paragraph 3.2.3.5. Devices shall be qualified by analysis, or for critical items, they shall be tested as part of an operating galley configuration to verify compliance to all requirements of Paragraph 3.2.3.5. Critical items shall be identified in the test plan and the analysis.

4.2.4.4 Other Features

The galley equipment shall be inspected, and configuration features of Paragraph 3.2.3.6 shall be operated to verify satisfactory operation. The configurations shall be qualified by analysis, or for critical items, they shall be tested as part of an operating galley configuration to verify compliance to all requirements of Paragraph 3.2.3.6.

4.2.5 Structural Qualification

4.2.5.1 General

Galley structural load tests or analyses shall be conducted in accordance with subparagraphs below, to verify conformance to the structural requirements of Section 3.2 of this specification. Compliance may be shown by engineering structural analysis or by combination of analysis and testing, provided that the structure analyzed conforms to those for which experience has shown that analysis is reliable. In other cases, substantiating load tests shall be conducted. (See Appendix II.)

4.2.5.2 Structural Load Tests

4.2.5.2.1 Static Test Fixture

Static load tests shall be conducted on each structurally different galley configuration using a static test fixture with attachment provisions as defined in Paragraph 3.2.4.3. Galley support shall be only at points simulating actual aircraft structure attachments.

Where airplane structure deflections are specified herein, the structural test plan shall include design concept drawings for a test fixture which simulates airplane structure deflections and flexibility. Those galley structures or galley complexes which are proposed for testing on a rigid flat support fixture shall be identified in the plan, if any.

4.2.5.2.2 Weight

The items constituting certified galley weight shall be weighed to establish certified empty weight of the galley installation or unit configuration to be tested. Removable equipment and units or items which affect structural integrity shall be included. The additional design weight allowance for removable insert items and food and beverages for each space within the galleys shall be certified, and weight limit markings of each compartment shall be verified.

4.2.5.2.3 Loading

The galley complex shall be installed in the test fixture and shall be loaded in a manner that duplicates loading when installed in the airplane at load values and directions which demonstrate conformance to the requirements of Paragraph 3.2.3 and 3.2.4 for a maximum weight condition, i.e., with full load of food, beverages and insert items. Externally applied loads to simulate external appurtenances such as

attendant seats or fire extinguishers shall be applied through points which duplicate the centers of gravity of the appurtenances. The galley complex shall be subjected to loads in each of the directions specified in Paragraph 3.2.4.4, and shall sustain the loads for a minimum of three seconds.

4.2.5.2.4 Doors, Latches, Hinges and Retaining Device Tests

Each door, latch, hinge or other retaining device shall be tested under load conditions of Paragraph 3.2.4.4 to demonstrate its ability to contain the intended item(s).

4.2.5.2.5 Sub-Unit and Module Tests

A representative item of each different configuration of removable sub-unit or module which will be regularly removed from and replaced in the galley during operational use shall be tested in a manner which simulates critical loading conditions per requirements of Paragraphs 3.3 and 3.4.

4.2.5.2.6 Attachment Fitting Tests

Each fitting configuration which attaches galley equipment to airplane structure shall be tested for conformance to Paragraph 3.2.4.4.

4.2.6 Electrical Qualification

4.2.6.1 Electrical Tests

Electrical tests and inspections shall be performed to verify compliance with Paragraph 3.2.5 of this specification.

4.2.6.2 Electromagnetic Interference Tests

Galley items which are potential sources of electromagnetic interference (EMI) shall be subjected to tests required by AS 1428, "Electrical Requirements for Standard Galleys." An EMI test plan and test reports shall be prepared in accordance with Appendix II.

4.2.7 Water System Tests

a. The galley water system shall be inspected for compliance to requirements of Paragraph 3.6.1.

b. The galley water system(s) shall be proof pressure tested at 862 kPa (125 psig) internal pressure. There shall be no evidence of leakage or deformation or failure of system components.

4.2.8 Drain System Tests

a. The galley drain system shall be inspected for compliance to requirements of Paragraph 3.2.6.2.

b. The system(s) shall be proof tested to +3.62 kPa (+50 psig) and -69 kPa (-10 psig). It shall show no evidence of leakage or deformation.

c. 1.53 liters (93 cubic inches) of water shall be poured into each sink with the drain outlet closed. There shall be no overflow at 10 degrees sink tilt.

d. The drain shall be opened and water collected in c. above shall be allowed to drain. Drain rate shall be 0.950 liters (58 cubic inches) per minute or more at 4 degrees tilt.

4.2.9 Refrigeration System Tests

When galley refrigeration is required, refrigeration system qualification tests shall be conducted in accordance with test requirements and procedures of AS 1455 and the applicable subsidiary refrigeration system or end item specifications.

4.2.10 Sanitation Inspection

Galleys shall be inspected for compliance with sanitation requirements of Paragraph 3.2.7.

4.2.11 Placard Inspection

Galleys shall be inspected to verify conformance to requirements of Paragraph 3.2.8. All placard information shall be verified for proper wording, suitable location, and part numbers.

4.2.12 Safety Tests and Inspections

4.2.12.1 Personnel Hazard Safety

Galleys shall be inspected to verify conformance to the requirements of Paragraph 3.2.9.2.

4.2.12.2 Fire Properties of Materials

4.2.12.2.1 Flammability

Galley materials shall be qualified by similarity or shall be tested in accordance with FAR 25.853.

4.2.12.3 Fire Containment

Each galley compartment or enclosed area which requires fire containment design as specified in Paragraph 3.2.9.4.1 shall be tested to demonstrate compliance with all the requirements of Paragraph 3.2.9.4.

4.2.13 Decorative Materials and Finishes

Decorative surfaces of the galley shall be compared with the colors and patterns designated by the interface control drawings. The colors, patterns, and visual appearance shall conform to 3.2.10 and shall meet the standards defined by end item specifications listed in 3.1.1.1 and buyer's specifications for standard options.

4.2.14 Materials, Processes and Standard Parts Inspection

The galleys shall be inspected for conformance to Paragraph 3.2.11.

4.2.15 Maintainability Inspection

The galleys shall be inspected for conformance to Paragraph 3.2.12.

4.2.16 Reliability Assurance

Galley reliability assurance requirements shall be verified as specified in the specifications for individual maintenance significant items listed in 3.1.1.1.

4.2.17 Service Life

Galley life requirements shall be verified as specified in the end item specifications listed in 3.1.1.1.

4.3 Acceptance Tests and Inspections

4.3.1 General

Each production standard galley equipment end item and each installation of standard galleys on production airplanes shall meet the requirements in subparagraphs below.

4.3.2 Inspection and Functional Tests

4.3.2.1 General

Acceptance inspection and testing shall be conducted for BFE at the galley manufacturer's facilities as required in subparagraphs below. The buyer is responsible and shall notify the airframe manufacturer at least 20 days prior to the first article configuration inspection (FACI) and tests which demonstrate conformance to qualification and acceptance requirements of this document. Applicable acceptance documentation, test schedules, test and inspection reports, and technical coordination shall be made available to the airframe manufacturer on request, and the airframe manufacturer may witness acceptance tests and inspections.

The airframe manufacturer is responsible for FACI and tests for SFE.

4.3.2.2 Inspection

4.3.2.2.1 Drawing Conformance

Each item shall be inspected for conformance to the effective issue(s) of the airframe manufacturer's interface control drawings, the production drawings of the galley manufacturer, and all applicable documentation referenced thereby.

4.3.2.2.2 Dimensional Check - Airplane Interface Locations

Each galley installation and each galley equipment end item which is independently supported by the airplane shall be inspected by methods, such as gages, templates, and numerical control computer tapes, which assure dimensional control at locations which critically interface with the airplane as shown on the airframe manufacturer's interface control drawings.

4.3.2.2.3 Structure

The galleys shall be inspected for compliance to weight, attachment, and other requirements of Paragraph 3.2.4 which are feasible to determine by inspection.

4.3.2.2.4 Drain System

Screening devices in the drain system shall be inspected to verify conformance to requirements of Paragraph 3.2.6.2. Drain arrangement and assembly shall be inspected to verify conformance to Paragraph 3.2.6.2.4.

4.3.2.2.5 Sanitation Inspection

The galleys shall be inspected for conformance to sanitation requirements of Paragraph 3.2.7.

4.3.2.2.6 Placard Inspection

Galleys shall be inspected to verify drawing conformance of placards and their installation, including proper wording, suitable location, and part numbers corresponding to the galley configuration to be delivered.

4.3.2.2.7 Safety Inspection

Galleys shall be inspected to verify conformance to the requirements of Paragraph 3.2.9.

4.3.2.2.8 Decor Conformance

The galleys shall be inspected and compared to airplane interior color and material samples for conformance to the requirements for decorative surfaces in Paragraph 3.2.10.

4.3.2.2.9 Interchangeability

The galleys shall be inspected to verify by fit check the interfaces of galley shells, carts, ovens, coffee makers, and similar items which have been identified by the galley system and detail specifications as controlled interchangeable items and to verify interchangeability conforming to Paragraph 3.2.12.1.

4.3.2.2.10 Identification of Product

The galleys shall be inspected to verify conformance to Paragraph 3.2.12.2.

4.3.2.3 Functional Tests

4.3.2.3.1 Electrical

Electrical functional tests shall be conducted in accordance with AS 1428, and conformance to Paragraph 3.2.4 of this specification shall be verified.

4.3.2.3.2 Water System Test

The galley water system shall be pressurized to 45 psig. All taps, spigots and valves shall be operable and there shall be no leakage from any connections or joints in the system.

4.3.2.3.3 Refrigeration System Test

When galley refrigeration is used, the refrigeration system acceptance tests and inspections shall be conducted in accordance with AS 1455.

5.0 PREPARATION FOR DELIVERY

5.1 Packaging for Shipment

Galleys shall be packaged and packed for shipment using materials, methods, and package design which prevents deterioration or damage during handling, shipping and associated temporary storage by the mode of shipment used. Where size or other considerations result in more than one article being packed within a single shipping package, the individual articles shall be individually packaged within the larger package to permit individual identification, handling and storage after removal from the larger package.

5.2 Marking for Shipment

Each package or container including individual packages packed within larger containers shall be marked externally with the following minimum information:

a. Buyer's name

b. Name of item

c. Manufacturer's name and part number

d. Manufacturing date

e. Quantity of items in package

f. Airframe manufacturer's galley interface control drawing numbers

5.3 Special Instructions

If special handling procedures or special instructions are required to assure proper airframe manufacturer receiving handling, inspection, installation, system functional test, and initial operation, a removable instruction tag or a shipping instruction shall be attached to each article so affected.

PREPARED BY

A-24, TRANSPORT AIRCRAFT GALLEY STANDARDIZATION

6.0 NOTES

6.1 Abbreviations

AC	Alternating Current
BFE	Buyer Furnished Equipment
BL	Buttock Line
C	Cubic
°C	Degrees Celcius
c.g.	Center of Gravity
cm	Centimeters
CR	Change Request
dB	Decibel
DC	Direct Current
FAA	Federal Aviation Administration (USA)
FAR	Federal Air Regulations (USA)
FDA	Food and Drug Administration (USA)
gm	Grams
gpm	Gallons per Minute
Hz	Hertz
IML	Inner Mold Line
j	Joules
Kg	Kilograms
kPa	Kilopascals
KVA	Kilovolt Amperes
l	Liters
LBL	Left Buttock Line
lpm	Liters per minute
lx	Lux (lumens per square meter)
m	Meters
MC	Master Change
ml	Milliliters
mm	Millimeters
psia	Pounds per Square Inch Absolute
psig	Pounds per Square Inch Gauge
RBL	Right Buttock Line
SCFM	Standard Cubic Feet per Minute
SFE	Seller Furnished Equipment
SPE	Seller Purchased Equipment
sq	Square
STA	Station
TBD	To Be Determined (by future revision)
USPHS	U.S. Public Health Service
VDC	Volts Direct Current
WL	Water Line

6.2 Definitions

6.2.1 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 6.2.2 below.

6.2.2 Standard Galley Definitions

Acceptance	Contract acceptance by the airframe manufacturer from the buyer of galleys for installation on production airplanes
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 aircraft of the galley buyer or user
Allowable Interface Load	The maximum capability of a structure (airplane or galley) to react a load without structural failure. Defined as a force in pounds at the structure attachment interface point airplane coordinates
Auxiliary Unit	A separate galley unit for food or beverage and liquor service
Buttock Line	A vertical fore and aft plane used for identifying inboard/outboard locations within the airplane
Buyer Furnished Equipment	The equipment (galleys and inserts) purchased by the buyer and furnished to the airframe manufacturer for installation in production airplanes

Configuration	Relative arrangement of parts. The figure, contour or pattern produced by a space arrangement of parts, assemblies, or structures
Buyer	The operator or airline purchasing galleys or an aircraft containing galleys
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 which occurs within an equipment item or system which prevents it from performing its intended function within precisely specified requirements
Footprint	The area of airplane floor space reserved for locating the galleys. Also the lower surface of galley envelope areas shown in plan view
Galley(s)	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 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 aircraft, transported to ground kitchens, washed and cleaned, stored or recycled with food and supplies for installation in galleys ready for flight
Interchangeability	That quality which allows an assembly or part to substitute or be substituted for another of the same part number designation and meet all physical, functional, and structural requirements and be installed by the application of the attaching means only. This specifically excludes trimming, cutting, filing, drilling, reaming, shimming and forming during installation. No tools other than those normally available to service mechanics are required for installation of the item. No operations or alterations except designed adjustments are required on supporting and surrounding structure in order to install the item

Interface	The physical, functional, or procedural relationships established as a basis for division of responsibilities between two or more independent design, manufacturing or test activities as related to the hardware for which they are jointly responsible
Interface-Physical	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, finishes at the juncture
Interface-Functional	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
Interface-Procedural	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
Loaded Galley Weight	The weight of all galleys including maximum allowable weight of food, carts, beverages, inserts galley service items
Maintenance Significant	Maintenance items of equipment or components which are judged to be relatively the most important for safety, reliability, or economic impact
Master Change	Documentation prepared by the airframe manufacturer which defines and coordinates a negotiable change to the contract specifications after contract signing

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 flight crew for food and beverage service and cleanup
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

Seller Furnished Equipment	The structure provisions, equipment, and furnishings provided by the airframe manufacturer
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 repair is no longer physically or economically feasible.
Station	A vertical inboard-outboard plane used for identifying fore and aft locations
To Be Determined (TBD)	Any information which is not available or is undefined at the time of specification issue. "TBD" is normally limited to drafts or early issues of specifications, and used judiciously to provide specification completeness of format and subjects when further coordination and revision is intended. Removal of all "TBDs" is an objective prior to the final issue or a specific revision of a specification. Where TBD is used, the specification requirement is not contractually binding with respect to the missing information.
Water Line	A horizontal reference plane used for identifying vertical locations within the airplane

6.3 Dimension Standards

The standard units for galley equipment defined by this specification shall be international standard in the c.g.s. system with metric linear and weight units. where equipment dimensions can be chosen within optional limits for new designs, the nearest standard dimension shall be selected as follows:

Range of Dimension	Nearest Standard Dimension Increment
100 mm and over	5 millimeter increments
20 to 100 mm	5 millimeter where possible
2 to 20 mm	1 millimeter increments

When more than one set of dimensions are shown such as metric, with english in parenthesis, the primary dimension is the first shown (metric) other dimensions shown in parenthesis are for reference only and are not for controlling use in design.

6.4 Society of Automotive Engineeers (SAE)

6.4.1 SAE Committee A24

Standard galley system specifications are prepared, coordinated and maintained by SAE Committee A24, Transport Aircraft Galley Standardization. The committee membership represents a broad spectrum of airlines, standardizing organizations and manufacturers of airframes, galley systems and galley equipment items. Proposed design criteria are established by committee members based on evaluation of the most common existing equipment configurations and their quantities in service, the latest state of the art in materials and equipment technology, and airline ground support and marketing factors.

Publications are issued by the SAE based on approval recommendations by the SAE Aerospace Council. For additional information, or to make recommendations for consideration in future specification revisions, contact the SAE, Committee A24. (See 6.4.2 for address and phone number.)

6.4.2 SAE Document Ordering

Copies of issued SAE specifications and standards may be ordered from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096. Telephone: Area Code (412) 776-4841.

6.4.3 SAE Specifications in Preparation.

The program for the preparation of certain SAE specifications where issue date is noted "TBD" in 2.2 is not complete. Contact the Society of Automotive Engineers, Committee A24 (address above) to obtain information on committee schedules for preparation and draft review, and SAE issue of unissued specifications.

APPENDIX I

10.0 FIGURES AND TABLES

10.1 Scope

All figures and tables (full page) referred to in the basic specification are contained in this appendix and are listed by page number in Table of Contents.

10.2 Figure and Table Numbering

Figure and table numbers consist of the first two decimal (third level) paragraph number in which it is referenced, followed by a consecutive dash number for each figure within the paragraph. (See list in Table of Contents.)

10.3 Series 14 Modular Sizes

The Series 14 modular sizes, based on carts which are 14 inches wide, have not been fully defined as an integrated system of modular sizes. Therefore, they are not shown on most figures in this appendix, but will be added in a future revision of this specification when defined by airline users.

10.4 Configuration Details

Details of equipment design features shown on figures in this specification are included to illustrate general design concept only. The specific detail configuration of each end item is controlled completely by its end item specification within the general requirements and modular sizes of this specification. This specification will, from time to time, be revised to be consistent with each end item specification and reference the applicable released issue or revision date of each specification.

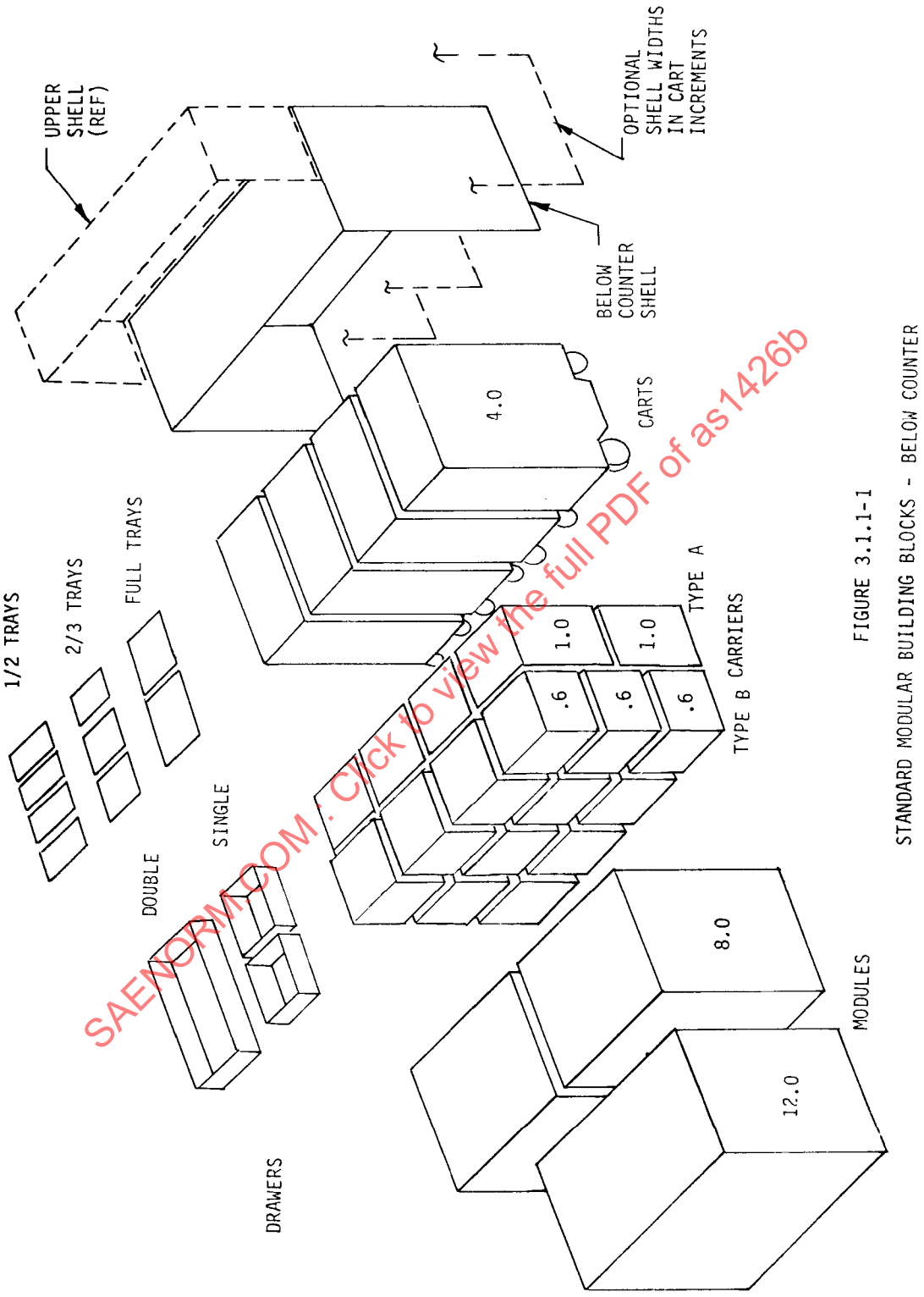


FIGURE 3.1.1-1 STANDARD MODULAR BUILDING BLOCKS - BELOW COUNTER

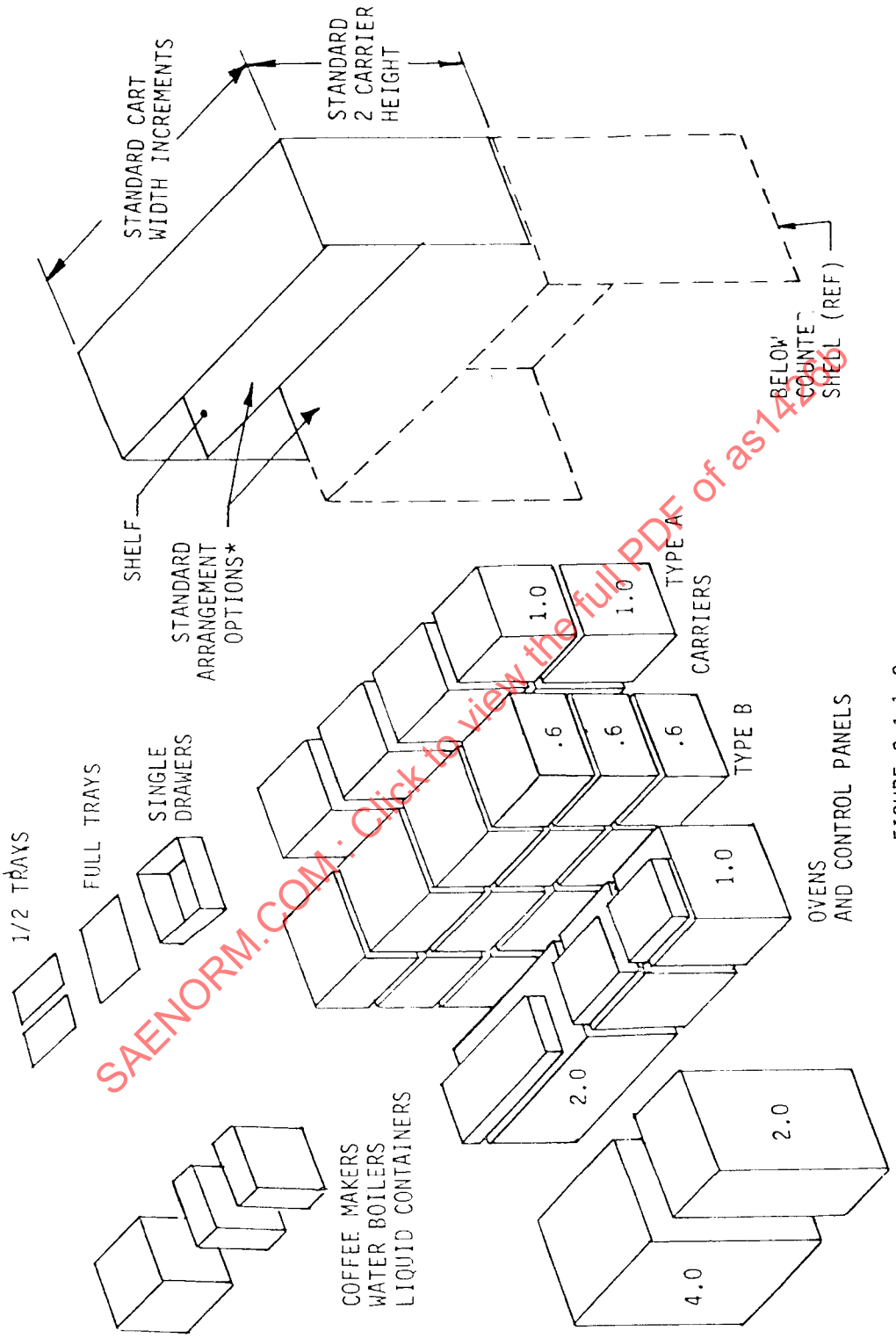
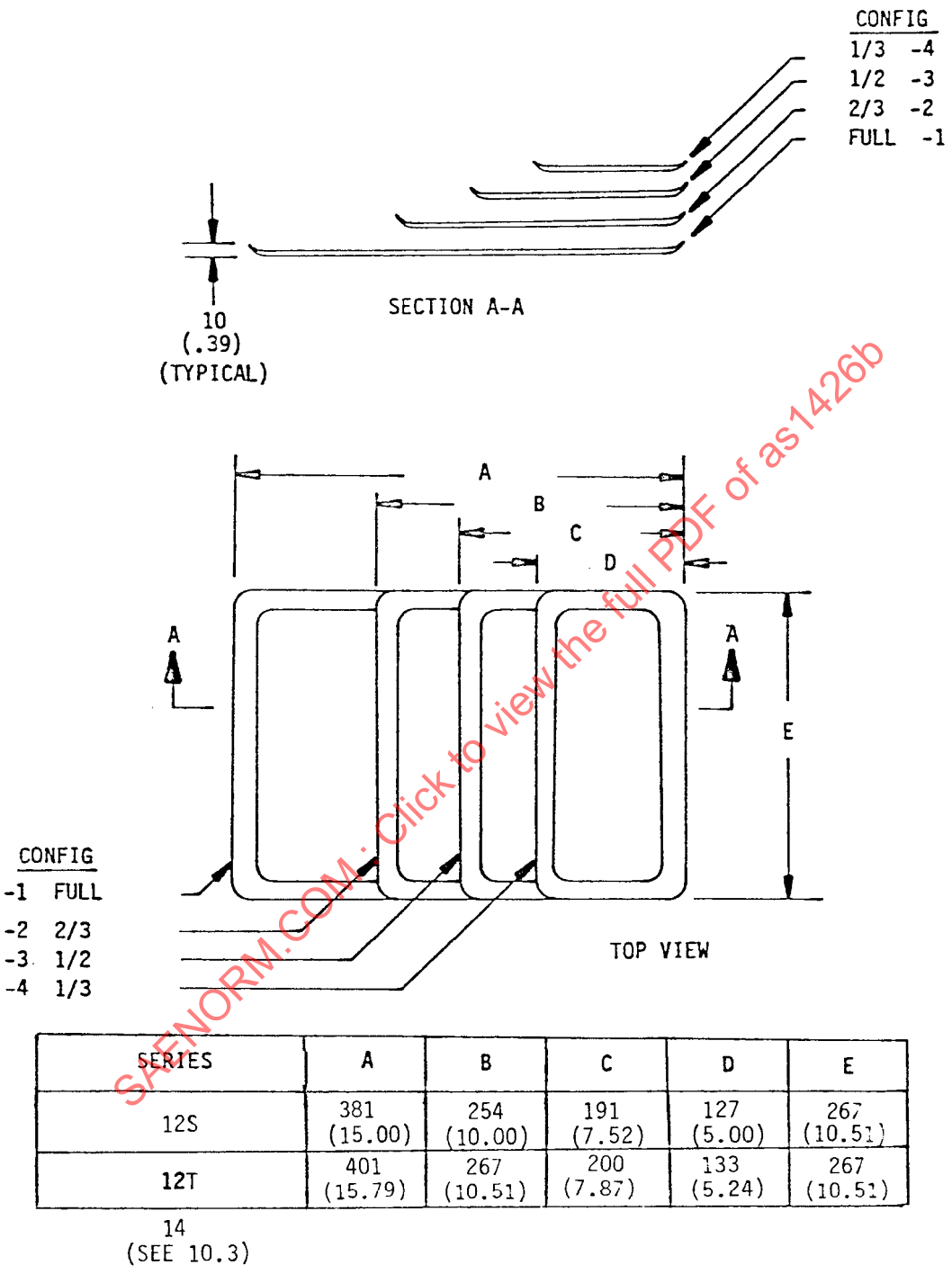


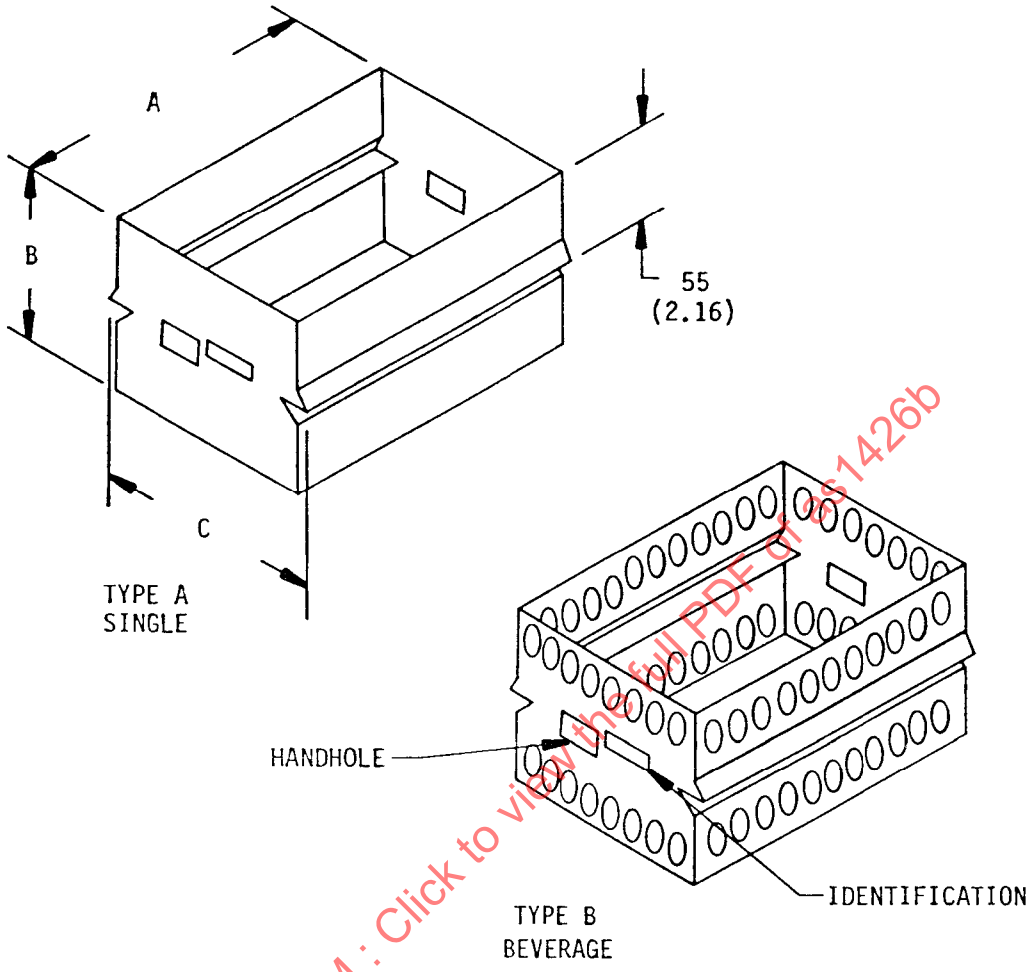
FIGURE 3.1.1-2 STANDARD MODULAR BUILDING BLOCKS - ABOVE COUNTER



SERIES	A	B	C	D	E
12S	381 (15.00)	254 (10.00)	191 (7.52)	127 (5.00)	267 (10.51)
12T	401 (15.79)	267 (10.51)	200 (7.87)	133 (5.24)	267 (10.51)

14
(SEE 10.3)

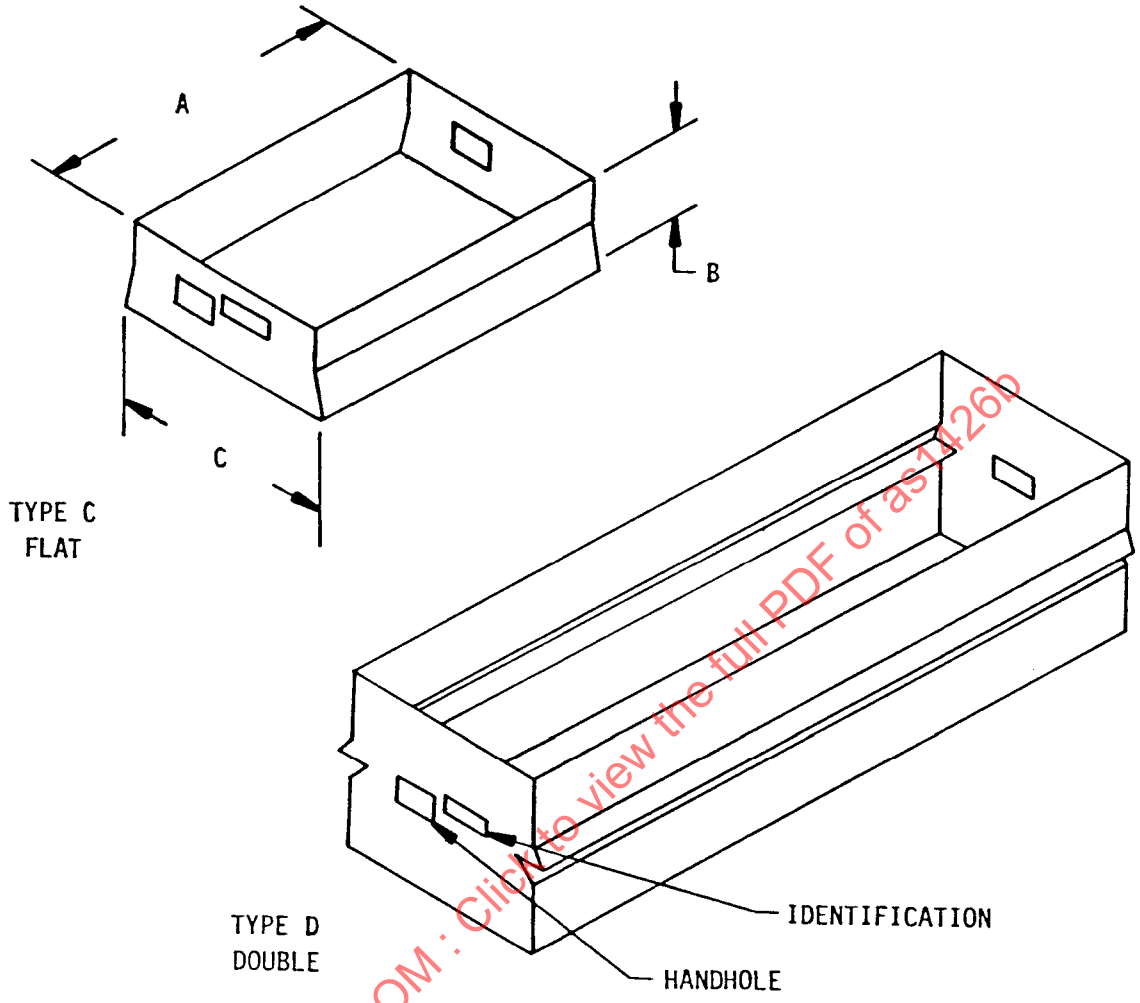
FIGURE 3.3.1-1 TRAY



SERIES	CONFIGURATION	DIMENSION		
		A	B	C
12S	TYPE A - SINGLE	381 (15.00)	115 (4.53)	267 (10.51)
	TYPE B - BEVERAGE	381 (15.00)	115 (4.53)	267 (10.51)
12T	TYPE A - SINGLE	401 (15.79)	115 (4.53)	267 (10.51)
	TYPE B - BEVERAGE	401 (15.79)	115 (4.53)	267 (10.51)

14
(SEE 10.3)

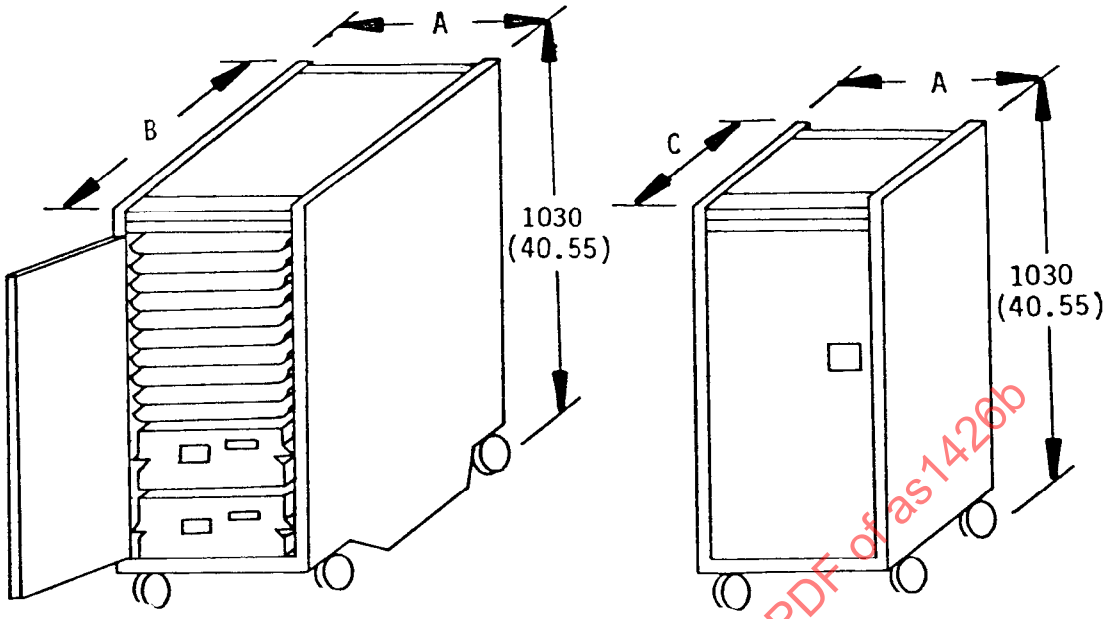
FIGURE 3.3.2-1 DRAWER - TYPES A,B



SERIES	CONFIGURATION	DIMENSION		
		A	B	C
12S	TYPE C - FLAT	381 (15.00)	55 (2.16)	267 (10.57)
	TYPE D - DOUBLE	762 (30.00)	115 (4.53)	267 (10.51)
12T	TYPE C - FLAT	401 (15.79)	55 (2.16)	267 (10.51)
	TYPE D - DOUBLE	802 (31.57)	115 (4.53)	267 (10.51)

14
(SEE 10.3)

FIGURE 3.3.2-2 DRAWER-TYPES C,D



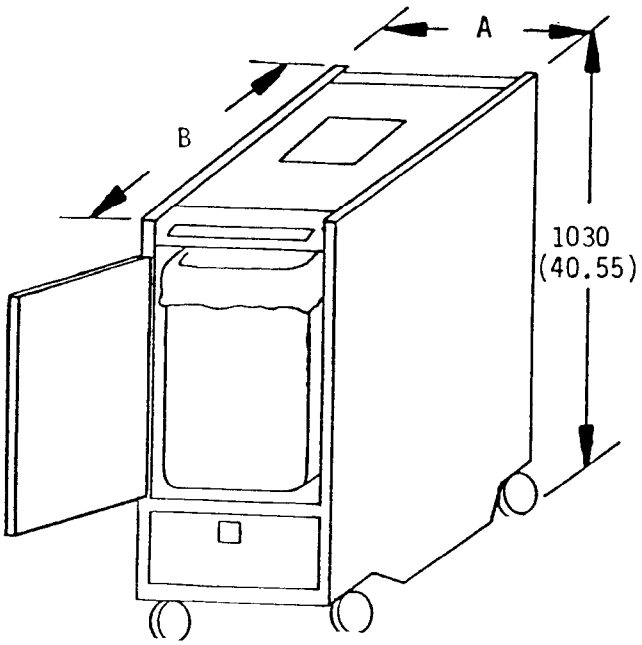
TYPE A

TYPE B
(HALF SIZE)

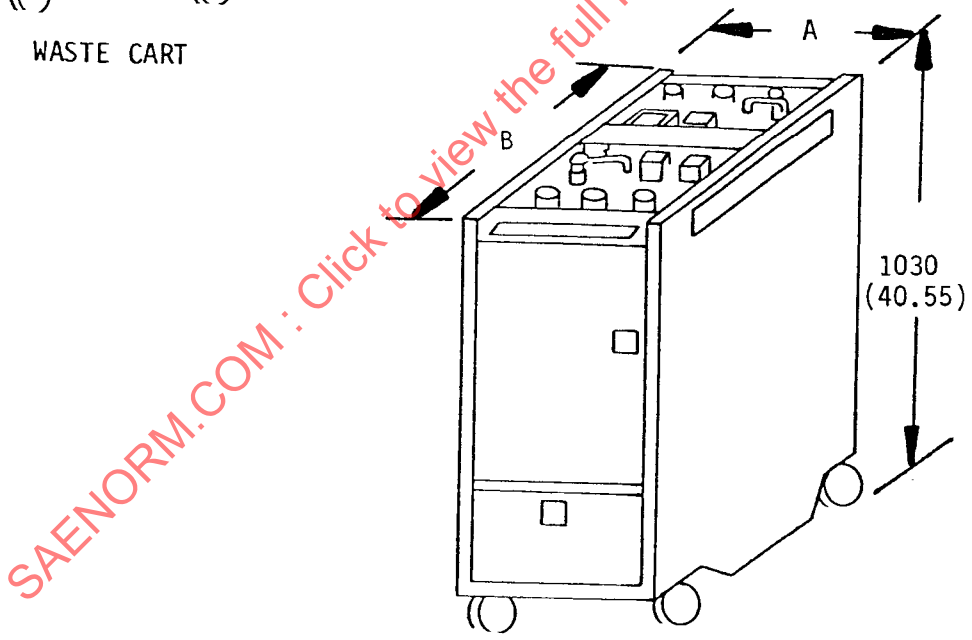
SERIES	CONFIGURATION	DIMENSION			TRAYS		DRAWERS	
		A	B	C	PITCH	QTY	PITCH	QTY
12S	-100	305 (12.0)	820 (32.3)	410 (16.14)	60 (2.36)	28	120 (4.72)	14
	-200	305 (12.0)	820 (32.3)	410 (16.14)	70 (2.75)	24	140 (5.50)	12
12T	-100	305 (12.0)	860 (33.86)	430 (16.93)	60 (2.36)	28	120 (4.72)	14
	-200	305 (12.0)	860 (33.86)	430 (16.93)	70 (2.75)	24	140 (5.50)	12

14
(SEE 10.3)

FIGURE 3.3.3-1 CART, TRAY/DRAWER - TYPES A, B



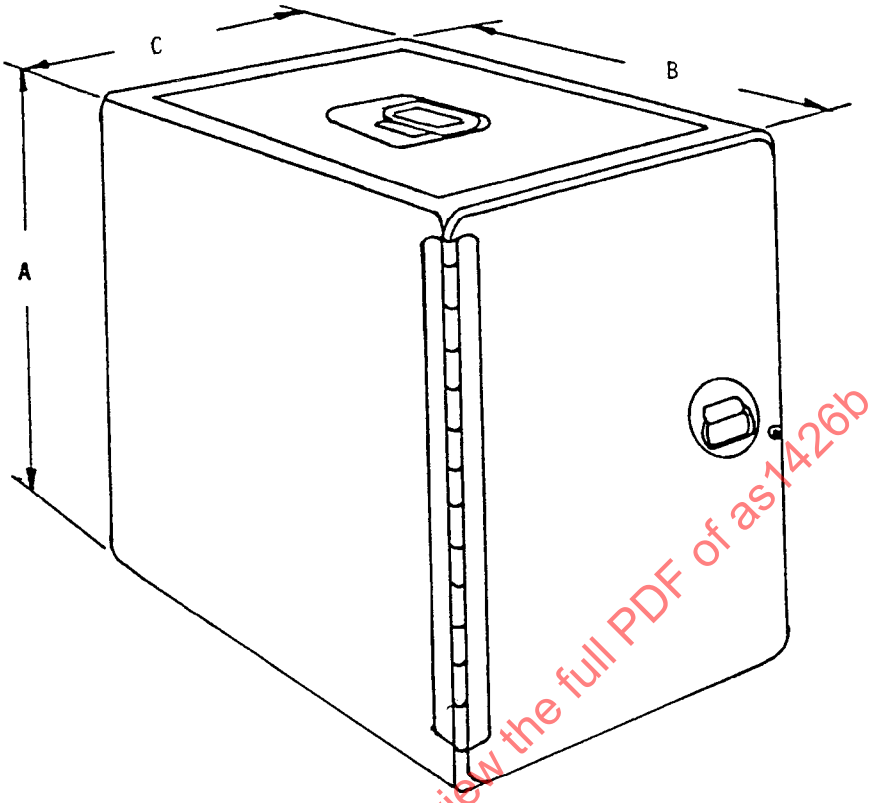
WASTE CART



BEVERAGE CART

SEE FIGURE 3.3.3-1 FOR A AND B DIMENSIONS

FIGURE 3.3.3-2 WASTE CART, BEVERAGE CART



SERIES	TYPE	CONFIGURATION	DIMENSION			TRAYS		DRAWERS	
			A	B	C	PITCH	QTY	PITCH	QTY
12S	A	-100	470 (18.50)	410 (16.14)	290 (11.42)	60 (2.36)	7	120 (4.72)	3
		-200	470 (18.50)	410 (16.14)	290 (11.42)	70 (2.75)	6	140 (5.50)	3
	B	-100	280 (11.02)	410 (16.14)	290 (11.42)	60 (2.36)	4	120 (4.72)	2
		-200	280 (11.02)	410 (16.14)	290 (11.42)	70 (2.75)	4	140 (5.50)	2
12T	A	-100	470 (18.50)	430 (16.93)	290 (11.42)	60 (2.36)	7	120 (4.72)	3
		-200	470 (18.50)	430 (16.93)	290 (11.42)	70 (2.75)	6	140 (5.50)	3
	B	-100	280 (11.02)	430 (16.93)	290 (11.42)	60 (2.36)	4	120 (4.72)	2
		-200	280 (11.02)	430 (16.93)	290 (11.42)	70 (2.75)	4	140 (5.50)	2

14
(SEE 10.3)

FIGURE 3.3.4-1

CARRIER, TRAY/DRAWER - TYPES A, B