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AEROSPACE RECOMMENDED PRACTICE

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Safety Considerations of Food and Beverage Service Carts

CANCELLATION NOTICE

This document has been declared "CANCELLED" as of February 2005. By this action, this document will remain listed in the Numerical Section of the Aerospace Standards Index.

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1. SCOPE:

1.1 Food and beverage service carts referenced herein include:

a. Items of food or beverage service equipment not permanently attached or made a part of the aircraft structure
b. Components of such carts that are nonstationary parts thereof
c. Specific associated equipment and systems affecting the operation of such carts

1.2 This Aerospace Recommended Practice does not fully address:

a. Design details that provide extended service life and continued airworthiness since these are a function of: (1) total galley and food/beverage system design, (2) human factors engineering desired by individual galley operators, (3) techniques of care in servicing, and (4) maintenance philosophy. However, references to these considerations are included as appropriate.
b. Requirements that are covered by Federal Aviation Regulations (FARs), pertinent U.S. Public Health regulations, or design details which should be covered by galley operator/airplane manufacturer detailed specifications for subject equipment.

1.3 Basic airframe crash load requirements are defined as the structural design criteria applied by the aircraft designer in accordance with specifications and FARs to the basic airframe as well as to galleys and associated equipment.

2. PURPOSE:

This Aerospace Recommended Practice provides guidance criteria regarding safety considerations for design to attain safety for cabin personnel of transport aircraft in operating food and beverage service carts and to minimize hazards to passengers exposed to such operations, including:

a. Use of food and beverage service carts
b. Restraint of carts under all operating conditions
c. Avoiding malfunctions of, or defects in, food and beverage service carts or associated equipment

3. DETAIL RECOMMENDATIONS:

3.1 General:

3.1.1 The following reference list provides additional recommendations as applicable:

ARP503D	Emergency Evacuation Illumination
ARP577B	Emergency Placarding - Internal and External
ARP712A	Galley Lighting
ARP767A	Impact Protective Design of Occupant Environment - Transport Aircraft
ARP695C	Galley Installations
AS1426	Standard Galley System Specification

3.1.2 Consideration shall be given to the possible detrimental effects of wear and rough handling, structural integrity, fire containment capability, and continued airworthiness over extended period of service.

3.1.3 Construction shall facilitate maintenance of food and beverage service carts to provide sanitary conditions.

3.1.4 Restraint devices and latches of the cart shall not jam or release while exposed to airplane vibrations.

3.2 Structural Design Requirements:

3.2.1 Strength requirements at least equal the basic airframe crash load requirements (see 1.3).

3.2.2 The basic cart structure shall consist of the following components:

a. The base assembly, including brake system
b. The body structure, including doors
c. The worktop
d. Tray/drawer supports

3.2.2.1 The structure of the cart shall be designed to withstand the load limits referred to in 1.3 while restraining its contents at maximum design weight without detrimental permanent deformation and withstand ultimate loads without failure.

3.2.2.2 The cart structure shall be sufficiently rigid to prevent excessive deflections with the doors open.

3.2.2.3 The sides shall be sufficiently rigid to prevent trays or drawers from dropping off the runners and/or the door from unlatching.

3.2.2.4 Cart doors shall incorporate a latch-type handle. Doors shall be capable of retaining positions at 0° (closed) and 270° (open), i.e., folded against outside of cart; and at or between 90° and 270° shall not inhibit removal or insertion of trays, drawers or contents thereof. Doors, when positioned at 270°, shall be retained to prevent door movement. The design shall minimize protrusions on the surfaces of the doors whether opened or closed.

3.2.2.5 The workstop shall be level, provide an impact-resistant surface, and allow sufficient work surface for which the cart was intended. The edge of the worktop shall contain a raised, rounded lip sufficiently high enough to prevent items stowed on the top of the cart from sliding off. Cart tops shall be smooth, free of protrusions, and resistant to corrosion or degradation. All seams shall be sealed. Sealing or soldering agents shall be compatible with food handling standards.

3.2.3 The cart drawers shall be sized for the intended contents. Each drawer shall have a stop device that will prevent it from sliding out unintentionally. The stop device shall be capable of being manually overridden. Tray/drawer supports and cart internal dimensions shall be compatible with physical interface requirements to provide adequate support without hindering removal. Trays and drawers shall be supported end to end on each set of supports.

3.2.4 The cart shall be equipped with swivel casters. The caster wheel may swivel outside the cart envelope. Swivel casters shall be mounted close to the corners of the cart base. The weight of the fully-loaded cart shall be uniformly distributed on all wheels.

3.2.5 Wheel material used in conjunction with casters shall meet the following requirements:

a. Assure smooth rolling on carpeted aircraft surfaces at inflight angles associated with all phases of flight during which service carts are used, as well as rough concrete
b. Assure low resistance to rotation about the vertical axis; the minimum diameter of wheels shall be 75.0 mm (3.0 in)
c. Footprint pressure at maximum load shall not exceed the airplane allowable floor loading

3.2.6 The cart shall be equipped with a horizontal handle extending the full width of the cart, with handle height determined by current anthropometric data. The design of the handles shall distribute the load over the largest practical surface area of hand and fingers. Cart handles shall be located at the working end(s) of the cart. Handles or handholds shall have smooth contours and shall be shaped to prevent finger entrapment.

3.2.7 The braking system operation shall not require more than one person. The cart braking system shall engage when a foot pedal is depressed at either end of the cart and shall release when the release pedal is actuated at either end of the cart. These foot-actuated pedals shall be of a design to positively indicate the engagement of such braking system. There shall be provision for secondary means to lock or release the braking system. The brakes shall be designed to hold the fully loaded cart stationary on an 11° slope that is carpeted with representative airline low-pile carpet.

3.2.8 Cart surfaces shall be free of sharp edges, projections, or crevices to minimize damage to aircraft cabin interior components, such as seats and galleys. A 3.0 mm minimum radius for vertical corners of the cart is suggested.

3.2.9 Hinges shall be designed to minimize personnel hazard and offer minimum protrusion in the opened or closed position.

3.2.10 All cart doors shall be equipped with a latch or latches capable of holding the door and contents restrained under all operational conditions and the acceleration loads given in 1.3. The latch(es) shall be of the position-indicating type and allow for grasping as a handle.

3.2.11 The base assembly shall be rigid enough to sustain heavy load impacts on the attached casters without deformation and damage. The base panel shall be designed and dimensioned to meet all requirements of the specified cart brake and restraint system.

3.3 Dimensional and Weight Requirements:

3.3.1 Dimensions shall be appropriate for the personnel intended to use the cart and the operating environment in which the equipment will be used.

3.3.2 As a design objective, the weight of any cart shall be a minimum consistent with the stated design requirements.

3.4 Restraint Requirements:

3.4.1 Carts shall be restrained by a double-latch system and by the galley structure.

3.4.2 A positive primary retention system for doors, removable components, and carts shall consist of latches, uniform in design type, minimum in number to accomplish retention requirements. Such a system shall be simple to operate by a single motion. Details of recommended design include:

a. Latching devices shall have visual indication of full, positive engagement and self-evident by latch design or by integral indicators
b. Forces generated by hard landings, turbulence, crash loads, vibration or the weight of the latch itself shall not release the retention devices; restraint clearances shall be minimized to avoid dynamic loading
c. Latch bolt movement shall fail-safe to the latched position if a detent or spring becomes defective