The Engineering Resource For Advancing Mobility®

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AEROSPACE RECOMMENDED PRACTICE

Submitted for recognition as an American National Standard

SAE ARP 1315A

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Superseding ARP 1315

LAVATORY INSTALLATION

1. PURPOSE: This Aerospace Recommended Practice (ARP) establishes recommendations with respect to personnel and aircraft safety for the design of lavatory compartments in commercial aircraft. Consideration should be given to the fact the lavatory compartment is an area in which the passenger is not under direct observation of the flight attendants.

2. DEFINITION: This ARP deals with passenger, crew, and aircraft safety as specifically applied to a compartment within an aircraft passenger cabin for the purpose of providing facilities for washing, waste disposal, and toiletry needs. The compartment may include:

   Enclosure (walls, doors, ceiling and floors)
   Cabinets (sink, dispensers and disposals)
   Supply compartments
   Toilet system
   Plumbing (water lines, drain lines, vent lines and oxygen lines)
   Electrical wiring and components
   Accessories
   Lighting, call system, and public address system
   Oxygen supply provisions
   Fresh air outlet

   NOTE: This document is not intended to specify design methods or equipment to be used in the accomplishment of the stated objective.

3. DETAIL RECOMMENDATIONS:

3.1 References and Applicable Regulations:

3.1.1 The current applicable sections of Federal Aviation Regulations and U.S Public Health Service requirements shall be considered minimum requirements.

3.1.2 The recommendations contained in the following ARP's shall be considered:

503D - Emergency Evacuation Illumination
577B - Emergency Placarding - Internal and External
767A - Impact Protective Design of Occupant Environment - Transport Aircraft
1270 - Aircraft Cabin Pressurization Control Criteria

3.2 General Lavatory Construction:

3.2.1 The material used in the construction of the lavatory compartment and furnishings shall meet or exceed the requirements of F.A.R. 25.853.

3.2.1.1 Wall and ceiling linings of the lavatory compartment shall be constructed of self-extinguishing materials.

3.2.2 Magnesium or magnesium alloys shall not be used.

3.3 Human Factors:

3.3.1 Consideration shall be given to the placement and operation of passenger-operated equipment to prevent injury.

3.3.2 Placement and/or bypassing of vent lines shall consider potential passenger injury when using the toilet facilities.

3.3.3 Delethalization and passenger protection shall be considered in the design and architectural shaping of lavatory furnishings and surfaces.

3.3.4 Consideration shall be given to the use of at least one facility by handicapped/extra care passengers, with appropriate assist means provided to assist in their movement within the compartment.

3.3.5 Consideration shall be given to the use of the facility by persons unfamiliar with the lavatory. Placarding shall be used for clarity when necessary.

3.3.6 Sharp edges and corners shall be avoided, especially in blind areas where servicing is difficult.

3.3.7 Decompression (emergency) oxygen shall be available and readily accessible, with first aid/supplemental oxygen also provided when applicable; a minimum of two oxygen masks shall be provided.

3.3.8 Adequate lighting within the compartment shall be provided.

3.4 Lavatory Configuration:

3.4.1 Readily visible "No Smoking in Lavatory" placards and ash trays shall be provided inside and outside the lavatory compartment. The ash trays shall be obvious and accessible to either a standing or seated occupant and readily distinguishable from doors for disposables. Self-contained ash trays and housings shall be designed and located to prevent smoking materials from falling inside the cabinets or waste containers.

3.4.2 The waste disposal door shall be clearly identified and readily distinguishable from an ash tray. It shall be placarded against disposal of cigarettes and cigars and be self-closing.

3.4.3 Waste receptacles and compartments shall be capable of containing a fire and the waste container shall be constructed of self-extinguishing material.

3.4.4 The waste container and chute shall be designed to prevent jamming and for easy servicing to facilitate and encourage good housekeeping. Easily opened and closed doors with straightforward access and easily removed waste container shall be provided. It shall be impossible to install the removable container improperly.

3.4.5 Consideration shall be given to the overall arrangement of furnishings and equipment to provide adequate separation and protection of electrical wiring and components, plumbing lines, vent lines, and oxygen lines from waste disposal areas.

3.4.6 Dispenser service doors and stowage compartment doors shall be designed to discourage opening and misuse by passengers. Any compartment which can be opened without the use of a tool shall be capable of containing a fire resulting from improper disposal of wastes and cigarettes.

3.4.7 There shall be no opening that could result in a flue action in the event of a fire within the lavatory compartment or sub-compartments.

3.4.8 The floor shall be sealed to provide a barrier preventing liquids from dripping or seeping into compartments or equipment below.

3.4.9 It shall be possible to enter a locked lavatory from the outside without resorting to special tools.

3.4.10 Rapid decompression shall be considered during development of lavatory design. Passageway doors shall be designed to insure that they will not be torn loose in the event of rapid decompression.

3.4.11 Lavatory compartments shall be suitably ventilated.

3.4.12 The public address system shall be audible in the lavatory compartment to inform passengers of all announcements.

3.4.13 A service panel shall be available within the compartment to include an attendant call button and "Return to Seat" sign. A passenger call from the lavatory shall also illuminate a light outside the lavatory and closest attendant panel to indicate which lavatory the passenger call originated from.

3.4.14 Lavatory doors and the areas around the door opening shall have no sharp edges or protrusions which could cause injury or present a hazard to safe movement under normal or emergency conditions.

3.4.15 When in the open position, passageway doors shall not block the egress of occupants from seats or from any areas of the aircraft.

3.4.16 Round or spherical operating handles or knobs shall "unlock" when gripped and turned in either direction.

3.4.17 When two adjacent doors are so hinged that the doors open toward each other, the design shall preclude any jamming or interference that could lock the doors in a semi-open position.

3.5 Electrical:

3.5.1 All electrical equipment, such as motors, terminal strips, lights, ballasts, hot water heaters, and water coolers, shall be isolated or protected from lint, moisture, aerosol spray, soap, and cleaning agents.

3.5.2 Attention shall be given to the packaging and location of electrical equipment to prevent overheating.

3.5.3 Consideration shall be given to preventing areas containing electrical equipment from being used improperly for stowage or waste disposal with resultant fire hazard.

3.5.4 Electrical equipment and wire bundles shall be installed so that they cannot be stepped on or used as a handhold by maintenance personnel.

3.5.5 Electrical ballasts (if required) shall be self-protecting in the event of lamp failure.

3.5.6 Electrical components shall be fail safe and shock proof.

3.5.7 Sleeves, if used on wire bundles, shall be perforated to drain.

3.5.8 Electrical plugs and connectors shall be oriented to avoid entrance of moisture.

3.5.9 Drip loops shall be provided where appropriate.

3.6 Plumbing:

3.6.1 Plumbing lines shall be located in such a manner as to prevent leakage or condensation from dripping on electrical wiring or equipment.

3.6.2 Vent and drain lines shall be located outside of the waste compartment.

3.7 Toilet System:

3.7.1 If an electrically driven pump is used in the toilet flush system, the motor shall meet the requirements of MIL-M-7969 or equivalent, and the motor pump shall be capable of operating dry for an extended period of time without damage.

3.7.1.1 The motor pump shall be self-lubricating.

3.7.1.2 The insulation materials and finishes in the motor stator winding shall be resistant to toilet tank fluids.