



AEROSPACE RECOMMENDED PRACTICE

ARP488™**REV. G**

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Superseding ARP488F

(R) Cabin Emergency Exits Design and Operation - Transport Category Aircraft

RATIONALE

This SAE Aerospace Recommended Practice (ARP) is intended to provide design and performance recommendations for transport category aircraft cabin emergency exits. This recommended practice has been revised to provide references for guidance material, provide recommendations that were missing from previous revisions, reorganize requirements for better flow, and provide further clarification on regulatory and guidance terms such as "simple and obvious."

1. SCOPE

This ARP provides design and performance recommendations for emergency exits in the passenger cabin. This ARP does not apply to Crew Emergency Exits.

1.1 Purpose

The purpose of this ARP is to supplement the emergency exit certification requirements and guidance (e.g., 14 CFR Part 25, EASA CS-25, FAA Advisory Circular [AC] 25.783-1A, FAA AC 25-17A Change 1, etc.) by identifying design features that will help to make the operation of airplane passenger exits safe, simple, quick, and more intuitive under normal and emergency conditions. This document is not intended to specify particular design methods or mechanisms to be used to accomplish the objectives established herein. This document is not intended to duplicate information already contained within the certification requirements or guidance material unless additional clarification can be added above and beyond the existing material.

2. REFERENCES

2.1 Applicable Documents

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

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Documents

Standard, visit Sharing Hub

2.1.1 SAE Publications

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

AMS-STD-595 Colors Used in Government Procurement

ARP503 Emergency Evacuation Illumination

ARP577 Emergency, Instruction, and Information Placards - Internal and External

2.1.2 Code of Federal Regulations (CFR) Publications

Copies of these documents are available online at <https://www.ecfr.gov>.

14 CFR Part 25 Airworthiness Standards, Transport Category Airplanes

2.1.3 EASA Publications

Available from European Union Aviation Safety Agency, Konrad-Adenauer-Ufer 3, D-50668 Cologne, Germany, Tel: +49 221 8999 000, www.easa.europa.eu.

CS-25 EASA Certification Specifications for Large Aeroplanes

CS-25 Book 2 Acceptable Means of Compliance - AMC - Subpart D

2.1.4 FAA Publications

Available from Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Tel: 866-835-5322, www.faa.gov.

AC 25-17A Change 1 Transport Airplane Cabin Interiors Crashworthiness Handbook

AC 25.783-1A Fuselage Doors and Hatches

DOT/FAA/HF-STD-001B Human Factors Design Standard

2.1.5 Transport Canada Publications

Available from Transport Canada, Tower C, Place de Ville, 330 Sparks Street Ottawa, Ontario K1A 0N5, Tel: 1-800-305-2059, www.tc.gc.ca.

AC No. 500-003 Emergency Exits Exposed to Freezing Rain

2.1.6 U.S. Government Publications

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

MIL-STD-1472H Department of Defense Design Criteria Standard Human Engineering

2.2 Definitions

5TH PERCENTILE FEMALE: A female that is approximately 1.52 m (60 inches) tall and weighs no more than 46.27 kg (102 pounds).

50TH PERCENTILE MALE: A male that is approximately 1.78 m (70 inches) tall and weighs 77.11 kg (170 pounds ± 5 pounds).

95TH PERCENTILE MALE: A male that is approximately 1.88 m (74 inches) tall and weighs no less than 95.25 kg (210 pounds).

EMERGENCY MODE: The exit is permanently or can be set in a condition such that its emergency power assist (as applicable) and evacuation assist means (as applicable) are automatically activated upon opening the exit (e.g., armed mode).

NORMAL MODE: The exit is set in a condition such that its emergency power assist (as applicable) and evacuation assist means (as applicable) are not activated upon opening the exit (e.g., disarmed mode).

SIMPLE AND OBVIOUS: Simple and obvious is a qualitative assessment process. One way that “simple and obvious” may be demonstrated is via naïve subject testing utilizing subject rating systems, interviews post test, post-test video reviews (as applicable), or test witnessing designee past experience.

2.3 Mandating and Recommending Words

SHALL: Indicates a mandatory criterion.

SHOULD: Indicates a criterion for which an alternative, including noncompliance, may be applied if it is documented and justified.

NOTE: Within the context of this recommended practice, “mandatory” criteria are those applicable design and performance standards a given design is expected to comply with directly or in an equivalent manner acceptable to the certifying authority.

3. SYSTEM RECOMMENDATIONS

NOTE: In all instances of “test,” the requirement can be met through test or similarity to previous tested configurations.

3.1 General

- 3.1.1 Each floor-level passenger cabin emergency exit should have similar operating procedures to the other floor-level emergency exits on an aircraft.
- 3.1.2 An exit with a door/hatch that is automatically secured in the open position should be utilized in lieu of a removable door/hatch that must be manually stowed.
- 3.1.3 Increasing cabin differential pressure should act to increase the security and retention of the exit door/hatch.
- 3.1.4 In normal mode, opening the exit up to the maximum cabin differential pressure, at which the exit can be opened, shall not create a hazard to the person opening the exit or persons outside the aircraft within the opening path of the exit.
- 3.1.5 Means shall be provided to safeguard against exit opening during flight due to inadvertent action of airplane occupants.
- 3.1.6 Design precautions shall be taken to minimize the possibility of a person intentionally opening an exit during flight.