



AEROSPACE RECOMMENDED PRACTICE

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

ARP 495B

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PASSENGER EVACUATION DEVICES - CIVIL AIR TRANSPORT

1. PURPOSE

This Aerospace Recommended Practice (ARP) establishes criteria for design and installation of devices which will ensure rapid and effective occupant evacuation in the event of an emergency.

2. DEFINITION

This ARP deals with emergency evacuation devices installed for the purpose of rapidly assisting the occupants to the ground or water from emergency exits and/or wings.

NOTE: This document is not intended to specify design methods, mechanisms or equipment to be used in accomplishment of the objectives set forth herein.

3. DETAIL RECOMMENDATIONS

The following detail criteria are recommended:

3.1 General:

- 3.1.1 The passenger evacuation device, including any inflation system it may be provided with, shall be capable of functioning after exposure for 24 hr at all temperature throughout the temperature range of -40°F to $+160^{\circ}\text{F}$ (-40°C to $+70^{\circ}\text{C}$).
- 3.1.2 Materials and processes used in the construction of the evacuation device shall be flame resistant (self-extinguishing), ozone resistant and fungus proof. Exposure to salt spray, sand and dust and spillage of beverages, jet engine fuel and hydraulic fluid shall not impair the operation and use of the device.
- 3.1.3 The structural member of the device shall be either protected from or constructed of materials that are resistant to degradation from ultraviolet radiation.
- 3.1.4 The evacuation device and its fastenings shall be so constructed that static electricity will not be generated in sufficient quantity to cause a spark which could ignite a fuel/air mixture. The surface resistivity of any sliding surface shall not exceed one megohm when measured on any square sample not less than 5 in. squared.
- 3.1.5 The device shall be installed in such a manner that in the event of an emergency, it will be available for immediate deployment.
- 3.1.6 The device shall be capable of providing for the maximum evacuation rate consistent with the flow potential of the exit.
- 3.1.7 The device shall be capable of being actuated by untrained evacuees. It shall be capable of being automatically deployed and erected. The method of operation shall be conspicuously and clearly indicated by brief instruction placards. Placards and emergency lighting shall be in conformity with ARP 577 and ARP 503 respectively.

SAE Technical Board rules provide that: "All technical reports, including standards and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

- 3.1.8 If the evacuation device is an inflatable device, it shall be equipped with pressure relief valves set at an acceptable pressure to ensure satisfactory operation.
- 3.1.9 The evacuation device shall be designed and constructed to be highly resistant to catastrophic failure of the structural members or sliding surface(s) as a result of evacuees jumping on the device in normal street attire with shoes on. The sliding material shall be puncture resistant and have a minimum trapazoidal tear strength of 40 lb (18.16 kg).

3.2 Attachment to the Aircraft:

- 3.2.1 The attachment of the passenger evacuation device to the aircraft, for use during evacuation, shall have a minimum strength equal to at least 1.5 times the highest design load imposed on the device during use.
- 3.2.2 Any device having positive buoyancy when extended shall have a means to readily disconnect the device from the aircraft so that it can also be used as an emergency flotation device. In addition, a static line shall be provided in such a manner that the device shall automatically remain secured to the aircraft when it is used as an emergency flotation platform. The static line shall be a minimum length of 25 ft (7.62 m) and have a knotted breaking strength of 500-1000 lb (227-454 kg). The attachment to the evacuation device shall be stronger than the static line. The static line shall not interfere with the operation of the device.

3.3 Use as a Ground Evacuation Device:

- 3.3.1 The device shall not depend upon persons on the ground for operation; however, the device shall provide a means whereby two or more persons on the ground may provide support should the device fail to inflate or erect properly.
- 3.3.2 Winds up to 25 MPH (40.2 km/hr) from any direction parallel to the ground shall not adversely affect the usability of the device.
- 3.3.3 The erection time, measured from the point of activation of the erecting mechanism, after complete deployment from the storage compartment, until the device is in its usable condition shall be a maximum of 5 sec. in still air and 70°F (21°C) temperatures. The device shall remain usable for a minimum of 10 min. after inflation/erection.
- 3.3.4 The automatic activation system shall also have a manually activated back-up system. It shall be possible to readily deactivate the automatic deployment feature before opening the exit. In addition, unless the device deploys over the wing to the ground, the device shall not activate unless it has been deployed at least 12 in. below the exit sill during the initial stage of deployment.
- 3.3.5 Use of the device after erection must be self-evident.
- 3.3.6 The configuration of the device, when erected, shall impart a sense of security and confidence in its use by the occupant so that maximum rates of escape may be maintained.
- 3.3.7 The device shall be suitable for assisting occupants to the ground from the exit under all combinations of landing gear conditions.
- 3.3.8 The device shall permit occupants, including young children, aged persons and ambulatory persons to evacuate rapidly with a minimum probability of incurring injury.