SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP4101/7 REV. A

Issued 1988-07
Reaffirmed 2007-07
Stabilized 2013-07

Superseding ARP4101/7

Flight Deck Escape Provisions for Transport Aircraft

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE S-7 Flight Deck Handling Qualities Stds for Trans Aircraft Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/ARP4101/7A

1. SCOPE:

The purpose of this document is to recommend criteria for the provision of crew escape facilities from the flight deck area.

2. REFERENCES:

2.1 Documentation:

This annex should be used in conjunction with the ARP4101 Core Document. In addition, the following documents may be applicable:

- SAE S-7 ARP4102, Flight Deck Panels, Controls and Displays
- SAE S-7 ARP4101/8, Flight Deck Interior Doors

2.2 Definitions:

2.2.1 Emergency Exit: An emergency exit is an opening which may be used for emergency evacuation of the aircraft.

Class A: Openings primarily intended for personnel use.
Class B: Secondary openings primarily intended for servicing or personnel use.
Class C: Auxiliary openings primarily intended for emergency use.

2.2.2 Exit Closure: An exit closure is the door, window, or other device used to close or otherwise fill or occupy the exit opening.

3. OPERATIONAL REQUIREMENTS:

3.1 Emergency Exits:

3.1.1 Emergency exits should be provided on the flight deck or otherwise be immediately accessible to permit the crew to escape from the aircraft after an emergency on land or water, regardless of the orientation of the flight deck. If any of the emergency exits required under this paragraph are not located within the flight deck itself, the accessibility of each emergency exit from the flight deck should be clear, positive, and unrestricted under survivable crash landing conditions.

3.1.2 Each emergency exit should permit the free passage of a fully clothed, ambulatory, 220 lb (100 kg), 6 ft 3 in (190 cm) crew member, and permit the free passage of all of the flight crew's survival equipment required for use with the aircraft under the terms of its operating certificate.

3.1.3 Each emergency exit should be provided with suitable means to permit the crew member using it to descend quickly and safely from the aircraft to the surface on which it rests. Descent routes should be free of protrusions, such as pitot tubes, angle of attack vanes, etc.

3.1.4 If the emergency exit is located overhead, means should be provided to permit the crew member using it to ascend to and climb through it without undue difficulty.

3.2 Exit Closures:

3.2.1 Emergency exit closures should be openable both from inside and outside the aircraft. Attempted or partial operation from either side should not impair operation from the other side.

3.2.2 The method of operation of the release handle or lever, and the axis and direction of rotation should be obvious and natural to the operator. Specifically, rotation of “T” or “L” type handles in a counterclockwise direction from inside the aircraft or pulling of levers in a direction generally toward the operator should unlatch and/or open the exit closure.

3.2.3 All handles should be capable of operation by one person using one hand.

3.2.4 The direction of motion required to open or unlock the mechanism from the exterior or the interior should be indicated in plain view on or in the immediate vicinity of the interior and exterior operating handles. The letters or marking should be easily readable and understandable under adverse conditions (nighttime, aircraft inverted, etc.). (See ARP577 on placards and ARP503 on illumination.)

3.2.5 The entire operation of the operating handle should be in a continuous motion without any sharp changes in direction throughout the general movement except for pulling the handle from countersunk recesses on external installations.

3.2.6 The handle dimensions should take into consideration the normal hand grip limitations, including adequate hand-to-handle contact areas to reduce to a minimum possible personnel injury under high load applications to the handle.

3.2.7 All external handles should provide clearance to allow gripping of either external or countersunk handles with gloved hands.

3.2.8 It is desirable to locate the operating handles relative to the hinges or axis of rotation to allow maximum torque.

3.2.9 The operating handle should not restrict the available opening in case of partial exit opening because of closure jamming.

3.2.10 To allow normal operation, sufficient provisions should be made to prevent icing of the outside or external handle mountings.

3.2.11 The design should enable the operator to open the exit closure, even with ice accumulation, seal vulcanization and reasonable amount of fuselage distortion.

3.2.12 Internal exit closure handles or their protective covers should be designed so that they cannot be hidden by window curtains, stowed clothing, etc.

3.2.13 Increasing cabin differential pressure should act so as to increase the security and retention of the exit closure.

3.2.14 Means shall be provided to prevent opening of the exit closure to a dangerous extent in flight.

3.2.15 The exit closure mechanism should be so designed that improper or incomplete closing of the exit will be obvious.

3.2.16 Consideration should be given to the operation and release of exit closure when aircraft is in other than an upright position.

3.2.17 Only the single operation of pulling or pushing the exit closure into the clear should be necessary. No secondary operation should be necessary such as moving or unlocking such devices as locks, catches, stops, bolts, bars, etc. This does not preclude the use of an easily removable or operable non-tampering protective cover.

3.2.18 The arc of rotation of handles should not exceed 180 degrees.

3.2.19 It is desirable in the use of “L” handle types to have the final motion of the handle consistent with the opening motion of the closure during its final operation.

3.2.20 External push plates used for operating closure opening mechanism should move or give in the same directions as the opening movement of the exit closure when a push force is applied.