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# AEROSPACE RECOMMENDED PRACTICE

ARP 488B

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## EXITS AND THEIR OPERATION - AIR TRANSPORT CABIN EMERGENCY





1. PURPOSE

The purpose of this recommended practice is to provide design recommendations for passenger cabin entry doors, service doors, and emergency exits. The objective is to make opening procedure simple, quick, obvious, and reliable for normal and emergency conditions to all occupants.

Note: a. It is not the purpose of this ARP to specify the design methods or specific mechanisms to accomplish the objectives.
b. Nor is the purpose to include the closing operation of exits.

The intent of this ARP is to provide for opening of exits for fast emergency evacuation, when necessary.

2. GENERAL RECOMMENDATIONS:

2.1 Exit Recommendations:

2.1.1 Increasing cabin pressure should act to increase the security and retention of the exit.

2.1.2 Means should be provided to prevent in-flight opening of the exit or opening of the exit by vibration or landing impact loads with little or no cabin pressure.

2.1.3 Exits should have emergency illumination per ARP 503, Emergency Evacuation Illumination.

2.1.4 Consideration should be given to the operation of the exits when the aircraft is not upright; i.e., some doors may have to be lifted up and over the hinge point due to a cant and have the required force increased due to gravity. All possible landing gear failures and combination of failures should be examined. This consideration should include the weight of the door, location, trim, evacuation slide or slide/raft, method of release, type and location of hinges, etc.

2.1.5 The method of opening the exit should be simple and obvious. No special skill or technique should be required. It should not be necessary to perform secondary operations (such as unlocking stops, straps, bars or catches), except for easily displaceable or easily operable protective covers.

2.1.6 Consideration should be given to the operation and release of the exit in the event of ice accumulation, seal vulcanization, residual cabin pressure, and fuselage distortion. Upholstery trim or other items which could block the exit should be considered in order that survivable crash loads do not pull such items over the opening.

2.1.7 Exits should be clearly marked and have placards with instructions for operation per ARP 577, Emergency Placarding - Internal and External.

2.1.8 Window type exits should be operable from the outside with the adjacent seats in the most critical locations and the seat backs in all positions of recline and breakover and with passenger service units or other overhead mounted units in the most critical locations.

2.2 Operating Handle Recommendations - Location: The term "handle" is used to refer to the part of the exit mechanism (lever, button, knob, etc.) that is manipulated directly by the operator in order to open the exit.

2.2.1 When force must be applied to a handle, it is desirable to locate the handle in a position to utilize the maximum force-producing capabilities of the operator in actuating the exit door.

2.2.2 A single operating handle should be mounted internally and a single operating handle should be mounted externally on the door itself or immediately adjacent to the opening. Remote door release mechanisms should be avoided.

2.2.3 The handle should not restrict the usefulness of the exit opening in the event that the exit is for some reason limited to partial opening.

2.2.4 Interior exit handle locations should be visible from across the cabin, through the passageway, and the crossaisle, if existent. Interior exit handles or their protective covers should not be hidden or obstructed by any cabin furnishings or stowed items.

2.3 Handle Recommendations - Operation:

2.3.1 The method of operating the handle should be obvious and natural to the operator.

2.3.2 The entire operation of the handle should be in a smooth continuous motion, with no abrupt changes in force or direction.

2.3.3 Exits which are power operated for normal airline service should be provided with a supplementary power source which can open the exit in the emergency exit mode after loss of the normal power supply.

2.3.4 The operation of the exterior handle should automatically dis-engage any powered exit opening system and ground escape device deployment and erection system and then open the exit.

2.3.5 The interior handle for a detachable exit door or hatch should be operable from a seated or standing position by a continuous pull, initially in a general inboard direction. Exterior operation and opening of such exits should be accomplished by a "pushing" or "striking" force. The normal opening direction should be inward. The exterior opening mechanism should withstand a static load to 300 lb (135 kg) without failure.

2.3.6 Operation of either the exterior or the interior handle should open the exit regardless of the position of the other handle.

2.3.7 No handle should require more than one person to operate it.

2.3.8 Unlocking and opening an exit should be possible with the application of no more than a force of 30 lb (13.5 kg) with the airplane unpressurized under normal operating conditions.

2.3.9 Handle shape and dimensions should take into consideration normal hand grip limitations, provide for adequate handle-to-hand contact area, and provide hand clearance throughout the handle travel to insure adequate load application to the handle.

2.3.10 Clearance should be provided to allow gripping of exterior handles with gloved hands.

2.3.11 Provisions should be made to prevent icing of the handle and release mechanisms.

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# ERRATA SHEET - ARP 488B

Paragraph 2.3.13: Last sentence currently reads:

"The positions of the separate control handle should be in positive detents and be capable of remaining in any intermediate position."

Last sentence should read:

"The positions of the separate control handle should be in positive detents and be incapable of remaining in any intermediate position."