



U.S. Department
of Transportation

Federal Aviation
Administration

Subject: ACTION: Modification of Outward Opening Doors
on Existing Transport Airplanes

Date: MAR 20 1992

From: Manager, Transport Airplane Directorate,
Aircraft Certification Service, ANM-100

Reply to
Attn of:

To: Manager, Aircraft Certification Offices,
ANM-100S, ANM-100L, ACE-115A, and Manager, ANM-113

The FAA has completed review of the Air Transport Association (ATA) report on transport category airplane doors (ATA Cargo Door Task Force Final Report). Although we are in general agreement with the recommendations in the final report, we believe there are some additional modifications needed to ensure safe operation for the time these airplanes will remain in service.

The following list of cargo doors were reviewed by the ATA Design Subcommittee for any design deficiencies and for service difficulties which could potentially affect continued airworthiness:

<u>Airplane</u>	<u>Door</u>
A300, A300-600, A310	Lower Lobe Cargo Door Main Deck Cargo Door
Airbus A320	Lower Lobe cargo Door
Boeing 707/727	Main Deck cargo Door
Boeing 737	Main Deck cargo Door
Boeing 747	Lower Lobe Cargo door Main Deck cargo Door Nose cargo Door
Boeing 757	Package Freighter Door
Boeing 767	Large Forward Cargo Door
Lockheed L-1011	C-1A Lower Lobe Cargo Door
McDonnell Douglas DC-8	Main Deck Cargo Door
McDonnell Douglas DC-9	Main Deck cargo Door
McDonnell Douglas DC-10	Lower Lobe Cargo Doors (Fwd, Center, Aft) Main Deck Cargo Door

DESIGN REVIEW

The above doors were initially reviewed for compliance with § 25.783, Amendment 25-54, and Advisory Circular (AC) 25.783. It became apparent that full literal compliance with Amendment 25-54 was not practical for some of the older door designs. The Design Sub-committee therefore developed design standards for existing outward opening doors using Amendment 25-54 and AC 25.783 as a guide. Since the Working Group was unable to complete its review of the detail design of each door, due to insufficient data, the aircraft certification offices (ANM-100L, ANM-100S, ANM-113, ACE-115A) should review the above doors for compliance with these design standards. All outward opening doors installed on the above airplanes by a supplemental type certificate (STC) should also be reviewed. Following this review, airworthiness directives should be issued as necessary to bring the doors into compliance.

The subject outward opening doors should comply with the design standards listed below. Literal compliance with the criteria may not be required if compensating features achieve an equivalent level of safety.

(1) Indication System:

- (a) The indication system must monitor the closed, latched, and locked positions, directly.
- (b) The indicator should be amber unless it concerns an outward opening door whose opening during takeoff could present an immediate hazard to the airplane. In that case the indicator must be red and located in plain view in front of the pilots. An aural warning is also advisable. A display on the master caution/warning system is also acceptable as an indicator. For the purpose of complying with this paragraph, an immediate hazard is defined as significant reduction in controllability, structural damage, or impact with other structures, engines, or controls.
- (c) Loss of indication or a false indication of a closed, latched and locked condition must be improbable.
- (d) A warning indication must be provided at the door operators station that monitors the door latched and locked conditions directly, unless the operator has a visual indication that the door is fully closed and locked. For example, a vent door that monitors the door locks would meet this requirement.

(2) Means to Visually Inspect the Locking Mechanism:

There must be a visual means of directly inspecting the locks. Where all locks are tied to a common lock shaft, a means of inspecting the locks at each end may be sufficient to meet this requirement provided no failure condition in the lock shaft would go undetected when viewing the end locks. Viewing latches may be used as an alternate to viewing locks on some installations where there are other compensating features.

(3) Means to Prevent Pressurization:

All doors must have provisions to prevent initiation of pressurization of the airplane to an unsafe level if the door is not fully closed, latched and locked.

(4) Lock Strength:

Locks must be designed to withstand the maximum output power of the actuators and maximum expected manual operating forces treated as a limit load. Under these conditions, the door must remain closed, latched and locked.

(5) Power Availability:

All power to the door must be removed in flight and it must not be possible for the flight crew to restore power to the door while in flight.

(6) Powered Lock Systems:

For doors that have powered lock systems, it must be shown by safety analysis that inadvertent opening of the door after it is fully closed, latched and locked, is extremely improbable.

SERVICE BULLETINS

Service bulletins issued against these doors were reviewed by the ATA Design Working Group and by FAA engineers. Some of these service bulletins were categorized as "Airworthy" by the Design Working Group. Since we concur with their recommendations, the following service bulletins should be made mandatory by AD action against each airplane type design listed.

<u>Manufacturer</u>	<u>Model/door type</u>	<u>Service Bulletin No.</u>
Airbus	A300	52-002 52-041
Boeing	727 Main Deck	727-52A0054
	737 Main Deck	737-52-1033 737-52-1060 737-52-1068
	747 Lower Lobe	747-52-2107 747-52-2124 747-52-2186
	747 Main Deck	747-52-2093 747-52-2105 747-52-2107 747-52-2124 747-52-2186
Lockheed	757 Package Freighter L-1011 C1A	757-52-0040 093-52-155 093-52-252
McDonnell Douglas	DC10 Lower Lobe DC10 Main Deck	52-129 52-129 52-182

It may not be practical to issue only one AD against each type design to cover both service bulletins and design modifications. The service bulletins are presently available for incorporation whereas the design modifications may take time to develop. There is no reason to hold up issuance of ADs on the referenced service bulletins.

Proposed revisions to the door rule (§ 25.783) and the Door Advisory Circular (AC 25.783-1) are in the draft stages and will be put in coordination in the near future. The revisions to the door standards will incorporate recommendations made by the NTSB, ATA, and the JAA but will only apply to future designs.

There are two NTSB recommendations relating to the door safety issue (A-89-093 and A-89-094). ANM-100 needs to close out the NTSB and ATA recommended actions. Please provide ANM-100 with a status report on the ADs issued against the referenced service bulletins and the status of the design review of each outward opening door, both TC and STC doors, for which you have responsibility.

If you have any questions regarding this subject you may call Iven Connally, (FTS 392-2120), ANM-112.

Prepared by:


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Concur:


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