

**Exemption No. 8616**

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of

**Lufthansa Technik AG**

for an exemption from §§ 25.785(d) and  
25.813(e) of Title 14, Code of Federal  
Regulations

**Regulatory Docket No. FAA-2005-21584**

**GRANT OF EXEMPTION**

By letter dated April 8, 2005, Mr. Jürgen Repenning, Lufthansa Technik AG, Postfach 63 03 00, D-22313, Hamburg, Germany, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of §§ 25.785(j) and 25.813(e) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would permit relief from the requirement for firm handholds along each aisle and additional passenger areas, and relief from the requirement that prohibits the installation of interior doors between passenger compartments. The proposed exemption is specifically for the installation of an executive interior on a Boeing Model 747-400 airplane, serial number 33684, that has been designated as “private, not-for-hire.”

The applicant petitioned for exemption from requirements that a “firm handhold” be provided along each aisle; this requirement is found in § 25.785(j), of the current regulations, Amendment 25-88. However, the certification basis of the airplane undergoing modification includes only Amendments 25-1 through 25-45, rather than Amendment 25-88. For § 25.785 the appropriate amendment level is Amendment 25-32. The requirement that a “firm handhold” be provided along each aisle is found in § 25.785(d) at Amendment 25-32.

**The petitioner requests relief from the following regulations:**

**Section 25.785(d), Amendment 25-32** - Requires a “firm handhold” along each aisle.

**Section 25.813(e), Amendment 25-46** - Prohibits installation of interior doors between passenger compartments.

**The petitioner's supportive information is as follows:**

**“Petition for Exemptions**

“Petition for Exemption under 14 CFR part 11.25 from the following 14 CFR requirements;

“§ 25.785(d) ‘Firm handhold’ in the passenger cabin

“§ 25.813(e) ‘No Doors between passenger compartments’

“for the Boeing Model 747-400, equipped with an Executive Interior . . . for ‘Private, not-for-hire use’ and not offered for public conveyance.

“Reference is made to FAA Exemptions from § 25.785(d) ‘Firm handhold’ in the passenger cabin No. 7572 granted upon Lufthansa Technik’s application for the Boeing Model 737-7001GW series airplane, FAA Exemption No. 7710 for the Boeing Model 737-800, and exemption for § 25.813(e) ‘No Doors between passenger compartments’ (Boeing 737-800, exemption No. 7609), addressing installation of an executive interior.

**“General Background”**

Lufthansa Technik (LHT) has been selected by Bahrain Royal Flight to complete a Boeing Model 747-400, MSN [manufacturer’s serial number] 33684, that Bahrain Royal Flight purchased from Boeing. “LHT has been doing this kind of installation for many years for large Head of State, VIP, and Executive aircraft operated in Germany as well as in many foreign countries. The Bahrain Royal Flight 747-400 airplane is intended to be operated under Bahrain registration. The certification is processed in the form of a European EASA STC [supplemental type certificate] through German authority LBA, for which validation by the FAA is sought under the ‘Implementation Procedures for Design Approval, Production Activities, Export Airworthiness Approval, Post Design Approval Activities, and Technical Assistance between Authorities’ in accordance with the Bilateral Aviation Safety Agreement between the U.S. and Germany (BASA IPA). The FAA has accepted our application and has assigned Project Number ST4363NY-7- for this project.

“Exemptions are requested for the following provisions of 14 CFR part 25, taking into consideration the use of the aircraft in a private, not for hire operation. Granting of the exemptions is requested by this petition.

“We also respectfully request for the exemptions from § 25.785 (d), ‘Firm handhold’ in the passenger cabin, and § 25.813 (e), ‘No Doors between passenger compartments,’ . . . be processed and the publication and comment procedures as per § 11.27 will be done under following suppositions:

“- an exemption for § 25.785(d) ‘Firm handhold’ has been granted before

(Boeing 737-7001GWI, exemption No. 7572) and (Boeing 737-800, exemption No. 7710)

- “- an exemption for § 25.813(e) ‘No Doors between passenger compartments’ has been granted before (Boeing 737-800, exemption No. 7609)
- “- there were no adverse comments on the original petitions
- “- the issues are non controversial
- “- granting the petitions would not set a precedent

**“§ 25.785(d) ‘Firm handhold’ along each aisle**

“Exemption Requested:

“That the Boeing Model 747-400, when configured for private use and utilized under operating rules 14 CFR part 91 or 14 CFR part 125, be exempted from that part of § 25.785(d) which requires a firm handhold along each aisle.

“§ 25.785(d) states ‘If the seat backs do not have a firm handhold, there must be a handgrip or rail along each aisle to enable occupants to steady themselves while using the aisles in moderately rough air.’ ”

“Justification:

“The requirement for a firm handhold along aisles cannot be met for various rooms in VIP-areas like VIP- bedroom, reception area, FWD [forward]-lounge, FWD buffet/galley-area, royal lounge, conference/dining area and U/D (Upper Deck) due to wide open spaces between individual seat backs which typically provide an adequate handhold . . . . In fact, due to their spaciousness, there is no readily identifiable ‘aisle’ in these . . . areas. Any construction hanging down from the ceiling would ruin the appearance of all these areas and therefore is not acceptable to the customer.

“This is why LHT applies for an exemption regarding § 25.785(d).

“The risk for occupants due to the non-availability of direct handholds in the above mentioned private areas is considered acceptable for the following reasons:

“Occupant Safety Considerations:

“The risk for occupants due to the non-availability of direct handholds in the above mentioned private areas is considered acceptable for the following reasons:

- “- All furniture has rounded corners and edges to avoid serious injury in a turbulence situation.
- “- The installed seats are heavily upholstered and will not cause injuries when contacted.
- “- Door frames integrated into the cabin layout are a means for the passengers to steady themselves.
- “- There will be a recommendation to passengers to remain seated with their seat belts fastened.

**“§ 25.813(e) ‘No doors between passenger Compartments’**

“Exemption Requested:

“§ 25.813(e) states ‘no door may be installed in any partition between passenger compartments.’

“The proposed interior design includes doors between passenger compartments. Therefore, LHT applies for an exemption regarding § 25.813(e).

“Justification:”

The Boeing Model 747-400 is designed to the requirements of 14 CFR part 25, for transport category airplanes. These rules primarily address transport category airplanes that are used for the carriage of fare paying passengers from the general public, and also must consider airplanes with passenger seating up to 500. The Boeing Model 747-400 with the proposed VIP-Interior by LHT, on the other hand, will be outfitted exclusively for corporate use. The differences between the commercial transport category airplane used in airline operation and an airplane specifically used for corporate operations, either private or non-scheduled commercial, are not segregated in the part 25 rules. LHT contends that airplanes specifically designed for corporate service, either private or commercial, should be eligible for acceptance by exemption of cabin features and facilities which do not comply with the full requirements of part 25, provided a similar level of safety is achieved and can be demonstrated. The corporate fleet utilizing airplanes certified in the transport category, world wide, has now grown to a point where it is contended that the certification agencies need to consider new revised design rules for aircraft involved in this class of operation. Aircraft specifically designed and outfitted for corporate operation generally carry passengers familiar with flying and very familiar with the specific airplane on which they travel. Also, unlike an airliner, the crew of a corporate airplane has day-to-day contact with the people who are their passengers, thus safety communication is positive; also these airplanes are generally operated continuously by one crew who are knowledgeable of the specific airplane.

“Occupant Safety Considerations:

“The risk for occupants due to doors between passenger compartments in the above mentioned private areas is considered acceptable for the following reasons:

“(a) Doors may be installed in a compartment such that no other person than the occupants of the compartment would have to pass through that door to reach an emergency exit.

“(b) Each door between passenger compartments must have means to signal to the flightcrew when a door is closed. Appropriate procedures/limitations to ensure that takeoff and landing is prohibited when any such door is not in the proper takeoff and landing configuration.

“(c) Each door between passenger compartments must have dual means to retain it in the open position, each of which are capable of reacting the inertia loads specified in § 25.561.

“(d) Each door between passenger compartments must be frangible.

“(e) Doors between passenger compartments that are installed across the longitudinal aisle must translate laterally to open and close.

“(f) When doors are installed in the egress paths, each passenger must be informed. This notification is only required prior to the first time a person is a passenger on the airplane. In addition, all doors installed across the main evacuation path must open and close in a transverse direction. The direction of motion of the doors must be at the right angle to the longitudinal axis of the airplane. However, in the area of the business class where the majority of the occupants are seated and where the layout is more ‘airline’ like doors between passenger compartments are not permitted.

**“Public Interest**

“As in the case of the already established Exemptions for § 25.785(d) ‘Firm Handhold’ No. 6820 and 6820A and for § 25.813(e) ‘No Doors between passenger compartments’ (Boeing 737-800, exemption No. 7609), granting this Petition for Exemption would be clearly in the public interest as it allows efficient and safe carriage of Heads of State and executives in the sought for environment which would otherwise not be possible.

“Granting the exemptions furthermore would be in the interest of international harmonization because a number of authorities worldwide have already accepted configurations as proposed in this petition for exemption.”

## **Public Comment**

A summary of this petition was not published in the Federal Register. The nature of this exemption is effectively identical to those of previous petitions for which there were no public comments received.

### **The FAA’s analysis/summary is as follows:**

The FAA considers the petitioner’s proposal to be in the public interest for the same reasons as those previously stated by the petitioner.

As more and more transport category airplanes have been configured (or re-configured) for “private, not-for-hire” use, the FAA has given considerable attention to the issue of appropriate regulation of such airplanes. Some of the current regulations governing design certification of transport category airplanes are not compatible with private, not-for-hire use of such airplanes. Given this situation, the FAA has received a number of petitions for exemption from certain regulations. The FAA has granted such exemptions when it finds that to do so is in the public interest and does not adversely affect the level of safety provided by the regulations. In the future, the FAA intends to propose regulations governing transport category airplanes in private use, obviating the need for case-by-case review of individual petitions for exemption.

### Firm Handhold

Specifically, the applicant petitioned for exemption from requirements that a “firm handhold” be provided along each aisle. This requirement is found in § 25.785(j), of the current regulations, Amendment 25-88. However, the certification basis of the airplane under going modification includes only Amendments 25-1 through 25-45, rather than Amendment 25-88. For § 25.785, the appropriate amendment level is Amendment 25-32. The requirements that a “firm handhold” be provided along each aisle are found in § 25.785(d) at Amendment 25-32.

The petitioner requests an exemption from the handhold requirements of § 25.785(d) for the dining room and the saloon. Review of the layout provided with the petition indicates that there are additional areas of concern within the airplane. These areas are the VIP-bedroom, reception area, FWD-lounge, FWD buffet/galley-area, royal lounge, conference/dining area and U/D.

The FAA has considered the requirement for firm handholds in the context of private use airplanes. For the entrance hall, dining room, saloon, aft corridor, master bedroom, and master bathroom, the requirement to have a firm handhold would be impractical, given the proposed configuration. The proposed arrangement provides an acceptable level of safety for a private use airplane.

## Interior Doors

The placement of interior doors is clearly quite significant to the owner/operator of the airplane. The flexibility to partition the airplane into individual rooms, such as private meeting rooms or bedrooms, is paramount to an acceptable interior. The availability of private meeting rooms and bedrooms is essential. The FAA acknowledges the desirability of these features from the operator's point of view.

When the regulations pertaining to interior doors were adopted, they did not necessarily consider "rooms." They considered two possible types of interior doors in a passenger compartment. The first type is an interior door between passenger compartments. The second type is an interior door between the exit and the passenger compartment.

Until recently, only the first type of door was prohibited by § 25.813(e). However, part 25, as amended by Amendment 25-116, prohibits interior doors between the exit and the passenger compartment. In addition, Amendment 121-306 prohibits these doors in airplanes manufactured after November 27, 2006, operated under 14 CFR part 121. Amendments 25-116 and 121-306, titled "Miscellaneous Cabin Safety Changes," were published in the Federal Register on October 27, 2004.

In terms of airplanes configured for "private, not-for-hire" use, there are four different categories of doors in the passenger cabins.

1. Category 1 is a door in a room and the room is less than the full width of the airplane. There will be an aisle on the outside of the room. This type of room may be occupied during takeoff and landing, and only the occupants of the room must use the door to reach an exit.
2. Category 2 is a door in a room and is the same as Category 1 except there is a single emergency exit or pair of emergency exits within the room.
3. Category 3 is a door or doors in a compartment and the compartment is the full width of the airplane. There are passengers seated on both sides of the door(s) and the main aisle leads out of or passes through the compartment. The compartment does not have any emergency exits. This type of compartment may be occupied during takeoff and landing.
4. Category 4 is a door in a room and the room is the full width of the airplane. Passengers are seated on both sides of the door, and there is a pair of emergency exits at one end. This type of room may be occupied during takeoff and landing.

After considerable deliberation, the FAA has concluded that, in regard to the installation of interior doors between passenger compartments, not all interior doors are equivalent. With respect to such interior doors, the FAA has determined that the following requirements will produce an adequate level of safety:

1. In order to maximize the level of safety, doors in Category 2, 3, or 4 installed across the main cabin aisle must open and close in a transverse direction. That is, the direction of motion of the door must be at a right angle to the longitudinal axis of the airplane. A “pocket door” is one example of such a design. This will tend to minimize the chance that the inertia forces of an accident could force the door closed.
2. Redundant means are necessary to latch doors open for takeoff and landing. Each latching means must have the capability of retaining the door in the takeoff and landing position under the inertia forces of § 25.561.
3. Each interior door must be frangible, in the event that it is jammed in the closed position in flight or during taxi, takeoff, or landing. Frangibility is intended to ensure that if a door is jammed closed occupants can escape in either direction and emergency equipment can be moved. Frangibility may be demonstrated in either of the following ways:
  - A 5<sup>th</sup> percentile female can break through the door, creating a large enough opening that a 95<sup>th</sup> percentile (or larger) male can pass through. (See Advisory Circular 25-17, “Transport Airplane Cabin Interiors Crashworthiness Handbook,” paragraph 43b(2)).
  - A 5<sup>th</sup> percentile female can break a hinge on the door or a hinge on a smaller door within the door such that the door can swing, so as to allow a 95<sup>th</sup> (or larger) percentile male to pass through the opening with the door swung open. This evaluation must be made with any cabin furnishing or equipment that could limit the swing arc of the door installed and then placed in the most adverse position. In using this approach, one must consider the possibility that the door is physically jammed in the closed position by distortion of the fuselage or furnishings. This possibility must be considered even if the door normally translates into the open and closed positions.
4. Doors which fall into Category 1 must be in the open position during taxi, takeoff and landing only when the room is occupied.
5. Doors which fall into Categories 2, 3, or 4 must be in the open position during taxi, takeoff and landing, regardless of occupancy.
6. With respect to the possibility that a door will remain closed when it should not be, the FAA has determined that a higher level of awareness is required to address this issue. Due to the relative complexity of the cabin interior, the FAA has determined that inspection by flight attendants prior to takeoff and landing is sufficient to verify that interior doors are in the proper position. Consequently, some type of remote indication is considered necessary. The petitioner’s proposal to provide remote indication to the flightcrew is considered adequate.

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in § 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, Lufthansa Technik is hereby granted an exemption from 14 CFR §§ 25.785(d), Amendment 25-32, and 25.813(e), Amendment 25-46. The petition is granted to the extent necessary to allow Lufthansa Technik to install an executive interior on a “private, not-for-hire” Boeing Model 747-400 airplane, serial number 33684. Specifically, the exemption allows relief from the requirement to provide firm handholds in the aisle in the VIP-bedroom, reception area, FWD-lounge, FWD buffet/galley-area, royal lounge, conference/dining area and U/D. This exemption is subject to the following conditions:

1. The airplane is not operated for hire or offered for common carriage. This provision does not preclude the operator from receiving remuneration to the extent consistent with 14 CFR parts 125 and 91, subpart F, as applicable.
2. Each door between passenger compartments must be frangible.
3. Doors that fall into Categories 1 and 3 must be in the open position during taxi, takeoff and landing only when the room is occupied or when passengers must pass through the room to reach an emergency exit.
4. Doors that fall into Categories 2 or 4 must be in the open position during taxi, takeoff and landing, regardless of occupancy.
5. Appropriate procedures must be established to signal the flightcrew that a door between passenger compartments is closed and to prohibit takeoff or landing when a door between passenger compartments is not in the proper position.
6. Doors between passenger compartments must have dual means to retain them in the open position, each of which means must be capable of withstanding the inertia loads specified in § 25.561.
7. Doors in Categories 2, 3, or 4, which are installed across a longitudinal aisle, must translate laterally to open and close.

Issued in Renton Washington, on August 26, 2005.

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/S/  
Ali Bahrami  
Manager, Transport Airplane Directorate  
Aircraft Certification Service