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# Title 14—AERONAUTICS AND SPACE

## Chapter I—Federal Aviation Administration, Department of Transportation

[Docket No. 10405; Amdt. 23-10]

### PART 23—AIRWORTHINESS STANDARDS: UTILITY AND ACROBATIC CATEGORY AIRPLANES

#### Airworthiness Standards

The purpose of these amendments is to limit the applicability of Part 23 of the Federal Aviation Regulations to small airplanes which have a passenger seating configuration, excluding pilot seats, of nine seats or less.

These amendments are based on a notice of proposed rule making (Notice 70-25) published in the FEDERAL REGISTER on July 7, 1970 (35 F.R. 10911). Except as modified by the following discussion, the reasons for the amendments are those in the notice. Changes from the notice and the disposition of comments on the notice are set forth below.

A number of the commentators objected to the proposal because they considered it to be beyond the planned third step of the three-step program previously announced by the FAA to upgrade the level of airworthiness of small airplanes intended for operations under Part 135. However, as explained in Notice 70-25, based upon the comments received in response to Notice 68-37, and after further consideration, it was determined that rather than adding additional airworthiness requirements to Part 23, it would be more appropriate to limit the applicability to small airplanes that are certificated with not more than nine passenger seats, excluding pilot seats. At the time that the 12,500 pounds weight limitation on small airplanes was established in 1953, civil airplanes were well below or well above that weight. In recent years, it has become apparent that the significance of that weight limitation as a line of demarcation between Parts 23 and 25 has changed. Many small airplanes with weights of, or close to, 12,500 pounds have been produced by manufacturers for private, executive, and air taxi use. Some of these airplanes have turbine engines and must carry large fuel loads to achieve a practical range at high speeds and altitudes. They make extensive use of modern communication and navigation equipment, and of complex aircraft systems. More important, however, is the sudden trend toward an increase in the number and types of small airplanes designed to carry relatively large numbers

of passengers. The FAA considers that continued applicability of Part 23 to small airplanes designed to carry 10 or more passengers is no longer in the interest of safety. Future generations of these small airplanes should adhere to the level of safety afforded by the requirements of Part 25 irrespective of whether operations are conducted under Part 135 or Part 91.

Comments were received expressing concern over the effect that the Civil Aeronautics Board's (CAB) pending decision on its investigation of air taxi weight limitations under Part 289 of the Board's economic regulations would have on the proposed amendments to Part 23, and suggested deferring action on Notice 70-25 until after the CAB reached a decision. The FAA does not agree that the CAB's pending investigation of air taxi weight limitations justifies deferring the adoption of this amendment. The issues involved in the CAB's investigation are concerned with large airplanes (airplanes with maximum takeoff weights of more than 12,500 pounds). Such airplanes would not be affected by any action on Notice 70-25

since, under the present rules, all large airplanes have to be certificated under Part 25.

Several comments objected to the proposal on the basis that the cost of certificating small airplanes under Part 25 would be prohibitive. One commentator indicated that design studies showed the costs to be prohibitive while another commentator stated that the major certification cost is in substantiating compliance with Part 25 rather than in designing to these standards. However, the commentators did not furnish information or data to support their objections and the FAA does not believe that the cost of certificating small airplanes under Part 25 would be prohibitive. In any event, the recent rapid increase in the number of small airplanes carrying 10 or more passengers emphasizes the need for a single level of airworthiness for airplanes carrying 10 or more passengers.

In response to several comments, the title of proposed § 23.1583(1) has been changed to read "Maximum passenger seating configuration" in order to make it clear that the operating limitation on passenger seats is intended to implement the change to the applicability provisions of § 23.1. In establishing the seating capacity as a limitation it was not intended to include the pilot's seat and, in the case of airplanes having dual flight controls, the second pilot's seat. Furthermore, it was not intended to prevent the present practice of two small children "doubling up" on a seat or an adult holding an infant.

In Notice 70-25 the FAA stated that it was not aware of any requirements in Part 25 that could not or should not be applied to small airplanes having a passenger seating configuration of 10 or more seats, and solicited comments concerning any requirements of Part 25 that are considered inappropriate for these small airplanes. A number of comments were received concerning this question and the FAA's disposition of these comments follows.

One comment suggested that the definition of stalling speed in Part 25 is inappropriate for any type of aircraft and especially for "light aircraft". The FAA does not agree. It appears that the commentator is concerned that the stalling speed determined under the provisions of Part 25; namely, that the airplane is considered stalled at an angle of attack measurably greater than that for maximum lift, is less conservative than the stalling speed determined under Part 23 which states that a stall is produced as evidenced by an uncontrollable downward pitching motion of the airplane. It should be noted, however, that the flight requirements, including the stalling speeds, of Parts 23 and 25 are appropriate for the type certification of an airplane under the respective parts. To this end, the flight requirements of Part 25 are more refined and incorporate considerably more margin, accountability, and failure considerations than those of Part 23. Incorporating the stalling speed requirements of Part 23 into Part 25 for application to small airplanes is not appropriate in view of the differences in the related requirements of those parts.

Another comment recommended that § 23.629(b) be incorporated into § 25.629 to permit, for small airplanes, the applicant to show freedom from flutter by appropriate flight tests. The recommended change is not necessary because the general provision of § 25.629(a) permits flight tests as a means of showing freedom from flutter.

One comment suggested that § 25.671(c)(1) be amended, for small airplanes, to exclude from consideration the failure of mechanical elements and structural failure of hydraulic components of the control system. The commentator contends that there is no need to require fail-safe design for the control system because the high reliability of mechanical elements has been proven by known aircraft in service. The commentator, however, did not submit any data in support of his contention, and the FAA considers that the requirements of § 25.671(c)(1) are appropriate for small airplanes.

Comments were received recommending changes to § 25.807 to permit the use of exits of the size of Type IV exists

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on small airplanes. The FAA in Notice 69-33 proposed amendments to § 25.807 and these comments will be considered in connection with that notice.

One comment recommended that § 25.815 be amended to allow, for small airplanes, a minimum passenger aisle width of nine inches, less than 25 inches from the floor, and 15 inches, more than 25 inches from the floor. While the FAA agrees with the commentator's position that emergency evacuation problems should be approached on a systems concept, the effectiveness of the system, however, is determined to a large extent by the individual components; namely, exit sizes, aisle width, exit markings, etc., which have been proven through experience to be critical in the system. Aisle width requirements were relaxed several years ago. The new width requirements established at that time have not been found to be overly burdensome or restrictive through service experience. Moreover, there is no evidence to justify a further reduction of aisle width for small airplanes.

One comment stated that the requirement of § 25.831(e) for separate environmental controls and supply systems for crew compartments is not necessary or practical for small airplanes. Section 25.831(e) is applicable only if the passenger and crew components can be separated. The requirement would not apply to most small airplanes since they are not usually designed for cabin separation. If the crew compartment can be separated from the passenger compartments, the requirement is necessary to assure that the temperature and quantity of ventilating air is adequate.

One comment stated that the burn rates and self-extinguishing requirements of § 25.853 for cabin interior materials are not necessary for small airplanes because they can be evacuated before the cabin becomes inhospitable. The requirements for materials with fire resistance properties are not related solely to the time required for evacuation. Rapid evacuation may not be possible or the fire might occur in-flight. The objective of the flammability standards is to reduce the growth and intensity of cabin fires, and the requirement is applicable to all Part 25 airplanes regardless of size.

Another comment recommended amending § 25.1195(a) to exclude certain compartments of reciprocating engines from the requirement for a fire extinguishing system on the basis that this system is not necessary in zones where the amount of flammable fluids can be controlled to a harmless quantity by the shutoff means. The FAA does not agree. Experience has shown that a hazardous quantity of engine oil can be

released into an engine compartment as a result of failure of an engine cylinder. A means to extinguish a fire which can occur during such failure is essential for all airplanes type certificated under Part 25.

One comment contended that § 25.1305 (a) (1), which requires a fuel pressure warning means, should not be applied to small airplanes. The commentator contends that, since there are only a few flight controls in a small airplane, the pilot is capable of observing the pressure gauge as often as necessary for flight safety without depending on an additional warning means. The FAA does not agree. The fuel pressure warning means is important to the pilot of a turbine engine powered airplane because there is no requirement for a fuel pressure gauge for airplanes equipped with this engine type. Furthermore, experience has shown that the overall pilot workload during flight prevents the continuous surveillance of instruments, including the fuel pressure gauge of a reciprocating engine airplane. The fuel pressure warning means serves to alert the pilot of an impending engine power interruption or failure so that corrective action may be taken immediately.

Another comment contended that the requirement in § 25.1435(a) (3) for fluid quantity indicators in continuously operating systems should not apply to small airplanes, and that small airplanes need only be equipped with means to visually check the quantity of fluid in the hydraulic system. The commentator states that the hydraulic systems on small airplanes are quite simple, usually providing for landing gear and brakes which incorporate backup means for operation in an emergency, and that items such as flaps and spoilers are not essential for continued safe operation after the depletion of the hydraulic fluid supply and, therefore, the importance of fluid quantity indication is lessened. The FAA does not agree that fluid quantity indicators in a continuously operating system are not necessary if the hydraulic system is not complicated. Furthermore, the proposed change would permit the use of a sight gauge located at a point other than at a flight crew station. It is necessary that means be provided at a flight crew station to indicate the quantity of fluid in each continuously operating system to alert the flight crew to an impending depletion of the hydraulic fluid in order that corrective action may be taken or the use of emergency systems planned.

Finally, § 23.807 is being amended to delete those requirements for emergency exits for airplanes with seating capacities greater than the maximum passenger seating configuration which will be permitted under this Amendment to Part 23.

In consideration of the foregoing, Part 23 of the Federal Aviation Regulations is amended as follows, effective March 13, 1971:

1. Paragraph (a) of § 23.1 is amended to read as follows:

§ 23.1. Applicability.

(a) This part prescribes airworthiness standards for the issue of type certificates, and changes to those certificates, for small airplanes in the normal, utility, and acrobatic categories that have a passenger seating configuration, excluding pilot seats, of nine seats or less.

2. Paragraph (a) of § 23.807 is amended to read as follows:

§ 23.807 Emergency exits.

(a) *Number and location.* Emergency exits must be located to allow escape without crowding in any probable crash attitude. The airplane must have at least the following emergency exits:

(1) For all airplanes, except airplanes with all engines mounted on the approximate centerline of the fuselage that have a seating capacity of five or less, at least one emergency exit on the opposite side of the cabin from the main door specified in § 23.763.

(2) [Reserved]

(3) If the pilot compartment is separated from the cabin by a door that is likely to block the pilot's escape in a minor crash, there must be an exit in the pilot's compartment. The number of exits required by subparagraph (1) of this paragraph must then be separately determined for the passenger compartment, using the seating capacity of that compartment.

3. A new § 23.1524 is added to read as follows:

§ 23.1524 Maximum passenger seating configuration.

The maximum passenger seating configuration must be established.

4. A new paragraph (1) is added to § 23.1583 to read as follows:

§ 23.1583 Operating limitations.

(1) *Maximum passenger seating configuration.* The maximum passenger seating configuration must be furnished.

(Secs. 313(a), 601, 603, Federal Aviation Act of 1958, 49 U.S.C. 1354, 1421, 1423; sec. 6(c), Department of Transportation Act, 49 U.S.C. 1655(c))

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J. H. SHAFFER,  
Administrator.

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