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Title 14 –Aeronautics and Space

Chapter I –Federal Aviation Administration, Department of Transportation

Subchapter C –Aircraft

Part 25 –Airworthiness Standards: Transport Category Airplanes

Subpart C –Structure

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701, 44702 and 44704; Pub. L. 115-254, 132 Stat 3281 (49 U.S.C. 44903 note).

Source: Docket No. 5066, 29 FR 18291, Dec. 24, 1964, unless otherwise noted.

Flight Loads

§ 25.321 General.

FLIGHT LOADS

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- (a) Flight load factors represent the ratio of the aerodynamic force component (acting normal to the assumed longitudinal axis of the airplane) to the weight of the airplane. A positive load factor is one in which the aerodynamic force acts upward with respect to the airplane.
- (b) Considering compressibility effects at each speed, compliance with the flight load requirements of this subpart must be shown—
 - (1) At each critical altitude within the range of altitudes selected by the applicant;
 - (2) At each weight from the design minimum weight to the design maximum weight appropriate to each particular flight load condition; and
 - (3) For each required altitude and weight, for any practicable distribution of disposable load within the operating limitations recorded in the Airplane Flight Manual.
- (c) Enough points on and within the boundaries of the design envelope must be investigated to ensure that the maximum load for each part of the airplane structure is obtained.
- (d) The significant forces acting on the airplane must be placed in equilibrium in a rational or conservative manner. The linear inertia forces must be considered in equilibrium with the thrust and all aerodynamic loads, while the angular (pitching) inertia forces must be considered in equilibrium with thrust and all aerodynamic moments, including moments due to loads on components such as tail surfaces and nacelles. Critical thrust values in the range from zero to maximum continuous thrust must be considered.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25-23, 35 FR 5672, Apr. 8, 1970; Amdt. 25-86, 61 FR 5220, Feb. 9, 1996]