

**§ 25.721**

any of the following, that would not allow a safe takeoff:

(1) The wing flaps or leading edge devices are not within the approved range of takeoff positions.

(2) Wing spoilers (except lateral control spoilers meeting the requirements of §25.671), speed brakes, or longitudinal trim devices are in a position that would not allow a safe takeoff.

(b) The warning required by paragraph (a) of this section must continue until—

(1) The configuration is changed to allow a safe takeoff;

(2) Action is taken by the pilot to terminate the takeoff roll;

(3) The airplane is rotated for takeoff; or

(4) The warning is manually deactivated by the pilot.

(c) The means used to activate the system must function properly throughout the ranges of takeoff weights, altitudes, and temperatures for which certification is requested.

[Amdt. 25-42, 43 FR 2323, Jan. 16, 1978]

**LANDING GEAR**

**§ 25.721 General.**

(a) The main landing gear system must be designed so that if it fails due to overloads during takeoff and landing (assuming the overloads to act in the upward and aft directions), the failure mode is not likely to cause—

(1) For airplanes that have passenger seating configuration, excluding pilots seats, of nine seats or less, the spillage of enough fuel from any fuel system in the fuselage to constitute a fire hazard; and

(2) For airplanes that have a passenger seating configuration, excluding pilots seats, of 10 seats or more, the spillage of enough fuel from any part of the fuel system to constitute a fire hazard.

(b) Each airplane that has a passenger seating configuration excluding pilots seats, of 10 seats or more must be designed so that with the airplane under control it can be landed on a paved runway with any one or more landing gear legs not extended without sustaining a structural component failure that is likely to cause the spillage

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of enough fuel to constitute a fire hazard.

(c) Compliance with the provisions of this section may be shown by analysis or tests, or both.

[Amdt. 25-32, 37 FR 3969, Feb. 24, 1972]

**§ 25.723 Shock absorption tests.**

(a) The analytical representation of the landing gear dynamic characteristics that is used in determining the landing loads must be validated by energy absorption tests. A range of tests must be conducted to ensure that the analytical representation is valid for the design conditions specified in §25.473.

(1) The configurations subjected to energy absorption tests at limit design conditions must include at least the design landing weight or the design takeoff weight, whichever produces the greater value of landing impact energy.

(2) The test attitude of the landing gear unit and the application of appropriate drag loads during the test must simulate the airplane landing conditions in a manner consistent with the development of rational or conservative limit loads.

(b) The landing gear may not fail in a test, demonstrating its reserve energy absorption capacity, simulating a descent velocity of 12 f.p.s. at design landing weight, assuming airplane lift not greater than airplane weight acting during the landing impact.

(c) In lieu of the tests prescribed in this section, changes in previously approved design weights and minor changes in design may be substantiated by analyses based on previous tests conducted on the same basic landing gear system that has similar energy absorption characteristics.

[Doc. No. 1999-5835, 66 FR 27394, May 16, 2001]

**§§ 25.725-25.727 [Reserved]**

**§ 25.729 Retracting mechanism.**

(a) *General.* For airplanes with retractable landing gear, the following apply:

(1) The landing gear retracting mechanism, wheel well doors, and supporting structure, must be designed for—