

§ 23.207

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use of the flight controls, but without increasing power and without—

- (1) Excessive loss of altitude;
- (2) Undue pitchup;
- (3) Uncontrollable tendency to spin;
- (4) Exceeding a bank angle of 60 degrees in the original direction of the turn or 30 degrees in the opposite direction in the case of turning flight stalls;
- (5) Exceeding a bank angle of 90 degrees in the original direction of the turn or 60 degrees in the opposite direction in the case of accelerated turning stalls; and
- (6) Exceeding the maximum permissible speed or allowable limit load factor.

(c) Compliance with the requirements of this section must be shown under the following conditions:

- (1) *Wing flaps*: Retracted, fully extended, and each intermediate normal operating position;
- (2) *Landing gear*: Retracted and extended;
- (3) *Cowl flaps*: Appropriate to configuration;
- (4) *Power*:
 - (i) Power off; and
 - (ii) 75 percent of maximum continuous power. However, if the power-to-weight ratio at 75 percent of maximum continuous power results in extreme nose-up attitudes, the test may be carried out with the power required for level flight in the landing configuration at maximum landing weight and a speed of $1.4 V_{SO}$, except that the power may not be less than 50 percent of maximum continuous power.
- (5) *Trim*: The airplane trimmed at a speed as near $1.5 V_{SI}$ as practicable.
- (6) *Propeller*: Full increase rpm position for the power off condition.

[Amdt. 23–14, 38 FR 31820, Nov. 19, 1973, as amended by Amdt. 23–45, 58 FR 42159, Aug. 6, 1993; Amdt. 23–50, 61 FR 5191, Feb. 9, 1996]

§ 23.207 Stall warning.

- (a) There must be a clear and distinctive stall warning, with the flaps and landing gear in any normal position, in straight and turning flight.
- (b) The stall warning may be furnished either through the inherent aerodynamic qualities of the airplane or by a device that will give clearly distinguishable indications under expected conditions of flight. However, a

visual stall warning device that requires the attention of the crew within the cockpit is not acceptable by itself.

(c) During the stall tests required by § 23.201(b) and § 23.203(a)(1), the stall warning must begin at a speed exceeding the stalling speed by a margin of not less than 5 knots and must continue until the stall occurs.

(d) When following procedures furnished in accordance with § 23.1585, the stall warning must not occur during a takeoff with all engines operating, a takeoff continued with one engine inoperative, or during an approach to landing.

(e) During the stall tests required by § 23.203(a)(2), the stall warning must begin sufficiently in advance of the stall for the stall to be averted by pilot action taken after the stall warning first occurs.

(f) For acrobatic category airplanes, an artificial stall warning may be mutable, provided that it is armed automatically during takeoff and rearmed automatically in the approach configuration.

[Amdt. 23–7, 34 FR 13087, Aug. 13, 1969, as amended by Amdt. 23–45, 58 FR 42159, Aug. 6, 1993; Amdt. 23–50, 61 FR 5191, Feb. 9, 1996]

SPINNING

§ 23.221 Spinning.

(a) *Normal category airplanes*. A single-engine, normal category airplane must be able to recover from a one-turn spin or a three-second spin, whichever takes longer, in not more than one additional turn after initiation of the first control action for recovery, or demonstrate compliance with the optional spin resistant requirements of this section.

(1) The following apply to one turn or three second spins:

- (i) For both the flaps-retracted and flaps-extended conditions, the applicable airspeed limit and positive limit maneuvering load factor must not be exceeded;
- (ii) No control forces or characteristic encountered during the spin or recovery may adversely affect prompt recovery;
- (iii) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either