

§ 23.1505

the crewmembers as prescribed in §§ 23.1541 through 23.1589.

[Amdt. 23-21, 43 FR 2319, Jan. 16, 1978]

§ 23.1505 **Airspeed limitations.**

(a) The never-exceed speed V_{NE} must be established so that it is—

(1) Not less than 0.9 times the minimum value of V_D allowed under § 23.335; and

(2) Not more than the lesser of—

(i) 0.9 V_D established under § 23.335; or

(ii) 0.9 times the maximum speed shown under § 23.251.

(b) The maximum structural cruising speed V_{NO} must be established so that it is—

(1) Not less than the minimum value of V_C allowed under § 23.335; and

(2) Not more than the lesser of—

(i) V_C established under § 23.335; or

(ii) 0.89 V_{NE} established under paragraph (a) of this section.

(c)(1) Paragraphs (a) and (b) of this section do not apply to turbine airplanes or to airplanes for which a design diving speed V_D/M_D is established under § 23.335(b)(4). For those airplanes, a maximum operating limit speed (V_{MO}/M_{MO} airspeed or Mach number, whichever is critical at a particular altitude) must be established as a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training operations.

(2) V_{MO}/M_{MO} must be established so that it is not greater than the design cruising speed V_C/M_C and so that it is sufficiently below V_D/M_D , or V_{DF}/M_{DF} for jets, and the maximum speed shown under § 23.251 to make it highly improbable that the latter speeds will be inadvertently exceeded in operations.

(3) The speed margin between V_{MO}/M_{MO} and V_D/M_D , or V_{DF}/M_{DF} for jets, may not be less than that determined under § 23.335(b), or the speed margin found necessary in the flight tests conducted under § 23.253.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964, as amended by Amdt. 23-7, 34 FR 13096, Aug. 13, 1969; Amdt. 23-62, 76 FR 75762, Dec. 2, 2011]

§ 23.1507 **Operating maneuvering speed.**

The maximum operating maneuvering speed, V_O , must be established

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as an operating limitation. V_O is a selected speed that is not greater than $V_S\sqrt{n}$ established in § 23.335(c).

[Doc. No. 26269, 58 FR 42165, Aug. 6, 1993]

§ 23.1511 **Flap extended speed.**

(a) The flap extended speed V_{FE} must be established so that it is—

(1) Not less than the minimum value of V_F allowed in § 23.345(b); and

(2) Not more than V_F established under § 23.345(a), (c), and (d).

(b) Additional combinations of flap setting, airspeed, and engine power may be established if the structure has been proven for the corresponding design conditions.

[Doc. No. 4080, 29 FR 17955, Dec. 18, 1964; 30 FR 258, Jan. 9, 1965, as amended by Amdt. 23-50, 61 FR 5192, Feb. 9, 1996]

§ 23.1513 **Minimum control speed.**

The minimum control speed V_{MC} , determined under § 23.149, must be established as an operating limitation.

§ 23.1519 **Weight and center of gravity.**

The weight and center of gravity limitations determined under § 23.23 must be established as operating limitations.

§ 23.1521 **Powerplant limitations.**

(a) *General.* The powerplant limitations prescribed in this section must be established so that they do not exceed the corresponding limits for which the engines or propellers are type certificated. In addition, other powerplant limitations used in determining compliance with this part must be established.

(b) *Takeoff operation.* The powerplant takeoff operation must be limited by—

(1) The maximum rotational speed (rpm);

(2) The maximum allowable manifold pressure (for reciprocating engines);

(3) The maximum allowable gas temperature (for turbine engines);

(4) The time limit for the use of the power or thrust corresponding to the limitations established in paragraphs (b)(1) through (3) of this section; and

(5) The maximum allowable cylinder head (as applicable), liquid coolant and oil temperatures.

(c) *Continuous operation.* The continuous operation must be limited by—