

## § 27.1505

(b) When airspeed limitations are a function of weight, weight distribution, altitude, rotor speed, power, or other factors, airspeed limitations corresponding with the critical combinations of these factors must be established.

### § 27.1505 Never-exceed speed.

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

- (1) Not less than 40 knots (CAS); and
- (2) Not more than the lesser of—
  - (i) 0.9 times the maximum forward speeds established under § 27.309;
  - (ii) 0.9 times the maximum speed shown under §§ 27.251 and 27.629; or
  - (iii) 0.9 times the maximum speed substantiated for advancing blade tip mach number effects.

(b)  $V_{NE}$  may vary with altitude, r.p.m., temperature, and weight, if—

- (1) No more than two of these variables (or no more than two instruments integrating more than one of these variables) are used at one time; and
- (2) The ranges of these variables (or of the indications on instruments integrating more than one of these variables) are large enough to allow an operationally practical and safe variation of  $V_{NE}$ .

(c) For helicopters, a stabilized power-off  $V_{NE}$  denoted as  $V_{NE}$  (power-off) may be established at a speed less than  $V_{NE}$  established pursuant to paragraph (a) of this section, if the following conditions are met:

(1)  $V_{NE}$  (power-off) is not less than a speed midway between the power-on  $V_{NE}$  and the speed used in meeting the requirements of—

- (i) § 27.65(b) for single engine helicopters; and
- (ii) § 27.67 for multiengine helicopters.

(2)  $V_{NE}$  (power-off) is—

- (i) A constant airspeed;
- (ii) A constant amount less than power-on  $V_{NE}$ ; or
- (iii) A constant airspeed for a portion of the altitude range for which certification is requested, and a constant

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amount less than power-on  $V_{NE}$  for the remainder of the altitude range.

(Secs. 313(a), 601, 603, 604, and 605 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421, 1423, 1424, and 1425); and sec. 6(c) of the Dept. of Transportation Act (49 U.S.C. 1655(c)))

[Amdt. 27-2, 33 FR 964, Jan. 26, 1968, and Amdt. 27-14, 43 FR 2325, Jan. 16, 1978; Amdt. 27-21, 49 FR 44435, Nov. 6, 1984]

### § 27.1509 Rotor speed.

(a) *Maximum power-off (autorotation).* The maximum power-off rotor speed must be established so that it does not exceed 95 percent of the lesser of—

- (1) The maximum design r.p.m. determined under § 27.309(b); and
- (2) The maximum r.p.m. shown during the type tests.

(b) *Minimum power off.* The minimum power-off rotor speed must be established so that it is not less than 105 percent of the greater of—

- (1) The minimum shown during the type tests; and
- (2) The minimum determined by design substantiation.

(c) *Minimum power on.* The minimum power-on rotor speed must be established so that it is—

- (1) Not less than the greater of—
  - (i) The minimum shown during the type tests; and
  - (ii) The minimum determined by design substantiation; and
- (2) Not more than a value determined under § 27.33(a)(1) and (b)(1).

### § 27.1519 Weight and center of gravity.

The weight and center of gravity limitations determined under §§ 27.25 and 27.27, respectively, must be established as operating limitations.

[Amdt. 27-2, 33 FR 965, Jan. 26, 1968, as amended by Amdt. 27-21, 49 FR 44435, Nov. 6, 1984]

### § 27.1521 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 are type certificated.

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

- (1) The maximum rotational speed, which may not be greater than—