

## § 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—