

§ 27.87 Height-speed envelope.

(a) If there is any combination of height and forward speed (including hover) under which a safe landing cannot be made under the applicable power failure condition in paragraph (b) of this section, a limiting height-speed envelope must be established (including all pertinent information) for that condition, throughout the ranges of—

(1) Altitude, from standard sea level conditions to the maximum altitude capability of the rotorcraft, or 7000 feet density altitude, whichever is less; and

(2) Weight, from the maximum weight at sea level to the weight selected by the applicant for each altitude covered by paragraph (a)(1) of this section. For helicopters, the weight at altitudes above sea level may not be less than the maximum weight or the highest weight allowing hovering out-of-ground effect, whichever is lower.

(b) The applicable power failure conditions are—

(1) For single-engine helicopters, full autorotation;

(2) For multiengine helicopters, OEI (where engine isolation features ensure continued operation of the remaining engines), and the remaining engine(s) within approved limits and at the minimum installed specification power available for the most critical combination of approved ambient temperature and pressure altitude resulting in 7000 feet density altitude or the maximum altitude capability of the helicopter, whichever is less, and

(3) For other rotorcraft, conditions appropriate to the type.

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

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FLIGHT CHARACTERISTICS

§ 27.141 General.

The rotorcraft must—

(a) Except as specifically required in the applicable section, meet the flight characteristics requirements of this subpart—

(1) At the altitudes and temperatures expected in operation;

(2) Under any critical loading condition within the range of weights and centers of gravity for which certification is requested;

(3) For power-on operations, under any condition of speed, power, and rotor r.p.m. for which certification is requested; and

(4) For power-off operations, under any condition of speed and rotor r.p.m. for which certification is requested that is attainable with the controls rigged in accordance with the approved rigging instructions and tolerances;

(b) Be able to maintain any required flight condition and make a smooth transition from any flight condition to any other flight condition without exceptional piloting skill, alertness, or strength, and without danger of exceeding the limit load factor under any operating condition probable for the type, including—

(1) Sudden failure of one engine, for multiengine rotorcraft meeting Transport Category A engine isolation requirements of Part 29 of this chapter;

(2) Sudden, complete power failure for other rotorcraft; and

(3) Sudden, complete control system failures specified in § 27.695 of this part; and

(c) Have any additional characteristic required for night or instrument operation, if certification for those kinds of operation is requested. Requirements for helicopter instrument flight are contained in appendix B of this part.

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§ 27.143 Controllability and maneuverability.

(a) The rotorcraft must be safely controllable and maneuverable—

(1) During steady flight; and

(2) During any maneuver appropriate to the type, including—

(i) Takeoff;

(ii) Climb;

(iii) Level flight;

(iv) Turning flight;

(v) Autorotation;