§ 29.177 Static directional stability.

(a) The directional controls must operate in such a manner that the sense and direction of motion of the rotorcraft following control displacement are in the direction of the pedal motion with throttle and collective controls held constant at the trim conditions specified in §29.175(a), (b), (c), and (d). Sideslip angles must increase with steadily increasing directional control deflection for sideslip angles up to the lesser of—

(1) ±25 degrees from trim at a speed of 15 knots less than the speed for minimum rate of descent varying linearly to ±10 degrees from trim at $V_{NE}$;

(2) The steady-state sideslip angles established by §29.351;

(3) A sideslip angle selected by the applicant, which corresponds to a sideforce of at least 0.1g; or

(4) The landing gear retracted; and

(5) The rotorcraft trimmed at 0.8 $V_{NE}$ or $V_H$, whichever is less.

(c) $V_{NE}$. Static longitudinal stability must be shown at speeds from $V_{NE} - 20$ kt to $V_{NE}$ with—

(1) Critical weight;

(2) Critical center of gravity;

(3) Power required for level flight at $V_{NE} - 10$ kt or maximum continuous power, whichever is less;

(4) The landing gear retracted; and

(5) The rotorcraft trimmed at $V_{NE} - 10$ kt.

(d) Autorotation. Static longitudinal stability must be shown in autorotation at—

(1) Airspeeds from the minimum rate of descent airspeed – 10 kt to the minimum rate of descent airspeed + 10 kt, with—

(i) Critical weight;

(ii) Critical center of gravity;

(iii) The landing gear extended; and

(iv) The rotorcraft trimmed at the minimum rate of descent airspeed.

(2) Airspeeds from the best angle-of-glide airspeed – 10kt to the best angle-of-glide airspeed + 10kt, with—

(i) Critical weight;

(ii) Critical center of gravity;

(iii) The landing gear retracted; and

(iv) The rotorcraft trimmed at the best angle-of-glide airspeed.

[Amendment 29–24, 49 FR 44436, Nov. 6, 1984, as amended by Amendment 29–51, 73 FR 11001, Feb. 29, 2008]