

§ 25.181

force of 180 pounds is obtained, the rudder pedal forces may not reverse; and increased rudder deflection must be needed for increased angles of sideslip. Compliance with this paragraph must be demonstrated for all landing gear and flap positions and symmetrical power conditions at speeds from 1.13 V_{SR1} to V_{FE} , V_{LE} , or V_{FC}/M_{FC} , as appropriate.

(d) The rudder gradients must meet the requirements of paragraph (c) at speeds between V_{MO}/M_{MO} and V_{FC}/M_{FC} except that the dihedral effect (aileron deflection opposite the corresponding rudder input) may be negative provided the divergence is gradual, easily recognized, and easily controlled by the pilot.

[Amdt. 25-72, 55 FR 29774, July 20, 1990; 55 FR 37607, Sept. 12, 1990; Amdt. 25-108, 67 FR 70827, Nov. 26, 2002]

§ 25.181 Dynamic stability.

(a) Any short period oscillation, not including combined lateral-directional oscillations, occurring between 1.13 V_{SR} and maximum allowable speed appropriate to the configuration of the airplane must be heavily damped with the primary controls—

- (1) Free; and
- (2) In a fixed position.

(b) Any combined lateral-directional oscillations (“Dutch roll”) occurring between 1.13 V_{SR} and maximum allowable speed appropriate to the configuration of the airplane must be positively damped with controls free, and must be controllable with normal use of the primary controls without requiring exceptional pilot skill.

[Amdt. 25-42, 43 FR 2322, Jan. 16, 1978, as amended by Amdt. 25-72, 55 FR 29775, July 20, 1990; 55 FR 37607, Sept. 12, 1990; Amdt. 25-108, 67 FR 70827, Nov. 26, 2002]

STALLS

§ 25.201 Stall demonstration.

(a) Stalls must be shown in straight flight and in 30 degree banked turns with—

- (1) Power off; and
- (2) The power necessary to maintain level flight at 1.5 V_{SR1} (where V_{SR1} corresponds to the reference stall speed at maximum landing weight with flaps in

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the approach position and the landing gear retracted).

(b) In each condition required by paragraph (a) of this section, it must be possible to meet the applicable requirements of § 25.203 with—

(1) Flaps, landing gear, and deceleration devices in any likely combination of positions approved for operation;

(2) Representative weights within the range for which certification is requested;

(3) The most adverse center of gravity for recovery; and

(4) The airplane trimmed for straight flight at the speed prescribed in § 25.103(b)(6).

(c) The following procedures must be used to show compliance with § 25.203;

(1) Starting at a speed sufficiently above the stalling speed to ensure that a steady rate of speed reduction can be established, apply the longitudinal control so that the speed reduction does not exceed one knot per second until the airplane is stalled.

(2) In addition, for turning flight stalls, apply the longitudinal control to achieve airspeed deceleration rates up to 3 knots per second.

(3) As soon as the airplane is stalled, recover by normal recovery techniques.

(d) The airplane is considered stalled when the behavior of the airplane gives the pilot a clear and distinctive indication of an acceptable nature that the airplane is stalled. Acceptable indications of a stall, occurring either individually or in combination, are—

(1) A nose-down pitch that cannot be readily arrested;

(2) Buffeting, of a magnitude and severity that is a strong and effective deterrent to further speed reduction; or

(3) The pitch control reaches the aft stop and no further increase in pitch attitude occurs when the control is held full aft for a short time before recovery is initiated.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25-84, 60 FR 30750, June 9, 1995; Amdt. 25-108, 67 FR 70827, Nov. 26, 2002]

§ 25.203 Stall characteristics.

(a) It must be possible to produce and to correct roll and yaw by unreversed use of the aileron and rudder controls, up to the time the airplane is stalled. No abnormal nose-up pitching may