Federal Aviation Administration, DOT

§ 25.331 Symmetric maneuvering conditions.

(a) Procedure. For the analysis of the maneuvering flight conditions specified in paragraphs (b) and (c) of this section, the following provisions apply:

(1) Where sudden displacement of a control is specified, the assumed rate of control surface displacement may not be less than the rate that could be applied by the pilot through the control system.

(2) In determining elevator angles and chordwise load distribution in the maneuvering conditions of paragraphs (b) and (c) of this section, the effect of corresponding pitching velocities must be taken into account. The in-trim and out-of-trim flight conditions specified in §25.255 must be considered.

(b) Maneuvering balanced conditions. Assuming the airplane to be in equilibrium with zero pitching acceleration, the maneuvering conditions A through I on the maneuvering envelope in §25.333(b) must be investigated.

(c) Pitch maneuver conditions. The conditions specified in paragraphs (c)(1) and (2) of this section must be investigated. The movement of the pitch control surfaces may be adjusted to take into account limitations imposed by the maximum pilot effort specified by §25.397(b), control system stops and any indirect effect imposed by limitations in the output side of the control system (for example, stalling torque or maximum rate obtainable by a power control system.)

(1) Maximum pitch control displacement at $V_A$. The airplane is assumed to be flying in steady level flight (point A1,
§ 25.333 Flight maneuvering envelope.

(a) General. The strength requirements must be met at each combination of airspeed and load factor on and within the boundaries of the representative maneuvering envelope (W= diagram) of paragraph (b) of this section. This envelope must also be used in determining the airplane structural operating limitations as specified in §25.1501.

(b) Maneuvering envelope.