§ 25.351 Yaw maneuver conditions.

The airplane must be designed for loads resulting from the yaw maneuver conditions specified in paragraphs (a) through (d) of this section at speeds from $V_{MC}$ to $V_D$. Unbalanced aero-
dynamic moments about the center of gravity must be reacted in a rational or conservative manner considering the airplane inertia forces. In computing the tail loads the yawing velocity may be assumed to be zero.

(a) With the airplane in unacceler-
ated flight at zero yaw, it is assumed
that the cockpit rudder control is sud-
denly displaced to achieve the result-
ing rudder deflection, as limited by:

(1) The control system on control surface stops; or

(2) A limit pilot force of 300 pounds
from $V_{MC}$ to $V_A$ and 200 pounds from $V_C/M_C$ to $V_D/M_D$, with a linear variation
between $V_A$ and $V_C/M_C$.

(b) With the cockpit rudder control
deflected so as always to maintain the
maximum rudder deflection available
within the limitations specified in para-
graph (a) of this section, it is as-
sumed that the airplane yaws to the
overswing sideslip angle.

(c) With the airplane yawed to the
static equilibrium sideslip angle, it is
assumed that the cockpit rudder con-
trol is held so as to achieve the max-
mum rudder deflection available with-
in the limitations specified in para-
graph (a) of this section.

(d) With the airplane yawed to the
static equilibrium sideslip angle of
paragraph (c) of this section, it is as-
sumed that the cockpit rudder control
is suddenly returned to neutral.


§ 25.361 Engine torque.

(a) Each engine mount and its sup-
porting structure must be designed for
the effects of—

(1) A limit engine torque cor-
responding to takeoff power and pro-
pellor speed acting simultaneously
with 75 percent of the limit loads from
flight condition A of §25.333(b);

(2) A limit torque corresponding to
the maximum continuous power and
propeller speed, acting simultaneously
with the limit loads from flight condi-
tion A of §25.333(b); and

(3) For turbopropeller installations,
in addition to the conditions specified

Supplementary Conditions
§ 25.363 Side load on engine and auxiliary power unit mounts.

(a) Each engine and auxiliary power unit mount and its supporting structure must be designed for a limit load factor in lateral direction, for the side load on the engine and auxiliary power unit mount, at least equal to the maximum load factor obtained in the yawing conditions but not less than—

(1) 1.33; or

(2) One-third of the limit load factor for flight condition A as prescribed in §25.333(b).

(b) The side load prescribed in paragraph (a) of this section may be assumed to be independent of other flight conditions.

§ 25.365 Pressurized compartment loads.

For airplanes with one or more pressurized compartments the following apply:

(a) The airplane structure must be strong enough to withstand the flight loads combined with pressure differential loads from zero up to the maximum relief valve setting.

(b) The external pressure distribution in flight, and stress concentrations and fatigue effects must be accounted for.

(c) If landings may be made with the compartment pressurized, landing loads must be combined with pressure differential loads from zero up to the maximum allowed during landing.

(d) The airplane structure must be designed to be able to withstand the pressure differential loads corresponding to the maximum relief valve setting multiplied by a factor of 1.33 for airplanes to be approved for operation to 45,000 feet or by a factor of 1.67 for airplanes to be approved for operation above 45,000 feet, omitting other loads.

(e) Any structure, component or part, inside or outside a pressurized compartment, the failure of which could interfere with continued safe flight and landing, must be designed to withstand the effects of a sudden release of pressure through an opening in any compartment at any operating altitude resulting from each of the following conditions:

1. The penetration of the compartment by a portion of an engine following an engine disintegration;

2. Any opening in any pressurized compartment up to the size \( H_o \) in square feet; however, small compartments may be combined with an adjacent pressurized compartment and both considered as a single compartment for openings that cannot reasonably be expected to be confined to the small compartment. The size \( H_o \) must be computed by the following formula:

\[
H_o = \frac{PA}{6240} + 0.024
\]

where,

\( P \) = Maximum pressure in square feet, need not exceed 20 square feet.

\( A_s \) = Maximum cross-sectional area of the pressurized shell normal to the longitudinal axis, in square feet; and

\( H_o \) = Maximum opening in square feet, need not exceed 20 square feet.