(2) Have a means to prevent the contents of the compartment from becoming a hazard by impacting occupants or shifting; and

(3) Protect any controls, wiring, lines, equipment, or accessories whose damage or failure would affect safe operations.

Subpart D—Design and Construction

§ 23.2300 Flight control systems.

(a) The applicant must design airplane flight control systems to:

(1) Operate easily, smoothly, and positively enough to allow proper performance of their functions.

(2) Protect against likely hazards.

(b) The applicant must design trim systems, if installed, to:

(1) Protect against inadvertent, incorrect, or abrupt trim operation.

(2) Provide a means to indicate—

(i) The direction of trim control movement relative to airplane motion;

(ii) The trim position with respect to the trim range;

(iii) The neutral position for lateral and directional trim; and

(iv) The range for takeoff for all applicant requested center of gravity ranges and configurations.

§ 23.2305 Landing gear systems.

(a) The landing gear must be designed to—

(1) Provide stable support and control to the airplane during surface operation; and

(2) Account for likely system failures and likely operation environments (including anticipated limitation exceedances and emergency procedures).

(b) All airplanes must have a reliable means of stopping the airplane with sufficient kinetic energy absorption to account for landing. Airplanes that are required to demonstrate aborted takeoff capability must account for this additional kinetic energy.

(c) For airplanes that have a system that actuates the landing gear, there is—

(1) A positive means to keep the landing gear in the landing position; and

(2) An alternative means available to bring the landing gear in the landing position when a non-deployed system position would be a hazard.

§ 23.2310 Buoyancy for seaplanes and amphibians.

Airplanes intended for operations on water, must—

(a) Provide buoyancy of 80 percent in excess of the buoyancy required to support the maximum weight of the airplane in fresh water; and

(b) Have sufficient margin so the airplane will stay afloat at rest in calm water without capsizing in case of a likely float or hull flooding.

OCCUPANT SYSTEM DESIGN PROTECTION

§ 23.2315 Means of egress and emergency exits.

(a) With the cabin configured for takeoff or landing, the airplane is designed to:

(1) Facilitate rapid and safe evacuation of the airplane in conditions likely to occur following an emergency landing, excluding ditching for level 1, level 2 and single engine level 3 airplanes.

(2) Have means of egress (openings, exits or emergency exits), that can be readily located and opened from the inside and outside. The means of opening must be simple and obvious and marked inside and outside the airplane.

(3) Have easy access to emergency exits when present.

(b) Airplanes approved for aerobatics must have a means to egress the airplane in flight.

§ 23.2320 Occupant physical environment.

(a) The applicant must design the airplane to—

(1) Allow clear communication between the flightcrew and passengers;

(2) Protect the pilot and flight controls from propellers; and

(3) Protect the occupants from serious injury due to damage to windshields, windows, and canopies.

(b) For level 4 airplanes, each windshield and its supporting structure directly in front of the pilot must withstand, without penetration, the impact equivalent to a two-pound bird when the velocity of the airplane is equal to the airplane's maximum approach flap speed.