

§ 29.731

(1) The loads occurring in any maneuvering condition with the gear retracted;

(2) The combined friction, inertia, and air loads occurring during retraction and extension at any airspeed up to the design maximum landing gear operating speed; and

(3) The flight loads, including those in yawed flight, occurring with the gear extended at any airspeed up to the design maximum landing gear extended speed.

(b) *Landing gear lock.* A positive means must be provided to keep the gear extended.

(c) *Emergency operation.* When other than manual power is used to operate the gear, emergency means must be provided for extending the gear in the event of—

(1) Any reasonably probable failure in the normal retraction system; or

(2) The failure of any single source of hydraulic, electric, or equivalent energy.

(d) *Operation tests.* The proper functioning of the retracting mechanism must be shown by operation tests.

(e) *Position indicator.* There must be means to indicate to the pilot when the gear is secured in the extreme positions.

(f) *Control.* The location and operation of the retraction control must meet the requirements of §§ 29.777 and 29.779.

(g) *Landing gear warning.* An aural or equally effective landing gear warning device must be provided that functions continuously when the rotorcraft is in a normal landing mode and the landing gear is not fully extended and locked. A manual shutoff capability must be provided for the warning device and the warning system must automatically reset when the rotorcraft is no longer in the landing mode.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-24, 49 FR 44437, Nov. 6, 1984]

§ 29.731 Wheels.

(a) Each landing gear wheel must be approved.

(b) The maximum static load rating of each wheel may not be less than the corresponding static ground reaction with—

14 CFR Ch. I (1-1-08 Edition)

(1) Maximum weight; and

(2) Critical center of gravity.

(c) The maximum limit load rating of each wheel must equal or exceed the maximum radial limit load determined under the applicable ground load requirements of this part.

§ 29.733 Tires.

Each landing gear wheel must have a tire—

(a) That is a proper fit on the rim of the wheel; and

(b) Of a rating that is not exceeded under—

(1) The design maximum weight;

(2) A load on each main wheel tire equal to the static ground reaction corresponding to the critical center of gravity; and

(3) A load on nose wheel tires (to be compared with the dynamic rating established for those tires) equal to the reaction obtained at the nose wheel, assuming that the mass of the rotorcraft acts as the most critical center of gravity and exerts a force of 1.0 *g* downward and 0.25 *g* forward, the reactions being distributed to the nose and main wheels according to the principles of statics with the drag reaction at the ground applied only at wheels with brakes.

(c) Each tire installed on a retractable landing gear system must, at the maximum size of the tire type expected in service, have a clearance to surrounding structure and systems that is adequate to prevent contact between the tire and any part of the structure or systems.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-12, 41 FR 55471, Dec. 20, 1976]

§ 29.735 Brakes.

For rotorcraft with wheel-type landing gear, a braking device must be installed that is—

(a) Controllable by the pilot;

(b) Usable during power-off landings; and

(c) Adequate to—

(1) Counteract any normal unbalanced torque when starting or stopping the rotor; and

(2) Hold the rotorcraft parked on a 10-degree slope on a dry, smooth pavement.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-24, 49 FR 44437, Nov. 6, 1984]

§ 29.737 Skis.

(a) The maximum limit load rating of each ski must equal or exceed the maximum limit load determined under the applicable ground load requirements of this part.

(b) There must be a stabilizing means to maintain the ski in an appropriate position during flight. This means must have enough strength to withstand the maximum aerodynamic and inertia loads on the ski.

FLOATS AND HULLS

§ 29.751 Main float buoyancy.

(a) For main floats, the buoyancy necessary to support the maximum weight of the rotorcraft in fresh water must be exceeded by—

- (1) 50 percent, for single floats; and
- (2) 60 percent, for multiple floats.

(b) Each main float must have enough water-tight compartments so that, with any single main float compartment flooded, the mainfloats will provide a margin of positive stability great enough to minimize the probability of capsizing.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-3, 33 FR 967, Jan. 26, 1968]

§ 29.753 Main float design.

(a) *Bag floats.* Each bag float must be designed to withstand—

- (1) The maximum pressure differential that might be developed at the maximum altitude for which certification with that float is requested; and
- (2) The vertical loads prescribed in § 29.521(a), distributed along the length of the bag over three-quarters of its projected area.

(b) *Rigid floats.* Each rigid float must be able to withstand the vertical, horizontal, and side loads prescribed in § 29.521. An appropriate load distribution under critical conditions must be used.

§ 29.755 Hull buoyancy.

Water-based and amphibian rotorcraft. The hull and auxiliary floats, if used, must have enough watertight compartments so that, with any single compartment of the hull or auxiliary floats flooded, the buoyancy of the hull and auxiliary floats, and wheel tires if used, provides a margin of positive water stability great enough to minimize the probability of capsizing the rotorcraft for the worst combination of wave heights and surface winds for which approval is desired.

[Amdt. 29-3, 33 FR 967, Jan. 26, 1968; as amended by Amdt. 27-26, 55 FR 8003, Mar. 6, 1990]

§ 29.757 Hull and auxiliary float strength.

The hull, and auxiliary floats if used, must withstand the water loads prescribed by § 29.519 with a rational and conservative distribution of local and distributed water pressures over the hull and float bottom.

[Amdt. 29-3, 33 FR 967, Jan. 26, 1968]

PERSONNEL AND CARGO ACCOMMODATIONS

§ 29.771 Pilot compartment.

For each pilot compartment—

(a) The compartment and its equipment must allow each pilot to perform his duties without unreasonable concentration or fatigue;

(b) If there is provision for a second pilot, the rotorcraft must be controllable with equal safety from either pilot position. Flight and powerplant controls must be designed to prevent confusion or inadvertent operation when the rotorcraft is piloted from either position;

(c) The vibration and noise characteristics of cockpit appurtenances may not interfere with safe operation;

(d) Inflight leakage of rain or snow that could distract the crew or harm the structure must be prevented.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29-3, 33 FR 967, Jan. 26, 1968; Amdt. 29-24, 49 FR 44437, Nov. 6, 1984]