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CIVIL AERONAUTICS MANUAL 6

U. S. Department of Commerce — Civil Aeronautics Administration

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Supplement No. 1 — CAA Library — May 15, 1956

Subject: Revisions to CAM 6.

This supplement is issued to provide holders of Civil Aeronautics Manual 6 with a new section 6.625–2, Circuit breakers.

The new section states CAA's position that circuit protective devices should not be bypassed by an overriding type of control.

The Federal Register citations have been added after each section as a matter of information.

Remove and destroy the following pages:	*Insert in lieu thereof the following pages:*
1 and 2	1 and 2

Ink revisions:

Add section 6.625–2 in its proper place in the Table of Contents.

NOTE: New or revised material is indicated by brackets.

John F. Warlick

FOR WILLIAM B. DAVIS
Director,
Office of Aviation Safety.

Attachments.

Rotorcraft Airworthiness

6.18–1 *Approval of aircraft components (CAA rules which apply to sec. 6.18).* Aircraft components made the subject of technical standards orders shall be approved upon the basis and in the manner provided in Part 514 of this title (Regulation of the Administrator).

(16 F. R. 672, Jan. 25, 1951, effective Jan. 25, 1951.)

6.203–1 *Fixed or ground adjustable stabilizing surfaces (CAA policies which apply to secs. 6.10 and 6.203 (b)).* The purpose of section 6.203 is to require the testing of certain components which in the details of their construction, operational characteristics, or loading, do not lend themselves to established and reliable methods of analysis. In this regard, proof testing such items as fixed or ground adjustable stabilizing surfaces is not considered a minimum requirement and will not be necessary provided sufficient experience has been accumulated from previous satisfactory designs, methods of analysis and tests to justify acceptance of these components on the basis of structural analysis. Therefore, these components may be regarded structurally the same as any other part of the basic airframe.

(18 F. R. 2877, May 19, 1953, effective June 15, 1953.)

6.221–1 *Service life of auxiliary rotor assemblies (CAA interpretations which apply to sec. 6.221).* The requirement in section 6.221 that vibration stresses in highly stressed metal components of auxiliary rotors must not exceed safe values for continuous operation is interpreted to mean that the service life of such components should be determined by fatigue tests or by other methods found acceptable by the Administrator. The methods of service life determination for main rotor structure outlined under section 6.250–1 are considered to be acceptable in showing compliance with the pertinent portion of section 6.221.

(16 F. R. 3405, Apr. 19, 1951, effective May 1, 1951.)

6.231–1 *Distribution of vertical ground reaction loads and determination of angular inertia loads (CAA interpretations which apply to sec. 6.231 (b) (2)).* (a) Although section 6.231 (b) (2) states that the vertical loads are those specified in section 6.231 (b) (1), the distribution of the vertical loads among the ground reaction points is not necessarily the same for the two subparagraphs since the requirements of section 6.230 must be met. Section 6.230 (a) states, in part, that the external loads shall be placed in equilibrium with the linear and angular inertia loads in a rational or conservative manner.

(b) Compliance with section 6.231 (b) (2) is interpreted to require that a vertical inertia load of nW and a horizontal inertia load of 0.25 nW be applied at the center of gravity. For the level landing with drag on all wheels, the vertical ground reaction loads should be distributed between the forward and rear wheels to place the ground reaction loads in equilibrium with the rotorcraft linear inertia loads. For the level landing with drag on main wheels only, the pitching moments arising from the vertical and horizontal ground reactions should be placed in equilibrium with an angular inertia load about the c. g.

(c) The drag load at each wheel, in both cases, is required to be equal to 0.25 times the respective wheel vertical load.

(17 F. R. 8322, Sept. 17, 1952, effective Sept. 17, 1952.)

6.250–1 *Service life of main rotors (CAA policies which apply to sec. 6.250 (a)).* Several methods which have been found acceptable by the Administrator for determining the service life of main rotors are outlined in appendix A for the guidance of the industry in complying with section 6.250 (a).

(16 F. R. 3405, Apr. 19, 1951, effective May 1, 1951.)

6.355–1 *Application of loads (CAA policies which apply to sec. 6.355).* The actual forces acting on seats, berths, and supporting structure in the various flight, ground and emergency landing conditions will consist of many possible combinations of forward, sideward, downward, upward, and aft loads. However, in order to simplify the structural analysis and testing of these structures, it will be permissible to assume that the critical load in each of these directions, as determined from the prescribed flight, ground, and emergency landing conditions, acts separately. If the applicant desires, selected combinations of loads may be used, provided the required strength in all specified directions is substantiated. (TSO C–25 Aircraft Seats and Berths, outlines acceptable methods for testing seats and berths.)

(18 F. R. 5564, Sept. 17, 1953, effective Sept. 30, 1953.)

6.625–1 *Automatic reset circuit breakers (CAA policies which apply to sec. 6.625).* Automatic reset circuit breakers (which automatically reset themselves periodically) should not be applied as circuit protective devices.[1] They may be used as integral protectors for electrical equipment (for example thermal cutouts) provided that circuit protection is also installed to protect the cable to the equipment.

(19 F. R. 8140, Dec. 10, 1954, effective Dec. 15, 1954.)

[6.625–2 *Circuit breakers (CAA policies which apply to sec. 6.625).* All resettable type circuit protective devices should be so designed that, when an overload or circuit fault exists, they will open the circuit irrespective of the position of the operating control.[2]]

[1] Circuit protective devices are normally installed to limit the hazardous consequences of overloaded or faulted circuits. These devices are resettable (circuit breakers) or replaceable (fuses) to permit the crew to restore service when nuisance trips occur or when the abnormal circuit condition can be corrected in flight. If the abnormal circuit condition can *not* be corrected in flight, the decision to restore power to the circuit involves a careful analysis of the flight situation. It is necessary to weigh the essentiality of the circuit for continued safe flight against the hazards of resetting on a possibly faulted circuit. Such evaluation is properly an aircraft crew function which can not be performed by automatic reset circuit breakers. To assure crew supervision over the reset operation, circuit protective devices should be of such design that a manual operation is required to restore service after tripping.

[2] Circuit protective devices which conform to the above description are known commercially as "trip-free," that is, the tripping mechanism cannot be overridden by the operating control. Such circuit protective devices can be reset on an overload or circuit fault, but will trip subsequently in accordance with their current-time characteristics.]

(21 F. R. 2585, Apr. 20, 1956, effective May 15, 1956.)