Affects Parts: 4b, 40, 41, 42, 43

Regulation No. SR-450

UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY
WASHINGTON, D.C.

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[Reg. Docket 107; Reg. No. SR-450]

Airspeed Operation Limitation for Transport Category Airplanes

As a result of the First Federal Aviation Agency Airworthiness Review, the Agency published a notice of proposed rule making affecting several parts of the Civil Air Regulations. This notice which was published in the FEDERAL REGISTER (26 F.R. 5130) and circulated as Civil Air Regulations Draft Release No. 61-12 dated June 8, 1961, also contained a proposed Special Civil Air Regulation which would require, for certain transport category airplanes, revision of the Airplane Flight Manual statement of airspeed operating limitations, and the revision of airspeed indicator markings and installation of an overspeed warning device in turbine-powered airplanes.

Operating records show an increasing number of cases of exceeding the airspeed operating limits on transport category airplanes, particularly on turbine-powered airplanes. Among the probable causes of overspeed are the characteristics of turbine-powered airplanes which make it desirable to operate at the limit speed, the somewhat indefinite significance of the present normal operating limit speed, and the increasing preoccupation of the pilots with air traffic and other duties which distract them from continuous monitoring of airspeed instruments.

For new type airplanes, Part 4b of the Civil Air Regulations is being amended concurrently to replace the existing normal operating limit and never exceed speeds (§§ 4b.711 and 4b.712) by a single speed at the previous normal operating limit value. The new single limit in Part 4b is being designated as the "maximum operating limit speed," and will be defined in the Airplane Flight Manual (§ 4b.741) as a speed which shall not be deliberately exceeded in any regime of flight, except where a higher speed is authorized for flight test or pilot training operations.

To minimize overspeeding due to pilot preoccupation, § 4b.603(k) is being amended to require an aural warning device on turbine-powered airplanes and other airplanes having a speed margin of less than 20 percent between limit and demonstrated speeds. To insure early warning and thus to make a major portion of the speed margin available for pilot reaction and recovery maneuvers, the speed warning shall occur whenever the speed exceeds the limit speed by more than 6 knots or 0.01 Mach number.

The changes being made to Part 4b relating to airspeed operating limitations apply only to new type airplanes for which application for type certificate is filed on or after the effective date of the amended regulations, and would not affect existing airplanes. This Special Civil Air Regulation is being issued to apply retroactively to transport category airplanes certificated under the provisions of Part 4b in effect prior to the effective date of the amendments to Part 4b discussed herein.

For turbine-powered airplanes, this regulation requires an aural speed warning device and revision of Airplane Flight Manuals to replace the previous term "normal operating limit speed" with the new term "maximum operating limit speed" and to state that this speed shall not be deliberately exceeded in any regime of flight, except where a higher speed is specifically authorized for flight test or pilot training operations, or in approved emergency procedures. The actual value of this limit speed is not changed. The existing never exceed speed may be retained in the manual since, in some cases, emergency procedures may refer to this speed. Airspeed placards and markings are required to be revised as necessary to reflect the maximum operating limit speed.

For reciprocating engine-powered airplanes, this regulation merely requires revision of the statement in the Airplane Flight Manual explaining the significance of the existing speed limitations.

Since this Special Civil Air Regulation is applicable to existing airplanes, approximately 6 months is being allowed after its adoption for the revision of manuals and approximately one year for installation of warning devices in turbine-powered airplanes. The proposed provision requiring air carriers to take action to insure that their pilots are informed of the changes to the airspeed operating limitation prescribed in this regulation has been withdrawn. Such an additional provision is considered to be unnecessary in that it is the responsibility of the air carrier under other provisions of the Civil Air Regulations to inform their pilots of the current operating limitations for their aircraft.

Interested persons have been afforded an opportunity to participate in the making of this regulation, and due consideration has been given to all relevant matter presented.

In consideration of the foregoing, the following Special Civil Air Regulation is hereby adopted, to become effective May 3, 1962:

Contrary provisions of the Civil Air Regulations notwithstanding, the following requirements shall be applicable to transport category airplanes certificated under the provisions of Part 4b in effect prior to May 3, 1962:

1. *Turbine-powered airplanes.* (a) On or before September 1, 1962:

(1) The airspeed operating limitations in the Airplane Flight Manual shall be revised by deleting the term "normal operating limit speed" and the corresponding symbols "V_{NO}/M_{NO}", together with statements explaining the significance of this term, and inserting in lieu thereof the term "maximum operating limit speed", the corresponding symbols "V_{MO}/M_{MO}", and the following statement explaining the significance of the new term:

"The maximum operating limit speed shall not be deliberately exceeded in any regime of flight (climb, cruise, or descent), except where a higher speed is specifically authorized for flight test or pilot training operations, or in approved emergency procedures."

(2) Airspeed placards and instrument markings shall be consistent with subparagraph (1) of this paragraph. Where color markings are used on airspeed or Mach indicators, the red radial line shall be at V_{MO}/M_{MO}. Where a maximum allowable airspeed indicator is used, the limit hand shall indicate V_{MO}/M_{MO}.

(b) On or before February 1, 1963, each airplane shall be equipped with a speed warning device which shall provide aural warning to the pilots, which is distinctly different from aural warnings used for other purposes, whenever the speed exceeds V_{MO} plus 6 knots or $M_{MO}+0.01$. The upper limit of the production tolerances permitted for the warning device shall be at a speed not greater than the prescribed warning speed.

2. *Reciprocating engine-powered airplanes.* On or before September 1, 1962, the airspeed operating limitations in the Airplane Flight Manual shall be revised as necessary to state that the normal operating limit speed, or the maximum structural cruising speed (whichever term is used in the particular manual), shall not be deliberately exceeded in any regime of flight (climb, cruise, or descent), except where a higher speed is specifically authorized for flight test or pilot training operations, or in approved emergency procedures.

(Secs. 313a, 601, 603, 604; 72 Stat. 752, 775, 776, 778; 49 U.S.C. 1354(a), 1421, 1423, 1424)

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N. E. HALABY,
Administrator.

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