



Standard Specification for Design Loads and Conditions¹

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1. Scope

1.1 This specification addresses the airworthiness requirements for the design loads and conditions of small airplanes.

1.2 This specification is applicable to small airplanes as defined in the F44 terminology standard. Use of the term airplane is used throughout this specification and will mean “small airplane.”

1.3 The applicant for a design approval must seek individual guidance from their respective CAA body concerning the use of this standard as part of a certification plan. For information on which CAA regulatory bodies have accepted this standard (in whole or in part) as a means of compliance to their Small Airplane Airworthiness Rules (hereinafter referred to as “the Rules”), refer to ASTM F44 webpage (www.ASTM.org/COMMITTEE/F44.htm) which includes CAA website links.

1.4 *Units*—Currently there is a mix of SI and Imperial units. In many locations, SI units have been included otherwise units are as they appear in Amendment 62 of 14 CFR Part 23. In a future revision values will be consistently stated in SI units followed by Imperial units in square brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

- 2.1 *ASTM Standards*:²
F3060 Terminology for Aircraft

¹ This specification is under the jurisdiction of ASTM Committee F44 on General Aviation Aircraft and is the direct responsibility of Subcommittee F44.30 on Structures.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- 2.2 *U.S. Code of Federal Regulations*:³

14 CFR Part 23 Airworthiness Standards: Normal, Utility, Aerobatic and Commuter Category Airplanes (Amendment 62)

- 2.3 *European Aviation Safety Agency Regulations:*

Certification Specifications for Normal, Utility, Aerobatic, and Commuter Category Aeroplanes (CS-23, Amendment 3)

Certification Specifications for Very Light Aeroplanes (CS-VLA, Amendment 1)

3. Terminology

3.1 A listing of terms, abbreviations, acronyms, and symbols related to aircraft covered by ASTM Committees F37 and F44 airworthiness design standards can be found in Terminology **F3060**. Items listed below are more specific to this standard.

- 3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *chordwise, n*—directed, moving, or placed along the chord of an airfoil section.

3.2.2 *downwash, n*—the downward deflection of an airstream by an aircraft wing.

3.2.3 *flight envelope, n*—any combination of airspeed and load factor on and within the boundaries of a flight envelope that represents the envelope of the flight loading conditions specified by the maneuvering and gust criteria.

3.2.4 *flight load factor, n*—represents the ratio of the aerodynamic force component (acting normal to the assumed longitudinal axis of the airplane) to the weight of the airplane. A positive flight load factor is one in which the aerodynamic force acts upward, with respect to the airplane.

3.2.5 *propeller slipstream, n*—the airstream pushed back by a revolving aircraft propeller.

3.2.6 *spanwise, n*—directed, moving, or placed along the span of an airfoil.

3.2.7 *winglet, n*—a nearly vertical airfoil at an airplane's wingtip.

- 3.3 *Acronyms:*

³ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.