



Designation: F3082/F3082M – 17

# Standard Specification for Weights and Centers of Gravity of Aircraft<sup>1</sup>

This standard is issued under the fixed designation F3082/F3082M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification establishes the airworthiness design standards associated with aeroplane weight and center of gravity.

1.2 The term “aeroplane” is utilized in this specification as it was originally conceived for normal category fixed wing aircraft with a maximum certificated weight of 19 000 lb or less and a passenger seating configuration up to 19 as defined in the Rules. However, these standards may be more broadly applicable and their usage should not be unnecessarily limited.

1.3 The applicant for a design approval shall seek the individual guidance of their respective civil aviation authority (CAA) body concerning the use of this specification as part of a certification plan. For information on which CAA regulatory bodies have accepted this specification (in whole or in part) as a means of compliance to their small aircraft airworthiness regulations (hereinafter referred to as “the Rules”), refer to ASTM Committee F44 webpage ([www.astm.org/COMMITTEE/F44.htm](http://www.astm.org/COMMITTEE/F44.htm)), which includes CAA website links.

1.4 *Units*—The values stated in either SI units or inch-pound units are to be regarded separately as standard. 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards*:<sup>2</sup>

F3060 Terminology for Aircraft

F3061 Specification for Systems and Equipment in Small Aircraft

F3063/F3063M Specification for Design and Integration of Fuel/Energy Storage and Delivery System Installations for Aeroplanes

F3174/F3174M Specification for Establishing Operating Limitations and Information for Aeroplanes

F3120 Specification for Ice Protection for General Aviation Aircraft

## 3. Terminology

3.1 See Terminology F3060 for definitions and abbreviations.

## 4. General

4.1 *Weight and Center of Gravity*—The applicant must determine limits for weights and centers of gravity that provide for the safe operation of the airplane.

4.1.1 Each of the Flight Standards shall be met at critical combinations of weight and center of gravity within the range of loading conditions for which certification is requested. This shall be shown by:

4.1.1.1 Tests upon an aeroplane of the type for which certification is requested or by calculations based on, and equal in accuracy to, the results of testing, and

4.1.1.2 Systematic investigation of each probable combination of weight and center of gravity, if compliance cannot be reasonably inferred from combinations investigated.

4.1.2 The general tolerances in Table 1 are allowed during flight testing. However, greater tolerances may be allowed in particular tests, if properly justified.

### 4.2 Load Distribution Limits:

4.2.1 Ranges of weights and centers of gravity within which the aeroplane may be safely operated shall be established. If a weight and center of gravity combination is allowable only

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.