



Standard Specification for Design and Testing of Light Sport Aircraft Propellers¹

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1. Scope

1.1 This specification covers the establishment of the minimum requirements for the design, testing, and quality assurance of fixed-pitch or ground adjustable propellers for light sport aircraft. These propellers are used on light aircraft, and could be used with engines conforming to Practice F2339.

1.1.1 When applying the additions provided in Appendix X1, this specification also covers the establishment of the minimum requirements for the design, testing and quality assurance of in-flight adjustable propellers for light-sport aircraft.

1.2 This specification is intended for use by manufacturers of propellers for light sport aircraft.

1.3 This specification does not address the airframe installation requirements for propellers.

1.4 *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 to determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

F2339 Practice for Design and Manufacture of Reciprocating Spark Ignition Engines for Light Sport Aircraft

3. Terminology

3.1 *Definitions:*

3.1.1 *blade, n*—the aerodynamic portion of a propeller which is rotated through and acts on the air.

3.1.2 *blade root, n*—the portion of the blade that interfaces with the hub and provides retention.

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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.

3.1.3 *conventional fixed pitch propeller, n*—a one-piece fixed pitch propeller that is constructed of material such as wood or metal that has no abrupt changes in material properties as the blades transition through the hub area.

3.1.3.1 *Discussion*—A propeller with wooden blades bonded to a metallic hub would not be conventional.

3.1.4 *fixed pitch propeller, n*—a propeller with no capacity for pitch setting adjustment.

3.1.5 *ground adjustable propeller, n*—a propeller whose pitch setting is adjustable only when the aircraft is on the ground and the propeller is not rotating.

3.1.6 *hub, n*—any device that retains the blades of a propeller assembly.

3.1.7 *pitch setting, n*—the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.

3.1.8 *propeller, n*—a device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation.

4. General

4.1 Each manufacturer who claims compliance to this specification must be able to show compliance with the applicable requirements of this specification.

4.2 Manufacturers must prepare and make available a list of acceptable engine-propeller combinations.

4.3 Manufacturers must prepare and make available an operating manual or manuals containing, at minimum, the following information:

4.3.1 An overall description of the propeller and its features.

4.3.2 The mass moment of inertia of the propeller about its rotational axis.

4.3.3 Instructions for installation of the propeller.

4.3.4 Instructions for operation of the propeller.

4.3.5 The maximum allowable engine power and rotational speed and any other propeller operating limitations found necessary by the manufacturer for the safe operation of the propeller.

4.3.6 For ground adjustable propellers, instructions for pitch adjustment and the minimum and maximum pitch settings allowed during operation.