



Designation: F 2339 – 04

# Standard Practice for Design and Manufacture of Reciprocating Spark Ignition Engines for Light Sport Aircraft<sup>1</sup>

This standard is issued under the fixed designation F 2339; 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 practice covers minimum requirements for the design and manufacture of reciprocating spark ignition engines for light sport aircraft, day VFR use.

1.2 *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. Significance and Use

2.1 This practice provides designers and manufacturers of engines for light sport aircraft design references and criteria to use in designing and manufacturing engines.

2.2 Declaration of compliance is based on testing and documentation during the design and testing or flight testing of the engine type by the manufacturer or under the manufacturers' guidance.

## 3. Engine Model Designation

3.1 *Engine Parts List*—A parts list is required for each engine model qualified in accordance with this specification.

3.2 *New Engine Model Designations:*

3.2.1 Each new engine model must be qualified in accordance with this practice.

3.2.2 Design or configuration changes that impact the installation interface, performance, or operability of the engine require a new engine model designation.

3.3 *Design Changes of Parts*—Each design change of a part or component of an engine model qualified to this specification should be evaluated relative to the requirements of this specification.

## 4. Data Requirements

4.1 *Retained Data*—The following data and information should be retained on file at the manufacturer's facility for at a minimum of 18 years after production is discontinued.

4.1.1 Drawings that define the engine configuration.

4.1.2 Material and process specifications referenced in the parts drawings.

4.1.3 Engineering analyses and test data prepared for qualification with this specification.

4.2 *Delivered Data*—The following data should be delivered to the airplane manufacturer to support design and operation of the applicable airplane.

4.2.1 An engine performance specification that defines the engine performance under all anticipated operating environments.

4.2.2 An installation manual that defines all functional and physical interface requirements of the engine. This should include an engine outline/installation drawing.

4.2.3 An operating manual that defines normal and abnormal operating procedures and any applicable operating limitations.

4.2.4 A maintenance manual that defines periodic installed maintenance, major inspection, overhaul intervals, and any other maintenance limitations.

4.2.5 An overhaul manual that provides instruction for disassembling the engine to replace or repair, or both, parts as required to return the engine to airworthy condition that is safe for operation until the next major overhaul.

## 5. Design Criteria

5.1 *Materials*—The materials used in the engine must be adequate for the intended design conditions of the engine.

5.2 *Fire Prevention*—The design and construction of the engine and the materials used must minimize the probability of the occurrence and spread of fire by:

5.2.1 Using fire-resistant lines, fittings, and other components that contain a flammable liquid when supplied with the engine; and

5.2.2 Shielding or locating components to safeguard against the ignition of leaking flammable fluid.

5.3 *Engine Cooling*—The engine design must include provisions for cooling; the installation manual must specify engine and component temperature limitations.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee F37 on Light Sport Aircraft and is the direct responsibility of Subcommittee F37.70 on Cross Cutting. Current edition approved Aug. 1, 2004. Published August 2004.