



Standard Specification for Design and Performance of a Light Sport Glider¹

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1. Scope

1.1 This specification covers airworthiness requirements for the design of a powered or non-powered fixed wing light sport aircraft, a “glider.”

1.2 This specification is applicable to the design of a light sport aircraft glider as defined by regulations and limited to day VFR flight.

1.3 A glider for the purposes of this specification is defined as a heavier than air aircraft that remains airborne through the dynamic reaction of the air with a fixed wing and in which the ability to remain aloft in free flight does not depend on the propulsion from a power plant. A powered glider is defined for the purposes of this specification as a glider equipped with a power plant in which the flight characteristics are those of a glider when the power plant is not in operation.

1.4 The values in SI units are to be regarded as the standard. The values in parenthesis are for information only.

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 requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

F2295 Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

F2316 Specification for Airframe Emergency Parachutes

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

F2840 Practice for Design and Manufacture of Electric Propulsion Units for Light Sport Aircraft

F2972 Specification for Light Sport Aircraft Manufacturer's Quality Assurance System

¹ This specification is under the jurisdiction of ASTM Committee F37 on Light Sport Aircraft and is the direct responsibility of Subcommittee F37.10 on Glider.

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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 Other Standards:

CS-22 Subpart H Certification Specifications for Sailplanes and Powered Sailplanes³

3. Terminology

3.1 Definitions:

3.1.1 *electric propulsion unit, EPU*—any electric motor and all associated devices used to provide thrust for an electric aircraft.

3.1.2 *energy storage device, ESD*—used to store energy as part of a Electric Propulsion Unit (EPU). Typical energy storage devices include but are not limited to batteries, fuel cells or capacitors.

3.1.3 *feathering*—a single action from the cockpit that repositions the propeller blades to low drag configuration when the engine is not operating.

3.1.4 *flaps*—any movable high lift device.

3.1.5 *maximum empty weight, W_E (kg)* —largest empty weight of the glider, including all operational equipment that is installed in the glider: weight of the airframe, powerplant, excluding energy storage device (ESD) for electric propulsion unit when removable, required equipment, optional and specific equipment, fixed ballast, full engine coolant and oil, hydraulic fluid, and the unusable fuel. Hence, the maximum empty weight equals maximum takeoff weight minus minimum useful load: $W_E = W - W_U$.

3.1.6 *minimum useful load, W_U (kg)* —where $W_U = W - W_E$.

3.1.7 The terms “engine” referring to internal combustion engines and “motor” referring to electric motors for propulsion are used interchangeably within this standard.

3.1.8 The term “engine idle” or “throttle closed” when in reference to electric propulsion units shall mean the minimum power or propeller rotational speed condition for the electric motor as defined without electronic braking of the propeller rotational speed.

3.2 Abbreviations:

3.2.1 *AOI*—Aircraft Operating Instructions

3.2.2 *AR*—Aspect Ratio = b^2/S

³ Available from European Aviation Safety Agency (EASA), Postfach 10 12 53, D-50452 Koeln, Germany, <http://www.easa.eu.int/home.php>.