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Standard Guide on Wing Interface Documentation for Powered Parachute Aircraft[1]

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1. Scope

1.1 This guide covers the manufacture of powered parachute aircraft and their qualification for certification.

1.2 This guide applies to powered parachute aircraft seeking civil aviation authority approval, in the form of flight certificates, flight permits, or other like documentation.

1.3 *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]

F2240 Specification for Manufacturer Quality Assurance Program for Powered Parachute Aircraft

F2241 Specification for Continued Airworthiness System for Powered Parachute Aircraft

F2242 Specification for Production Acceptance Testing System for Powered Parachute Aircraft

F2243 Specification for Required Product Information to be Provided with Powered Parachute Aircraft

F2244 Specification for Design and Performance Requirements for Powered Parachute Aircraft

F2483 Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft

F2563 Practice for Kit Assembly Instructions of Aircraft Intended Primarily for Recreation

3. Terminology

3.1 *Definitions:*

3.1.1 *powered parachute, n*—aircraft comprised of a flexible or semi-rigid wing connected to a fuselage in such a way that the wing is not in position for flight until the aircraft is in motion, that aircraft has a fuselage with seats, engine, and wheels (or floats), such that the wing and engine cannot be flown without the wheels (or floats) and seat(s). Unique to the powered parachute is the large displacement between the center of lift (high) and the center of gravity (low), which is the pendulum effect. The pendulum effect limits angle of attack changes, provides stall resistance, and maintains flight stability.

4. Interface Documentation

4.1 Interface documentation is the data necessary for the aircraft manufacturer to complete overall certification to ASTM powered parachute standards. The following data represents a guide to recommended type, detail, and general format for data transfer from a major subcontractor to the aircraft manufacturer.

4.2 *Manufacturer's Reference Documents*—The following are reference documents that should be supplied to the manufacturer by the subcontractor. These are intended to be maintained at a current status and referenced by documents provided with each delivered product.

4.2.1 *Quality Assurance Manual*—In order to meet the requirements of Specification F2240, it will be necessary for the manufacturer to have a current copy of the subcontractor's quality assurance manual on file. This manual needs to show that written procedures are in effect for:

4.2.1.1 Drawing control,

4.2.1.2 Component control,

4.2.1.3 Receiving inspection,

4.2.1.4 Material identification,

4.2.1.5 Inspection,

4.2.1.6 Non-conforming material handling, and

4.2.1.7 QA audits.

4.2.2 *Continued Airworthiness*—In order to meet the requirements of Specification F2241, it will be necessary for the manufacturer to have a current copy of the subcontractor's continued airworthiness manual on file.

4.2.3 *Production Acceptance Testing*—In order to meet the requirements of Specification F2242, it will be necessary for

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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.

the manufacturer to have a current copy of the subcontractor's production acceptance testing written procedure on file.

4.2.4 *Maintenance Manual Coordination*—In order to meet the requirements of Specification F2243, it will be necessary for the manufacturer to have a current copy of the subcontractor's maintenance manual on file.

4.2.5 *Statement of Conformance Coordination*—In order to meet the requirements of Specification F2244, it will be necessary for the manufacturer to have on file a current copy of the subcontractor's statement of conformance coordination document describing what is covered by the statement of conformance, as provided by the subcontractor.

4.3 *Data Provided with Delivered Product*—This is the individual product documentation that the manufacturers will depend on to complete certification of their finished unit to ASTM standards.

4.3.1 *Date of Documentation*—This is when the documentation was prepared for the specific unit presented.

4.3.2 *Identification of the Product Provided:*

4.3.2.1 Make,

4.3.2.2 Model, and

4.3.2.3 Serial number.

4.3.3 *Interface Physical Limits:*

4.3.3.1 Riser attachment spacing and length limits are to be presented as a table of "riser attachment spacing" versus acceptable associated "riser length" with appropriate tolerances.

4.3.3.2 Riser style, limits, or part number may be identified to meet a specific application,

4.3.3.3 Control input limits, and

4.3.3.4 Design load capability.

4.3.3.5 *Design Ultimate Load in Pounds*—This the number used by the manufacturer to show compliance with the required ultimate load factor based on the manufacturer's design gross weight.

4.3.4 *Quality Assurance Manual Date Reference*—The reference date provides unit-specific assurance that the manual on file at the manufacturer is the current document.

4.3.5 *Quality Assurance Audit,* latest date audited.

4.3.6 *Wing Top Drawing Number,* revision level and date released.

4.3.7 *Continued Airworthiness Manual Date Reference*—The reference date provides unit-specific assurance that the manual on file at the manufacturer is the current document.

4.3.8 Backup data storage location.

4.3.9 *Production Acceptance Test Document Date Reference*—The reference date provides unit specific assurance that the manual on file at the manufacturer is the current document.

4.3.10 *Maintenance Manual Date Reference*—The reference date provides unit specific assurance that the manual on file at the manufacturer is the current document.

4.3.11 *Statement of Compliance Coordination Document Date Reference*—The reference date provides unit specific assurance that the manual on file at the manufacturer is the current document.

4.3.12 Signature of responsible subcontractor administrator.

5. Recommended Data Sheets

5.1 The following exhibits provide an example format of how the necessary data may be presented.

5.2 See Fig. 1, supporting data sheet.

6. Keywords

6.1 light sport aircraft; powered parachute aircraft; special airworthiness certificates

FIG. 1 Supporting Data Sheet

Exhibit 1

Company XYZ

Powered Parachute Wing Interface Documentation for Use on Light Sport Aircraft

Date _____

Wing Make _____

Wing Model _____

Wing Serial Number _____

1. Riser attachment and length limits are presented in the attached table of "riser attachment spacing" versus acceptable associated "riser length" with appropriate tolerances.
2. Riser style, limits or part number _____ A specific part number that meets the riser attachment spacing and length requirements may be defined.
3. Control line pull limits: Maximum Overall (in.) _____,
   Nominal for control: minimum (in.) _____ maximum (in.) _____
4. Design ultimate load _____ lbs.

Reference documents:

1. This wing meets the requirements of ASTM Specifications F2240 and F2244, and as it pertains to the wing and as agreed upon in the Statement of Conformance Coordination Document _____ dated _____ (copy on file)
2. The Quality Assurance Manual was dated _____ (copy on file)
3. The latest Quality Assurance Audit was dated _____ (copy of the certificate on file)
4. This wing was produced to top drawing _____ rev ___ dated_____
5. The Continued Airworthiness Procedures Manual was dated _____ (copy on file)
6. Our backup copy of all wing certification documentation is stored at _____
7. Production Acceptance Test unique requirements have been coordinated through the PAT Document _____ dated _____ (copy on file)
8. Unique Maintenance Manual requirements have been coordinated through the Maintenance Manual Requirements document _____ dated _____ (copy on file)
9. This is the Statement of Conformance for this specific wing, as signed below.

Notes: If this wing is being used for replacement of an in-service craft, the procedures of direct replacement or replacement through additional factory testing must be completed and coordinated with both the wing and carriage manufacturer, prior to release to the end user. The user must be directed to note the appropriate change in the aircraft maintenance logs.

Signed by the President or his designee:

Signed _____ title _____