Designation: F3199 – 16a

Standard Guide for Wing Interface Documentation for Weight Shift Control Aircraft[1]

This standard is issued under the fixed designation F3199; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This guide covers the manufacture of Weight Shift aircraft and their qualification for certification.

1.2 This guide applies to Weight Shift Control 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 determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

F2317/F2317M Specification for Design of Weight-Shift-Control Aircraft

F2425 Specification for Continued Airworthiness System for Weight-Shift-Control Aircraft

F2447 Practice for Production Acceptance Test Procedures for Weight-Shift-Control Aircraft

F2457 Specification for Required Product Information to be Provided withWeight-Shift-Control Aircraft

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

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

3. Terminology

3.1 *Definitions:*

3.1.1 *weight-shift-control aircraft, n*—a powered aircraft with a framed pivoting wing and a fuselage controllable only in pitch and roll by the pilot's ability to change the aircraft's center of gravity with respect to the wing. Flight control of the aircraft depends on the wing's ability to flexibly deform rather than the use of control surfaces.

4. Interface Documentation

4.1 Interface documentation is the data necessary for the aircraft manufacturer to complete overall certification to ASTM Weight Shift Control 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 F2972, 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 F2425, 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 Practice F2447, it will be necessary for 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 Practice F2483, 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 for Specification F2317/F2317M, it will be necessary for the manufacturer to have on file a current copy

[1] This guide is under the jurisdiction of ASTM Committee F37 on Light Sport Aircraft and is the direct responsibility of Subcommittee F37.40 on Weight Shift.

Current edition approved Nov. 1, 2016. Published December 2016. Originally approved in 2016. Last previous edition approved in 2016 as F3199 – 16. DOI: 10.1520/F3199-16A.

[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.

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 Lengths of appropriate cable, cords, or struts, or combinations thereof, with appropriate tolerances.

4.3.3.2 Tensions of appropriate cables where applicable with appropriate tolerances.

4.3.3.3 Batten profile charts.

4.3.3.4 Tuning parameters for wing cloth tension and wing tip rotation angles where applicable.

4.3.3.5 Any other pertinent data or instructions.

4.3.4 *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.

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

4.3.6 *Quality Assurance Audit,* latest date audited.

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

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

4.3.9 Backup data storage location.

4.3.10 *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.

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

4.3.12 *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.

4.3.13 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.

6. Keywords

6.1 light sport aircraft; special airworthiness certificates; weight shift control aircraft

Exhibit 1

Company XYZ

Weight Shift Control Wing Interface Documentation for Use on Light Sport Aircraft

Date _____

Wing Make _____

Wing Model _____

Wing Serial Number _____

1. Lengths of appropriate cables, cords and/or struts
2. Tensions of appropriate cables where applicapable
3. Batten profile charts
4. Tuning parameters for wing cloth tension and wing tip rotation angles
5. Design ultimate load _____ lbs.

Reference documents:

1. This wing meets the requirements of ASTM Specifications F2972 and F2317/F2317M, 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 _____

FIG. 1 Supporting Data Sheet