This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

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Standard Practice for Static Pressure System Tests in Small Aircraft[1]

This standard is issued under the fixed designation F3229/F3229M; 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 practice covers internationally accepted methods for the conducting static pressure system tests for "small" aircraft.

1.2 The applicant for a design approval must seek the individual guidance of their respective CAA body concerning the use of this practice as part of a certification plan. For information on which CAA regulatory bodies have accepted this practice (in whole or in part) as a means of compliance to their Small Aircraft Airworthiness regulations (hereinafter referred to as "the Rules"), refer to ASTM F44 webpage (www.ASTM.org/COMMITTEE/F44.htm) which includes CAA website links.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 Following is a list of external standards referenced throughout this practice; the earliest revision acceptable for use is indicated. In all cases later document revisions are acceptable if shown to be equivalent to the listed revision, or if otherwise formally accepted by the governing civil aviation authority; earlier revisions are not acceptable.

2.2 *ASTM Standards:*[2]

F3060 Terminology for Aircraft

F3230 Practice for Safety Assessment of Systems and Equipment in Small Aircraft

F3233/F3233M Specification for Flight and Navigation Instrumentation in Aircraft

3. Terminology

3.1 Terminology specific to this practice is provided below. For general terminology, refer to Terminology F3060.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aircraft type code, n*—an Aircraft Type Code (ATC) is defined by considering both the technical considerations regarding the design of the aircraft and the airworthiness level established based upon risk-based criteria; the method of defining an ATC applicable to this practice is defined in Practice F3230.

4. Static Pressure System Tests

NOTE 1—Table 1 provides correlation between various Aircraft Type Codes and the individual requirements contained within this section; refer to 3.2.1. For each subsection, an indicator can be found under each ATC character field; three indicators are used:

An empty cell ( ) in all applicable ATC character field columns indicates that an aircraft must meet the requirements of that subsection.

A white circle (○) in multiple columns indicates that the requirements of that subsection are not applicable to an aircraft only if all such ATC character fields are applicable.

A mark-out (×) in any of the applicable ATC character field columns indicates that the requirements of that subsection are not applicable to an aircraft if that ATC character field is applicable.

Example—An aircraft with an ATC of 1SRLLDLN is being considered. Since all applicable columns are empty for 4.2.1, that subsection is applicable to the aircraft. 4.1.1 would not be applicable, since it contains an × in the "D" meteorological condition column.

4.1 *Proof Test for Unpressurized Aircraft:*

4.1.1 To demonstrate the integrity of the static pressure system, a proof test must be conducted for unpressurized aircraft by evacuating the static pressure system to a pressure

[1] This practice is under the jurisdiction of ASTM Committee F44 on General Aviation Aircraft and is the direct responsibility of Subcommittee F44.50 on Systems and Equipment.

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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.

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TABLE 1 ATC Compliance Matrix, Section 4

Section	Airworthiness Level				Number of Engines		Type of Engine(s)		Stall Speed			Cruise Speed		Meteorological Conditions			Altitude		Maneuvers	
	1	2	3	4	S	M	R	T	L	M	H	L	H	D	N	I	L	H	N	A
4																				
4.1																				
4.1.1														×						
4.2																				
4.2.1																				
4.3																				
4.3.1														×						

differential of approximately 3.4 kPa [0.5 psi] or to a reading on the altimeter of 305 m [1000 ft] above the aircraft elevation at the time of the test. Without additional pumping for a period of 60 s, the loss of indicated altitude must not exceed 30 m [100 ft] on the altimeter.

4.2 *Proof Test for Pressurized Aircraft:*

4.2.1 To demonstrate the integrity of the static pressure system, a proof test must be conducted for pressurized aircraft by evacuating the static pressure system until a pressure differential equivalent to the maximum cabin pressure differential for which the aircraft is type certificated is achieved. Without additional pumping for a period of 60 s, the loss of indicated altitude must not exceed 2 % of the equivalent altitude of the maximum cabin differential pressure or 30 m [100 ft], whichever is greater.

5. Keywords

5.1 calibration test; pitot; pressurization; proof test; static

APPENDIX

(Nonmandatory Information)

X1. SUMMARY AND RATIONALE FOR CHANGES

X1.1 Revisions to Section 4

X1.1.1 *Revision 23:*

X1.1.1.1 *Discussion*—The Calibration Test defined in 4.3 is more appropriately located in Specification F3233/F3233M, Flight and Navigation Instrumentation in Aircraft.

X1.1.1.2 *Proposal*—Remove 4.3, Calibration Test.

X1.1.1.3 *Rationale for Change(s)*—The removed Calibration Test material established accuracy requirements for static pressure systems (barometric altimeters). Altimeter accuracy is a system performance requirement appropriate for a specification and not a practice.

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