



**[4910-13]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 23**

**[Notice No. 23-18-01-NOA]**

**Accepted Means of Compliance; Airworthiness Standards: Normal Category**

**Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Notification of availability; request for comments.

**SUMMARY:** This document announces the availability of 63 Means of Compliance (MOC) based on 30 published ASTM International (ASTM) consensus standards developed by ASTM Committee F44 on General Aviation Aircraft. A total of 46 of these accepted MOCs consist of ASTM consensus standards as published, with the remaining 17 MOCs comprised of a combination of ASTM standards and FAA changes. The Administrator finds these MOCs to be an acceptable means, but not the only means, of showing compliance to the applicable regulations in part 23, amendment 23-64, for normal category airplanes. The Administrator further finds that these accepted means of complying with part 23, amendment 23-64, provide at least the same level of safety as the corresponding requirements in part 23, amendment 23-63.

**DATES:** Comments must be received on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** Mail comments to: Federal Aviation Administration, Policy and Innovation Division, Small Airplane Standards Branch, AIR-690, Attention: Steve

Thompson, 901 Locust Street, Room 301, Kansas City, Missouri 64106. Comments may also be emailed to: [steven.thompson@faa.gov](mailto:steven.thompson@faa.gov). Specify the MOC, and if applicable, the standard being addressed by designation and title. Mark all comments: Part 23 MOC Comments.

**FOR FURTHER INFORMATION CONTACT:** Steve Thompson, Federal Aviation Administration, Policy and Innovation Division, Small Airplane Standards Branch, AIR-690, 901 Locust Street, Room 301, Kansas City, Missouri 64106; telephone (816) 329-4126; facsimile: (816) 329-4090; email: [steven.thompson@faa.gov](mailto:steven.thompson@faa.gov).

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

Interested persons are invited to submit written comments, data, or views. Communications should identify the MOC and consensus standard number, where applicable, and be submitted to the address previously specified in the ADDRESSES section of this NOA. The most helpful comments reference a specific portion of the accepted MOC(s) or standard(s), explain the reason for any recommended change, and include supporting data. The FAA may forward communications regarding the consensus standards to ASTM Committee F44 for consideration. The MOC or standard may be revised based on received comments. The FAA will consider all comments received during the recurring review of the MOC and consensus standard and will participate in the consensus standard revision process.

## Background

Under the provisions of the *National Technology Transfer and Advancement Act of 1995*<sup>1</sup> and Office of Management and Budget (OMB) Circular A-119, “Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities,” effective January 27, 2016, the FAA participates in the development of consensus standards and uses consensus standards as a means of carrying out its policy objectives where appropriate.

Consistent with the *Small Airplane Revitalization Act of 2013*<sup>2</sup>, the FAA has been working with industry and other stakeholders through ASTM to develop consensus standards for use as a MOC in certificating small airplanes under part 23. In promulgating part 23, amendment 23-64, the FAA explained that if it determined such consensus standards were acceptable MOC to part 23, it would publish a notice of availability of those consensus standards in the *Federal Register*.

Pursuant to FAA Advisory Circular 23.2010-1, section 3.1.1, this document serves as a formal acceptance by the Administrator, of MOCs based on consensus standards developed by ASTM. The MOCs accepted by this document are one means, but not the only means of complying with part 23 regulatory requirements.

The FAA has reviewed the consensus standards referenced in this NOA as the basis for MOCs to the regulatory requirements of part 23, amendment 23-64. In some cases, the Administrator finds sections of ASTM Standard F3264-17, “Standard Specification for Normal Category Aeroplanes Certification,” without changes, are accepted as means of complying with the airworthiness requirements of part 23, without degrading safety, and

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<sup>1</sup> Ref Pub. L. 104-113 as amended by Pub. L. 107-107.

<sup>2</sup> Ref Pub. L. 113-53.

within the scope and applicability of the consensus standards. In other cases, the MOCs, while based on ASTM consensus standards, include additional FAA provisions necessary to comply with the airworthiness requirements of part 23, amendment 23-64.

Part 23, amendment 23-64, established airworthiness requirements based on the level of safety of amendment 23-63 regulations, except for areas addressing loss of control and icing where the safety level was increased<sup>3</sup>. Achieving this level of safety through compliance with amendment 23-64—for a given certification project—may require use of additional MOCs beyond those accepted by this document, depending on the details of the specific design. For example, an applicant’s design may include features that are customary, but not addressed in the MOCs accepted by this document. Designs may also include features that are innovative and not type certificated previously. In either case, a supplemental MOC beyond those accepted in this document would be required. For example, the MOCs accepted by this document do not contain provisions addressing powered-trim system runaways. Therefore, in order to maintain the level of safety of amendment 23-63 regulations, applicants proposing use of these MOCs for an airplane with a powered-trim system would need to supplement the accepted MOC(s) with additional means for § 23.2300 to demonstrate safe controllability after a probable trim system runaway. To do this, applicants could use the provisions of § 23.677(d), amendment 23-49, or other MOC(s) accepted under § 23.2010. Further information on supplemental MOCs is provided in a part 23 means of compliance summary table and in

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<sup>3</sup> Ref 81 FR 96572, December 30, 2016.

the Small Airplanes Issues List, which are available on the [Small Airplanes—Regulations, Policies & Guidance](#) website<sup>4</sup>.

**Means Of Compliance Accepted In This Document**

The following is a list of sections from part 23, amendment 23-64, followed by their corresponding MOC accepted by this document:

23.1457: ASTM F3264-17, section 9.12

23.1459: ASTM F3264-17, section 9.13

23.1529: ASTM F3264-17, section 10.6

**Subpart B—Flight**

23.2100: ASTM F3264-17, section 5.1

23.2105: ASTM F3264-17, section 5.2

23.2110: ASTM F3264-17, section 5.3

23.2115: ASTM F3264-17, section 5.4

23.2120: ASTM F3264-17, section 5.5

23.2125: ASTM F3264-17, section 5.6

23.2130: ASTM F3264-17, section 5.7

23.2135: ASTM F3264-17, section 5.8, combined with the changes in the following

table:

Replace:	With:
ASTM F3173/F3173M-17, Sections 4.9.1.1 and 4.9.1.2	FAA 4.9.1.1 and 4.9.1.2: 4.9.1.1: “For a level 1 or 2 airplane, or level 3 or 4 airplane of 6,000 pounds or less maximum weight, 5 seconds from initiation of roll and” 4.9.1.2: “For a level 3 or 4 airplane of over 6,000 pounds maximum weight, (W+500) / 1300 seconds, but not more than 10 seconds, where W is the weight in pounds.”
ASTM F3173/F3173M-17,	FAA 4.9.3.1 and 4.9.3.2:

<sup>4</sup> See [https://www.faa.gov/aircraft/air\\_cert/design\\_approvals/small\\_airplanes/small\\_airplanes\\_regs/](https://www.faa.gov/aircraft/air_cert/design_approvals/small_airplanes/small_airplanes_regs/)

Sections 4.9.3.1 and 4.9.3.2	4.9.3.1: “For a level 1 or 2 airplane, or level 3 or 4 airplane of 6,000 pounds or less maximum weight, 4 seconds from initiation of roll and” 4.9.3.2: “For a level 3 or 4 airplane of over 6,000 pounds maximum weight, $(W+2,800) / 2,200$ seconds, but not more than 7 seconds, where W is the weight in pounds.”
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23.2140: ASTM F3264-17, section 5.9

23.2145: ASTM F3264-17, section 5.10

23.2150: ASTM F3264-17, section 5.11

23.2155: ASTM F3264-17, section 5.12

23.2160: ASTM F3264-17, section 5.13

23.2165: ASTM F3264-17, section 5.14

### Subpart C—Structures

23.2200: ASTM F3264-17, Section 6.1, combined with the changes in the following table:

Replace:	With:
ASTM F3116/F3116M-15, Section 5.1.3.1(1)	FAA 5.1.3.1(1) “ $V_S$ is a 1g computed stalling speed with flaps retracted (normally based on the maximum airplane normal force coefficient, $C_{NA}$ ) at the design maximum takeoff weight.”

23.2210: ASTM F3264-17, section 6.3

23.2215: ASTM F3264-17, section 6.4, combined with the changes in the following table:

Replace:	With:
ASTM F3116/F3116M-15, Section 4.1.4	FAA 4.1.4 “Appendix X1 through appendix X4 provide, within the limitations specified within the appendix, a simplified means of compliance with several of the requirements set forth in 4.2 to 4.26 and 7.1 to 7.9 that can be applied as one (but not the only) means to comply. If the simplified methods in appendix X1 through appendix X3 are used, they must be used together in their entirety.”
ASTM F3116/F3116M-15, Section 4.10.1.1	FAA 4.10.1.1 “In condition A, assume 100% of the semispan wing airload acts on one side of the airplane and 75% of this load acts on the other side. For airplanes with maximum weight of 1,000 pounds or less, 70% of the load acts on the other side.”
ASTM F3116/F3116M-15,	FAA X1.1.1

Section X1.1.1	“The methods provided in this appendix provide one possible means (but not the only possible means) of compliance and can only be applied to low-speed, level 1 and level 2 airplanes.”
ASTM F3116/F3116M-15, Section X1.1.4	X1.1.4 through X1.1.4.5: Same as published in F3116/F3116M-15. <i>Add</i> FAA X1.1.4.6: “Wings with winglets, tip tanks, or tip fins.”

23.2220: ASTM F3264-17, section 6.5

23.2225: ASTM F3264-17, section 6.6, combined with the changes in the following

table:

Replace:	With:
ASTM F3116/F3116M-15, Section X2.1.1	FAA X2.1.1 “The methods provided in this appendix provide one possible means (but not the only possible means) of compliance and can only be applied to low-speed, level 1 and level 2 airplanes.”
ASTM F3116/F3116M-15, Section X3.1.1	FAA X3.1.1 “The methods provided in this appendix provide one possible means (but not the only possible means) of compliance and can only be applied to low-speed, level 1 and level 2 airplanes.”
ASTM F3116/F3116M-15, Section X4.1.1	FAA X4.1.1 “The methods provided in this appendix provide one possible means (but not the only possible means) of compliance and can only be applied to low-speed, level 1 airplanes.”

23.2230: ASTM F3264-17, section 6.7

23.2235: ASTM F3264-17, section 6.8, combined with the changes in the following

table:

Replace:	With:
ASTM F3264-17, Section 6.8.1	FAA 6.8.1 “F3114-15 Standard Specification for Structures”

23.2240: ASTM F3264-17, section 6.9, combined with the changes in the following

table:

Replace:	With:
ASTM F3115/F3115M-15, Section 4.4.1	FAA 4.4.1 “For metallic (aluminum), unpressurized, non-aerobatic, low-speed, level 1 airplanes, applicants can demonstrate a 10,000 hour safe-life by limiting the 'I <sub>g</sub> ' gross stress, at maximum takeoff weight, to no more than 5.5 ksi. The applicant must show effective stress concentration factors of 4 or less in highly loaded joints and use materials or material systems for which the physical and mechanical properties are well established.”
ASTM F3115/F3115M-15,	FAA 6.1

Section 6.1	“For bonded airframe structure, the residual strength of bonded joints shall be addressed as follows: for any bonded joint, the failure of which would result in catastrophic loss of the airplane, the limit load capacity must be substantiated by one of the following methods.”
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23.2245: ASTM F3264-17, section 6.10

23.2250: ASTM F3264-17, section 6.11

23.2255: ASTM F3264-17, section 6.12

23.2260: ASTM F3264-17, section 6.13

23.2265: ASTM F3264-17, section 6.14

23.2270: ASTM F3264-17, section 6.15

### Subpart D—Design and Construction

23.2300: ASTM F3264-17, section 7.1, combined with the changes in the following table:

Replace:	With:
ASTM F3232/F3232M-17, Table 1, Row 4.4.6	FAA Table 1, Row 4.4.6 A white circle (“o”) in the following Aircraft Type Code (ATC) character fields: “Airworthiness Level – 1” and “Stall Speed – L”; a mark-out (“x”) in the following ATC character field: “Number of Engines – M”; and no codes in any other ATC character field. Note: This change applies the standard of ASTM F3232/F3232M-17, Section 4.4.6, to all single-engine airplanes except level 1 airplanes with a stall speed of 45 knots or less.

23.2305: ASTM F3264-17, section 7.2

23.2315: ASTM F3264-17, section 7.4

23.2320: ASTM F3264-17, section 7.5

23.2325: ASTM F3264-17, section 7.6, combined with the changes in the following table:

Replace:	With:
ASTM F3061/F3061M-17, Section 10.3.2	FAA 10.3.2 “In each area where flammable fluids or vapors might escape by leakage of a fluid system, there must be means to minimize the probability of ignition of the fluids and vapors, and the resultant hazard if ignition does occur. These means must account for the

factors prescribed in 10.3.3 through 10.3.7.”
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23.2330: ASTM F3264-17, section 7.7

23.2335: ASTM F3264-17, section 7.8

**Subpart E—Powerplant**

23.2400: ASTM F3264-17, section 8.1, combined with the changes in the following

table:

Replace:	With:
ASTM F3065/F3065M-15, Section 4.3	An FAA-accepted means of compliance for § 23.2400(c), such as the provisions of § 23.905(d), amendment 23-59.

23.2405: ASTM F3264-17, section 8.2

23.2410: ASTM F3264-17, section 8.3, combined with the changes in the following table

Replace:	With:
ASTM F3264-17, Section 8.3	8.3 through 8.3.2: Same as published in F3264-17. <i>Renumber</i> 8.3.3 to 8.3.6. <i>Add</i> FAA 8.3.3 through 8.3.5, and FAA 8.3.7: 8.3.3: “F3063/F3063M – 16a Standard Specification for Design and Integration of Fuel/Energy Storage and Delivery System Installations for Aeroplanes” 8.3.4: “F3064/F3064M – 15 Standard Specification for Control, Operational Characteristics and Installation of Instruments and Sensors of Propulsion Systems” 8.3.5: “F3065/F3065M – 15 Standard Specification for Installation and Integration of Propeller System” 8.3.7: “F3117 – 15 Standard Specification for Crew Interface in Aircraft”

23.2415: ASTM F3264-17, section 8.4, combined with the changes in the following

table:

Replace:	With:
ASTM F3264-17, Section 8.4	8.4 through 8.4.1: Same as published in F3264-17. <i>Renumber</i> 8.4.2 to 8.4.3. <i>Add</i> FAA 8.4.2: F3063/F3063M – “16a Standard Specification for Design and Integration of Fuel/Energy Storage and Delivery System Installations for Aeroplanes”
ASTM F3066/F3066M-15, Section 5.1	An FAA-accepted means of compliance for the induction system ice protection aspects of § 23.2415, such as the provisions of § 23.1093(a), amendment 23-51.
ASTM F3066/F3066M-15, Section 5.2.1.1	FAA 5.2.1.1 “Operate throughout its flight power range, including minimum descent idle speeds, in the icing and snow conditions specified in

	Specification F3120/F3120M, without the accumulation of ice on engine, inlet system components, or airframe components that would do any of the following:”
ASTM F3066/F3066M-15, Section 5.2.2	[Remove]
ASTM F3066/F3066M-15, Sections 5.2.3, 5.2.3.1, and 5.2.3.2	<p>FAA 5.2.2  “Each turbine engine must idle for 30 min on the ground, with the air bleed available for engine icing protection at its critical condition, without adverse effect, in the ground icing conditions specified in Specification F3120/F3120M.”</p> <p>FAA 5.2.2.1 Followed by momentary operation at takeoff power or thrust.</p> <p>FAA 5.2.2.2 During the 30 min of idle operation, the engine may be run up periodically to a moderate power or thrust setting.”</p>

23.2420: ASTM F3264-17, section 8.5, combined with the changes in the following table:

Replace:	With:
ASTM F3264-17, Section 8.5	<p>8.5 through 8.5.1: Same as published in F3264-17.</p> <p><i>Remove</i> 8.5.2 and 8.5.3.</p> <p><i>Add</i> FAA 8.5.2:  F3065/F3065M – “15 Standard Specification for Installation and Integration of Propeller System”</p>

23.2425: ASTM F3264-17, section 8.6, combined with the changes in the following table:

Replace:	With:
ASTM F3264-17, Section 8.6	<p>8.6 through 8.6.2: Same as published in F3264-17.</p> <p><i>Renumber</i> 8.6.3 to 8.6.4.</p> <p><i>Add</i> FAA 8.6.3 and FAA 8.6.5:  8.6.3: “F3065/F3065M – 15 Standard Specification for Installation and Integration of Propeller System”  8.6.5: “F3117 – 15 Standard Specification for Crew Interface in Aircraft”</p>

23.2430: ASTM F3264-17, section 8.7, combined with the changes in the following table:

Replace:	With:
ASTM F3264-17, Section 8.7	<p>8.7.1 through 8.7.5: Same as published in F3264-17</p> <p><i>Add</i> an FAA-accepted means of compliance for the fuel supply aspects of § 23.2430, such as the provisions of § 23.991(b), amendment 23-43.</p>
ASTM F3066/F3066M-15, Section 6.3	An FAA-accepted means of compliance for the fuel/oil tank aspects of § 23.2430, such as the provisions of § 23.967(d), amendment 23-43.

23.2435: ASTM F3264-17, section 8.8

23.2440: ASTM F3264-17, section 8.9, combined with the changes in the following table:

Replace:	With:
ASTM F3264-17, Section 8.9	8.9 through 8.9.2: Same as published in F3264-17. <i>Renumber</i> 8.9.3 to 8.9.4. <i>Renumber</i> 8.9.4 to 8.9.5 and <i>change</i> to, “F3066/F3066M-15 Standard Specification for Powerplant Systems Specific Hazard Mitigation” <i>Add</i> FAA 8.9.3: 8.9.3: “F3063/F3063M-16a Standard Specification for Design and Integration of Fuel/Energy Storage and Delivery System Installations for Aeroplanes”

### **Subpart F—Equipment**

23.2500: ASTM F3264-17, section 9.1

23.2505: ASTM F3264-17, section 9.2

23.2510: ASTM F3264-17, section 9.3

23.2515: ASTM F3264-17, section 9.4

23.2520: ASTM F3264-17, section 9.5

23.2525: ASTM F3264-17, section 9.6

23.2530: ASTM F3264-17, section 9.7

23.2535: ASTM F3264-17, section 9.8

23.2540: ASTM F3264-17, section 9.9

23.2545: ASTM F3264-17, section 9.10

23.2550: ASTM F3061/F3061M-17, section 10.9

### **Subpart G—Flightcrew Interface and Other Information**

23.2600: ASTM F3264-17, section 10.1, combined with the changes in the following table:

Replace:	With:
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ASTM F3264-17, Section 10.1	10.1.1 through 10.1.5: Same as published in F3264-17 <i>Add an FAA-accepted means of compliance for the windshield luminous transmittance aspects of § 23.2600, such as the provisions of § 23.775(e), amendment 23-49.</i> <i>Add an FAA-accepted means of compliance for the pilot compartment view with formation of fog or frost aspects of § 23.2600, such as the provisions of § 23.773(b), amendment 23-45.</i>
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23.2605: ASTM F3264-17, section 10.2

23.2610: ASTM F3264-17, section 10.3

23.2615: ASTM F3264-17, section 10.4, combined with the changes in the following table:

Replace:	With:
ASTM F3064/F3064M-15, Section 6	An FAA-accepted means of compliance for the powerplant instruments aspects of § 23.2615, such as the provisions of § 23.1305, amendment 23-52.

23.2620: ASTM F3264-17, sections 5.15 AND 10.5

### **Editorial, Reapproval, Revision Or Withdrawal**

The FAA expects a suitable consensus standard to be reviewed periodically. ASTM policy is that a consensus standard should be reviewed in its entirety by the responsible subcommittee and must be balloted for reapproval, revision, or withdrawal, within five years of its last approval date. ASTM reapproves a standard—denoted by the year of reapproval in parentheses (e.g., F2427-05a(2013))—to indicate completion of a review cycle with no technical changes made to the standard. ASTM issues editorial changes—denoted by a superscript epsilon in the standard designation (F3235-17<sup>ε1</sup>)—to correct information that does not change the meaning or intent of a standard. Any MOC accepted by this document that is based on a standard later reapproved or editorially changed is also considered accepted without the need for a NOA. ASTM revises a standard to make changes to its technical content. Revisions to consensus standards serving as the basis for

MOC accepted by this document will not be automatically accepted and will require further FAA acceptance in order for the revisions to be an accepted MOC.

### **Availability**

ASTM Standard F3264-17, “Standard Specification for Normal Category Aeroplanes Certification,” is available for online reading at <https://www.astm.org/READINGLIBRARY/>. ASTM International copyrights these consensus standards and charges the public a fee for service. Individual downloads or reprints of a standard (single or multiple copies, or special compilations and other related technical information) may be obtained through [www.astm.org](http://www.astm.org) or by contacting ASTM at (610) 832-9585 (phone), (610) 832-9555 (fax), or through [service@astm.org](mailto:service@astm.org) (email). To inquire about consensus standard content and/or membership or about ASTM Offices abroad, contact Joe Koury, Staff Manager for Committee F44 on General Aviation: (610) 832-9804, [jkoury@astm.org](mailto:jkoury@astm.org).

The FAA maintains a list of accepted MOCs on the FAA website at [https://www.faa.gov/aircraft/air\\_cert/design\\_approvals/small\\_airplanes/small\\_airplanes\\_regs/](https://www.faa.gov/aircraft/air_cert/design_approvals/small_airplanes/small_airplanes_regs/).

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Pat Mullen  
Manager, Small Airplanes Standards Branch  
Aircraft Certification Service  
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