CERTIFICATION SPECIFICATIONS AND ACCEPTABLE MEANS OF COMPLIANCE FOR NORMAL-CATEGORY AEROPLANES

'CS-23 AMENDMENT 6' AND 'AMC & GM TO CS-23 ISSUE 4' CHANGE INFORMATION

The European Union Aviation Safety Agency (EASA) issues amendments to certification specifications (CSs) and publishes issues of acceptable means of compliance (AMC) and guidance material (GM) as consolidated documents. These documents are used for establishing the certification basis for applications submitted after the date of entry into force of the applicable amendment/issue.

Consequently, except for a note '[CS-23: Amdt 6/ AMC&GM to CS-23: Issue 4]' under the amended rule, the consolidated text of CS-23 / AMC & GM to CS-23 does not allow readers to see the detailed amendments that have been introduced compared to the previous amendment/issue. To allow readers to see them, this 'Change information' document was created, using the following format:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in blue;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

Note to the reader

In the proposed amendments, and in particular in existing (that is, unchanged) text, the term 'Agency' *is used interchangeably with* 'EASA'. *The interchangeable use of these two terms is more apparent in the consolidated versions. Therefore, please note that both terms refer to the* 'European Union Aviation Safety Agency (EASA)'.

SUBPART A — GENERAL

[…]

GM1 23.2010 Accepted means of compliance

For compliance demonstration, applicants will use the issue of the AMC & GM which is current on the date of application, as reflected in the certification programme for the certification basis determined by EASA.

This current issue, however, does not automatically invalidate the previous and later issues of the AMC & GM to CS-23 ~~Amendment 5~~Issue 3, unless this is specifically identified as such in the AMC & GM ~~AMC/GM~~. Applicants can, therefore, agree with EASA in the certification programme to use such previous issues of the AMC & GM to demonstrate compliance with the certification basis.

Whenever an earlier AMC is no longer considered to be acceptable for the demonstration of compliance, the restrictions on its use will be stated in ~~the~~a remark~~s column~~ on~~f~~ the specific line ~~for~~of that CS and the related AMC. In particular, AMC2&3 to CS-23/CS-VLA Subpart B to Subpart G (which reflect respectively CS-23 Amendment 4 and CS-VLA Amendment 1) will not be updated to cover new technologies or methods. However, they are still accepted as means of compliance. EASA will restrict their use in the AMC only when they no longer appropriately address new safety concerns or the associated safety levels.

GM2 23.2010 Accepted means of compliance

The AMC to certification specifications (CS) for Normal-Category Aeroplanes (CS-23 Amendment 5 and later) illustrate means, but not the only means, by which a requirement contained in CS-23 can be met. Satisfactory demonstration of compliance using the AMC shall provide for presumption of compliance with the related requirement. The AMC are a way to facilitate certification tasks for the applicant and the competent authority. Due to changes in technology or application of technology in a way that has not been considered or not (yet) included in the AMC, the appropriate application of this AMC in the certification of a design requires a review by the authority.

CS-23 Amendment 5 and later maintains the existing level of safety of CS-23 Amendment 4 and CS-VLA Amendment 1, except for areas addressing loss of control and icing, for which the safety level was increased. Achieving this level of safety through compliance with CS-23 Amendment 5 and later for a given certification project may require the use of additional means of compliance beyond those provided in this AMC, depending on the details of the specific design.

~~For example, the ASTM standard accepted by this AMC does not contain provisions that address powered trim system runaways. Therefore, in order to maintain the level of safety that was in CS-23 Amendment 4, applicants proposing the use of F3264-18b as a means of complying with CS-23.2300 for an aeroplane with a powered trim system would need to supplement the standards of F3264-18b with additional means of compliance to demonstrate safe controllability after a probable trim system runaway. To do this, applicants could use CS-23.677(d) from Amendment 4, or other means accepted under CS-23.2010 of Amendment 5.~~

~~Similarly, a~~Applicants may propose designs with novel or unusual features for which neither ~~F3264-18b~~ AMC1 nor the EASA Certification Specifications (CS-23 Amendment 4 and CS-VLA Amendment 1) contain~~s~~ appropriate AMC for showing compliance with CS-23 Amendment 5 and later. Therefore, applicants proposing the use of this~~e~~ AMC to CS-23 as a means of complying with CS-23 Amendment 5 and later for aeroplanes with novel or unusual design features may need to gain acceptance of additional means of compliance under CS 23.2010.

AMC1 CS-23 Subpart B through Subpart G contains means of compliance that consist of a listing of consensus standards at their specific revisions that have been reviewed by EASA and accepted as AMC to CS-23. ~~The table[1] provided in Sections B through G identifies which consensus standard contains an accepted demonstration of compliance with the requirement.~~ The scope and content of the referenced consensus standard can, however, differ from the overall scope of CS-23 or the objectives of the requirement. Therefore, using such a referenced consensus standard requires the applicant to identify what is applicable within that consensus standard and to seek agreement with the authority for agreement of the selected consensus standard and applied paragraphs. This is the so-called building-block flexibility that is built into the CS-23.

The listing in AMC1 Subpart B through Subpart G is consistent with the administrative ASTM standard F3264 at the revision as specified ~~in the header of the table[1]~~. The AMC1 is therefore basically a copy of ASTM F3264, except when it is considered necessary to include or exclude specific standards. If applicable, t~~T~~his is ~~identified~~explained ~~in~~by ~~the~~a remark~~s column of the table[1]~~.

When EASA has established that there is the need to deviate from some of the content of a specific referenced consensus standard in order to meet the level of safety of CS-23 Amendment 5, this is also stated in ~~the~~a remark ~~column[1]~~ in this AMC to CS-23.

AMC2 CS-23 Subpart B through Subpart G contains means of compliance that refer to the previous Amendment 4 of CS-23. These AMC are included for the (administrative) convenience of both the applicant and EASA when using an existing certification basis. ~~A table[2] is provided~~AMC2 in Sections B through G ~~that~~ identify~~ies~~ which CS-23 Amendment 4 requirements contain an accepted demonstration of compliance with the requirement. This AMC2 CS-23 Subpart B through Subpart G is applicable for fixed wing aeroplanes with a passenger-seating configuration of 19 or less and a maximum certificated take-off mass of 8 618 kg (19 000 pounds) or less.

Before the entry into force of Amendment 5 of CS-23, CS-23 was included in the certification basis that often required complementing special conditions (refer to point 21.A.16B of Part 21[3]) when the certification specification did not contain adequate or appropriate safety standards for the product. These special conditions can be applied to complement AMC2 when required.

~~[1] eRules CS-23 AMC editorial note: In contrary to what is explained in the AMC1 to CS-23.2010 above, the eRules representation is not presenting the AMC in a table format. The remarks from the AMC tables are provided directly following their relevant AMC.~~

~~[2] eRules CS-23 AMC editorial note: In contrary to what is explained in the AMC1 to CS-23.2010 above, the eRules representation is not presenting the AMC in a table format. The remarks from the AMC tables are provided directly following their relevant AMC.~~

[3] Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1). (http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1473415871666&uri=CELEX:32012R0748).

AMC3 CS-23 Subpart B through Subpart G contains means of compliance that refer to the previous Amendment 1 of CS-VLA. These AMC are included for the (administrative) convenience of both the applicant and EASA when using an existing certification basis. ~~A table~~[1] AMC3 that are~~is~~ provided in Sections B through G ~~that~~ identify~~ies~~ which CS-VLA Amendment 1 requirement(s) contain an accepted demonstration of compliance with the requirement. This AMC3 CS-23 Subpart B through Subpart G is applicable to aeroplanes with a single engine (spark- or compression-ignition) having not more than two seats, with a maximum certificated take-off weight of not more than 750 kg and a stalling speed in the landing configuration of not more than 83 km/h (45 knots)(CAS), to be approved for day VFR only. This AMC3 is applicable for non-aerobatic operations including:

— any manoeuvre incident to normal flying;

— stalls (except whip stalls); and

— lazy eights, chandelles, and steep turns, in which the angle of bank is not more than 60°.

Before the entry into force of Amendment 5 of CS-23, CS-VLA was included in the certification basis that often required complementing special conditions (refer to point 21.A.16B in Part 21) when the certification specification did not contain adequate or appropriate safety standards for the product. These special conditions can be applied to complement AMC3 when required.

Availability of referenced consensus standards

The referenced consensus standard documents are available from their issuing standards body:

— ASTM documents may be purchased from:

ASTM International

100 Barr Harbor Drive, PO Box C700

West Conshohocken, Pennsylvania

19428-2959, USA

(Website: www.astm.org)

GM3 23.2010 Accepted means of compliance

The following table provides an overview of the ASTM International Technical Committee F44 (hereinafter 'ASTM F44') consensus standards that are included in AMC1 as an acceptable means of compliance with CS-23. It also gives the revision number of the ASTM consensus standards as changed between Issue 3 and Issue 4 of the AMC1 to CS-23.

	AMC & GM to CS-23 Issue 4 (ED Decision 2023/XXX/R)	AMC & GM to CS-23 Issue 3 (ED Decision 2020/006/R)
ASTM consensus standard number and title	**ASTM consensus standard revision**	**ASTM consensus standard revision**
F2490 Standard Guide for Aircraft Electrical Load and Power Source Capacity	20	05
F3061/F3061M Standard Specification for Systems and Equipment in Small Aircraft	20	17
F3062/F3062M Standard Specification for Aircraft Powerplant Installation	20	18
F3063/F3063M Standard Specification for Aircraft Fuel Storage and Delivery	20	18a
F3064/F3064M Standard Specification for Aircraft Powerplant Control, Operation, and Indication	21	18a
F3065/F3065M Standard Specification for Aircraft Propeller System Installation	21a	18
F3066/F3066M Standard Specification for Aircraft Powerplant Installation Hazard Mitigation	18	18
F3082/F3082M Standard Specification for Weights and Centers of Gravity of Aircraft	17	17
F3083/F3083M Standard Specification for Emergency Conditions, Occupant Safety and Accommodations	20a	16
F3093/F3093M Standard Specification for Aeroelasticity Requirements	21	15
F3114 Standard Specification for Structures	21	15
F3115/F3115M Standard Specification for Structural Durability for Small Aeroplanes	20	15

	AMC & GM to CS-23 Issue 4 (ED Decision 2023/XXX/R)	AMC & GM to CS-23 Issue 3 (ED Decision 2020/006/R)
ASTM consensus standard number and title	**ASTM consensus standard revision**	**ASTM consensus standard revision**
F3116/F3116M Standard Specification for Design Loads and Conditions	18e2	18
F3117/F3117M Standard Specification for Crew Interface in Aircraft	20	18b
F3120/F3120M Standard Specification for Ice Protection for General Aviation Aircraft	20	15
F3173/F3173M Standard Specification for Aircraft Handling Characteristics	21	17
F3174/F3174M Standard Specification for Establishing Operating Limitations and Information for Aeroplanes	19	18
F3179/F3179M Standard Specification for Performance of Aircraft	20	18
F3180/F3180M Standard Specification for Low-Speed Flight Characteristics of Aircraft	21	18
F3227/F3227M Standard Specification for Environmental Systems in Aircraft	21	17
F3228 Standard Specification for Flight Data and Voice Recording in Small Aircraft	17	17
F3229/F3229M Standard Practice for Static Pressure System Tests in Small Aircraft	17	17
F3230 Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft	20a	17
F3231/F3231M Standard Specification for Electrical Systems for Aircraft with Combustion Engine Electrical Power Generation	21	17
F3232/F3232M Standard Specification for Flight Controls in Small Aircraft	20	17
F3233/F3233M Standard Specification for Instrumentation in Small Aircraft	21	17
F3234/F3234M Standard Specification for Exterior Lighting in Small Aircraft	17	17
F3235 Standard Specification for Aircraft Storage Batteries	17a	17a

	AMC & GM to CS-23 Issue 4 (ED Decision 2023/XXX/R)	AMC & GM to CS-23 Issue 3 (ED Decision 2020/006/R)
ASTM consensus standard number and title	**ASTM consensus standard revision**	**ASTM consensus standard revision**
F3236 Standard Specification for High Intensity Radiated Field (HIRF) Protection in Small Aircraft	17	17
F3254 Standard Specification for Aircraft Interaction of Systems and Structures	19	N/a
F3309/F3309M Standard Practice for Simplified Safety Assessment of Systems and Equipment in Small Aircraft	21	18
F3331 Standard Practice for Aircraft Water Loads	18	18
F3380 Standard Practice for Structural Compliance of Very Light Aeroplanes	19	N/a
F3396/F3396M Standard Practice for Aircraft Simplified Loads Criteria	20	N/a
F3408/F3408M Standard Specification for Aircraft Emergency Parachute Recovery Systems	21	N/a
F3432 Standard Practice for Powerplant Instruments	20a	N/a

SUBPART B — FLIGHT

[…]

AMC1 23.2100 Mass and centre of gravity

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.1 Weight/Mass and Centre of Gravity~~:~~

5.1.1 F3082/F3082M-17 Standard Specification for Weights and Centers of Gravity of Aircraft

5.1.2 ~~F3114-15~~F3114-21 Standard Specification for Structures

[…]

AMC1 23.2105 Performance data

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.2 Performance Data~~:~~

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

AMC1 23.2110 Stall speed

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.3 Stall Speed~~:~~

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

AMC1 23.2115 Take-off performance

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.4 Take-off Performance~~:~~

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

AMC1 23.2120 Climb requirements

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.5 Climb Requirements~~:~~

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

AMC3 23.2120 Climb requirements

CS-VLA Amdt 1

CS VLA~~.~~ 65 'Climbs': All engines operating

Remarks

To demonstrate compliance with CS 23.2120, the climb gradient should be determined, using F3179M-20 'Standard Specification for Performance of Aircraft'.

[…]

AMC1 23.2125 Climb information

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.6 Climb Information:

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

AMC1 23.2130 Landing

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.7 Landing~~:~~

~~F3179/F3179M-18~~F3179/F3179M-20 Standard Specification for Performance of Aircraft

~~**Remarks**~~

~~F3179 revised from -16 to -18~~

[…]

CS 23.2135 Controllability

(a) The aeroplane must be controllable and manoeuvrable, without requiring exceptional piloting skills, alertness, or strength, within the operating envelope:

(1) at all loading conditions for which certification is requested;

(2) during all phases of flight;

(3) with likely reversible flight control or propulsion system failure; and

(4) during configuration changes.

(b) The aeroplane must be able to ~~complete a~~make a safe landing~~, without causing substantial damage or serious injury~~ using the steepest approved approach gradient procedures and providing a reasonable safe margin below V_{REF} or above the approach angle of attack.

(c) V_{MC} is the calibrated airspeed at which, following the sudden critical loss of thrust, it is possible to maintain control of the aeroplane. For multi-engine aeroplanes, the applicant must determine V_{MC}, if applicable, for the most critical configurations used in take-off and landing operations.

(d) If the applicant requests certification of an aeroplane for aerobatics, the applicant must demonstrate those aerobatic manoeuvres for which certification is requested and determine entry speeds.

AMC1 23.2135 Controllability

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.8 Controllability~~:~~

~~F3173/F3173M-17~~F3173/F3173M-21 Standard Specification for Aircraft Handling Characteristics

~~**Remarks**~~

~~F3173 revised from -15 to -17~~

[…]

AMC1 23.2140 Trim

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.9 Trim~~:~~

~~F3173/F3173M-17~~F3173/F3173M-21 Standard Specification for Aircraft Handling Characteristics

~~**Remarks**~~

~~F3173 revised from -15 to -17~~

[…]

AMC1 23.2145 Stability

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.10 Stability~~:~~

~~F3173/F3173M-17~~F3173/F3173M-21 Standard Specification for Aircraft Handling Characteristics

~~**Remarks**~~

~~F3173 revised from -15 to -17~~

[…]

AMC1 23.2150 Stall characteristics, stall warning, and spins

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.11 Stall Characteristics, Stall Warning, and Spins~~:~~

~~F3180/F3180M-18~~F3180/F3180M-21 Standard Specification for Low-Speed Flight Characteristics of Aircraft

Remarks

~~F3180 revised from -16 to -18~~F3180-21 should be applied instead of F3180-19 that is referenced in F3264-21.

[…]

AMC2 23.2150 Stall characteristics, stall warning, and spins

CS-23 Amdt 4

23.201 Wings level stall

23.203 Turning Flight and accelerated turning stalls

23.207 Stall Warning

23.221 Spinning

Remarks

CS 23.2150(b) and (c) are not covered by this AMC2. Applicants may use the provision in ASTM F3180-~~18~~21 to show compliance with CS 23.2150.

[…]

AMC1 23.2155 Ground- and water-handling characteristics

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.12 Ground and Water Handling Characteristics~~:~~

~~F3173/F3173M-17~~F3173/F3173M-21 Standard Specification for Aircraft Handling Characteristics

~~**Remarks**~~

~~F3173 revised from -15 to -17~~

[…]

AMC1 23.2160 Vibration, buffeting, and high-speed characteristics

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.13 Vibration, Buffeting, and High-Speed Characteristics~~:~~

~~F3173/F3173M-17~~F3173/F3173M-21 Standard Specification for Aircraft Handling Characteristics

~~**Remarks**~~

~~F3173 revised from -15 to -17~~

[…]

AMC1 23.2165 Performance and flight characteristics requirements for flight in icing conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.14 Performance and Flight Characteristics Requirements for Flight in Icing Conditions~~:~~

~~F3120/F3120M-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

AMC2 23.2165 Performance and flight characteristics requirements for flight in icing conditions

CS-23 Amdt 4

23.1419 Ice Protection

Following the cancellation of Federal Aviation Administration (FAA) Advisory Circular (AC)-1419-2D, applicants should now use AMC1 23.2165.

[…]

AMC1 23.2170 Operating limitations

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

5.15 Operating Limitations~~:~~

~~F3174/F3174M-18~~F3174/F3174M-19 Standard Specification for Establishing Operating Limitations and Information for Aeroplanes

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3174 revised from -15 to -18~~

[…]

SUBPART C — STRUCTURES

[…]

AMC1 23.2200 Structural design envelope

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.1 Structural Design Envelope~~:~~

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

F3396/F3396M-20 Standard Practice for Aircraft Simplified Loads Criteria

~~**Remarks**~~

~~F3116 revised from -15 to -18~~

[…]

AMC1 23.2205 Interaction of systems and structures

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.2 Interaction of Systems and Structure

F3254-19 Standard Specification for Aircraft Interaction of Systems and Structures~~TBD~~

~~**Remarks**~~

~~Consensus standard in development~~

[…]

AMC1 23.2210 Structural-design loads

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.3 Structural Design Loads~~:~~

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

F3396/F3396M-20 Standard Practice for Aircraft Simplified Loads Criteria

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3116 revised from -15 to -18~~

[…]

AMC1 23.2215 Flight load conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.4 Flight Load Conditions~~:~~

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

F3396/F3396M-20 Standard Practice for Aircraft Simplified Loads Criteria

~~**Remarks**~~

~~F3116 revised from -15 to -18~~

[…]

AMC1 23.2220 Ground and water load conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.5 Ground and Water Load Conditions~~:~~

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

F3331-18 Standard Practice for Aircraft Water Loads

~~**Remarks**~~

~~F3116 revised from -15 to -18~~

~~F3331 New~~

[…]

AMC1 23.2225 Component loading conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.6 Component Loading Conditions~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

F3396/F3396M-20 Standard Practice for Aircraft Simplified Loads Criteria

~~**Remarks**~~

~~F3116 revised from -15 to -18~~

[…]

AMC1 23.2230 Limit and ultimate loads

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.7 Limit and Ultimate Loads~~:~~

~~F3114-15~~F3114-21 Standard Specification for Structures

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

[…]

AMC1 23.2235 Structural strength

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.8 Structural Strength~~:~~

~~F3114-15~~F3114-21 Standard Specification for Structures

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

[…]

AMC1 23.2240 Structural durability

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.9 Structural Durability & 9.11 Equipment Containing High-Energy Rotors~~:~~

~~F3115/F3115M-15 Standard Specification for Structural Durability for Small Aeroplanes~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

F3115/F3115M-20 Standard Specification for Structural Durability for Small Aeroplanes

F3380-19 Standard Practice for Structural Compliance of Very Light Aeroplanes

F3116/F3116M-18e2 Standard Specification for Design Loads and Conditions

[…]

AMC1 23.2245 Aeroelasticity

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.10 Aeroelasticity~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3093/F3093M-15~~F3093/F3093M-21 Standard Specification for Aeroelasticity Requirements

[…]

AMC1 23.2250 Design and construction principles

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.11 Design and Construction Principles~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3114-15~~F3114-21 Standard Specification for Structures

F3380-19 Standard Practice for Structural Compliance of Very Light Aeroplanes

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

[…]

AMC1 23.2255 Protection of structure

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.12 Protection of Structure~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3114-15~~F3114-21 Standard Specification for Structures

F3380-19 Standard Practice for Structural Compliance of Very Light Aeroplanes

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3066 revised from -15 to -18~~

[…]

AMC1 23.2260 Materials and processes

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.13 Materials and Processes~~:~~

~~F3114-15~~F3114-21 Standard Specification for Structures

F3380-19 Standard Practice for Structural Compliance of Very Light Aeroplanes

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

[…]

AMC1 23.2265 Special factors of safety

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.14 Special Factors of Safety~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3114-15~~F3114-21 Standard Specification for Structures

F3380-19 Standard Practice for Structural Compliance of Very Light Aeroplanes

[…]

AMC1 23.2270 Emergency ~~C~~conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

6.15 Emergency Conditions~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3083/F3083M-16~~F3083/F3083M-20a Standard Specification for Emergency Conditions, Occupant Safety and Accommodations

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

[…]

SUBPART D — DESIGN AND CONSTRUCTION

[…]

AMC1 23.2300 Flight control systems

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.1 Flight Control Systems~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

Remarks

Except as follows:

For Level 1 single-engine ~~airplanes~~ aeroplanes with a stall speed in the landing configuration (V_{S0}) of more than 45 knots, ASTM ~~F3264-18b~~F3264-21, paragraph 7.1 does not include means for showing that the ~~airplane~~ aeroplane is protected from loss of control when any one connecting or transmitting element in the primary flight control system fails. If applying for certification of a Level 1 single-engine ~~airplane~~ aeroplane with a V_{S0} greater than 45 knots, applicants may use the requirements of CS 23.677(b)(1) at Amendment 4 as a means of complying with this aspect of CS 23.2300, or may propose a different means of compliance in accordance with CS 23.2010.

For powered trim, applicants may use the provisions of CS 23.677(d) at Amendment 4 as a means of complying with CS 23.2010.

~~F3066 revised from -15 to -18~~

[…]

AMC1 23.2305 Landing gear systems

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.2 Landing Gear Systems~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

[…]

AMC1 23.2310 Buoyancy for seaplanes and amphibians

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.3 Buoyancy for Seaplanes and Amphibians~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

[…]

AMC1 23.2315 Means of egress and emergency exits

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.4 Means of Egress and Emergency Exits~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3083/F3083M-16~~F3083/F3083M-20a Standard Specification for Emergency Conditions, Occupant Safety and Accommodations

[…]

AMC1 23.2320 Occupant physical environment

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.5 Occupant Physical Environment~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3227/F3227M-17~~F3227/F3227M-21 Standard Specification for Environmental Systems in ~~Small~~ Aircraft

~~F3083/F3083M-16~~F3083/F3083M-20a Standard Specification for Emergency Conditions, Occupant Safety and Accommodations

~~F3114-15~~F3114-21 Standard Specification for Structures

~~F3117-18b~~F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

~~**Remarks**~~

~~F3117 revised from -15 to -18b~~

[…]

AMC1 23.2325 Fire protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.6 Fire Protection~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

F3234/F3234M-17 Standard Specification for Exterior Lighting in Small Aircraft

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3083/F3083M-16~~F3083/F3083M-20a Standard Specification for Emergency Conditions, Occupant Safety and Accommodations

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

Remarks

~~F3066 revised from -15 to -18~~

ASTM F44 published standards for showing compliance for electrical systems that are installed on aeroplanes with electric or hybrid-electric propulsion systems. EASA has not yet accepted F3316-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2330 Fire protection in designated fire zones

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.7 Fire Protection in Designated Fire Zones and Adjacent Areas~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

~~F3114-15 Standard Specification for Structures~~

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3114-15~~F3114-21 Standard Specification for Structures

~~F3083/F3083M-16 Standard Specification for Emergency Conditions, Occupant Safety and Accommodations~~

~~**Remarks**~~

~~F3066 revised from -15 to -18~~

~~Different from ASTM F3264-18b paragraph 7.7, ASTM F3083-16 has been added as means of complying with CS 23.2325.~~

[…]

AMC1 23.2335 Lightning protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.8 Lightning Protection~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

[…]

AMC1 23.2340 Design and construction information

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

7.9 Design and Construction Information

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

~~*None*~~

~~**Remarks**~~

~~No AMC expected~~

[…]

SUBPART E — POWERPLANT INSTALLATION

[…]

AMC1 23.2400 Powerplant installation

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.1 Powerplant Installation~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

~~F3065/F3065M-18~~F3065/F3065M-21a Standard Specification for Aircraft Propeller System Installation

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

Remarks

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3064 revised from -15 to -18a~~

~~F3065 revised from -15 to -18~~

~~F3066 revised from -15 to -18~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2405 Power or thrust control systems

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.2 Power or Thrust Control Systems & 8.5 Reversing Systems~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

~~F3065/F3065M-18~~F3065/F3065M-21a Standard Specification for Aircraft Propeller System Installation

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

~~**Remarks**~~

~~F3062 revised from -16 to -18~~

~~F3064 revised from -15 to -18a~~

~~F3065 revised from -15 to -18~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2410 Powerplant installation hazard assessment

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.3 Powerplant Installation Hazard Assessment~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

~~F3065/F3065M-18~~F3065/F3065M-21a Standard Specification for Aircraft Propeller System Installation

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~**Remarks**~~

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3064 revised from -15 to -18a~~

~~F3065 revised from -15 to -18~~

~~F3066-15 revised from -15 to -18~~

~~F3117 revised from -15 to -18b~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2415 Powerplant installation ice protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.4 Powerplant Installation Ice Protection~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~**Remarks**~~

~~Different from ASTM F3264-18b paragraph 8.4, ASTM F3063-18a has been added as a means of complying with CS 23.2415.~~

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3066 revised from -15 to -18~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

AMC2 23.2415 Powerplant installation ice protection

CS-23 Amdt 4

23.929 Engine installation ice protection

23.1093 Induction system icing protection

23.975 Fuel tank vents and carburettor vapour vents

23.997 Fuel strainer or filter

23.1105 Induction system screens

Remarks

Following the cancellation of FAA AC-1419-2D, applicants should now use the icing conditions that are outlined in AMC1 23.2165.

[…]

AMC1 23.2425 Powerplant operational characteristics

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.6 Powerplant Operational Characteristics~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

~~F3065/F3065M-18~~F3065/F3065M-21a Standard Specification for Aircraft Propeller System Installation

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~**Remarks**~~

~~F3062 revised from -16 to -18~~

~~F3064 revised from -15 to -18a~~

~~F3065 revised from -15 to -18~~

~~F3066 revised from -15 to -18~~

~~F3117 revised from -15 to -18b~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

CS 23.2430 Powerplant installation, energy storage and distribution systems

(a) Each system must:

(1) Be designed to provide independence between multiple energy storage and supply systems so that a failure of any one component in one system will not result in the loss of energy storage or supply of another system.

(2) Be designed to prevent catastrophic events due to lightning strikes taking into account direct and indirect effects for aeroplanes where the exposure to lightning is likely.

(3) Provide energy to the powerplant installation with adequate margins to ensure safe functioning under all permitted and likely operating conditions, and accounting for likely component failures.

(4) Provide the information established in CS 23.2445~~(a)(7)~~(g) to the flight crew and provide uninterrupted supply of that energy when the system is correctly operated, accounting for likely energy fluctuations.

(5) Provide a means to safely remove or isolate the energy stored within the system.

(6) Be designed to retain the energy under all likely operating conditions and minimise hazards to the occupants during any survivable emergency landing. For Level-4 aeroplanes, failure due to overload of the landing system must be taken into account.

(7) Prevent hazardous contamination of the energy supplied to each powerplant installation.

[…]

AMC1 23.2430 Powerplant installation, energy storage and distribution systems

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.7 Fuel and Energy Storage and Distribution Systems~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3114-15~~F3114-21 Standard Specification for Structures

~~**Remarks**~~

~~Different from ASTM F3264-18b paragraph 8.7, ASTM F3061-17 has been considered not relevant as a means of complying with CS 23.2430 and therefore not included.~~

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3064 revised from -15 to -18a~~

~~F3066 revised from -15 to -18~~

~~F3114-15 New~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2435 Powerplant installation support systems

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.8 Powerplant Induction, Exhaust, and Support Systems~~:~~

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~**Remarks**~~

~~Different from ASTM F3264-18b paragraph 8.8, ASTM F3066-18 has been considered not relevant as a means of complying with CS 23.2435 and therefore not included.~~

~~F3062 revised from -16 to -18~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2440 Powerplant installation fire protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

8.9 Powerplant Installation Fire Protection~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~**Remarks**~~

~~With reference to ASTM F3264-18b paragraph 8.9, ASTM F3063-18 has been added as a means of complying with CS 23.2440.~~

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18~~

~~F3064 revised from -15 to -18a~~

~~F3066 revised from -15 to -18~~

ASTM F44 published standards for showing compliance for electric propulsion systems. EASA has not yet accepted F3239-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

[…]

AMC1 23.2445 Powerplant installation information

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

~~*None*~~

8.10 Powerplant Installation Information ~~*None*~~

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

F3174/F3174M-19 Standard Specification for Establishing Operating Limitations and Information for Aeroplanes

~~**Remarks**~~

~~No AMC expected~~

[…]

SUBPART F — SYSTEMS AND EQUIPMENT

[…]

AMC1 23.2500 General requirements on systems and equipment function

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.1 Systems and Equipment Function ~~and Safety~~ Requirements~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3230-17 Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft~~

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

F3235-17a Standard Specification for ~~Electrical Storage~~Aircraft Storage Batteries ~~in Small Aircraft~~

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

F3229/F3229M-17 Standard Practice for Static Pressure System Tests in Small Aircraft

~~F3309/F3309M-18 Standard practice for Simplified Safety Assessment of Systems and Equipment in Small Aircraft~~

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

F3066/F3066M-18 Standard Specification for Aircraft Powerplant Installation Hazard Mitigation

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~F3120-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~Remarks~~

~~F3309 New~~

~~F3064 revised from -15* to -18a~~

~~* F3064-15 § 6.2.1 must be complemented. F3064-18 § 6.2.1.6 provides this AMC.~~

~~F3066 revised from -15 to -18~~

~~F3117 revised from -15 to -18b~~

~~F3120-15 added as AMC~~

ASTM F44 published standards for showing compliance for electrical systems that are installed on aeroplanes with electric or hybrid-electric propulsion systems. EASA has not yet accepted F3316-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

EASA does not consider that F3235-17a alone provides a complete means of compliance for electrical storage batteries in small aircraft (e.g. paragraph 4.2.1). Therefore, additional and complementary means of compliance should be developed and agreed with EASA for the specific application.

[…]

AMC1 23.2505 General requirements on equipment installation

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.2 Equipment Function and Installation Requirements~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3230-17 Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft~~

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

F3235-17a Standard Specification for Aircraft~~Electrical~~ Storage Batteries ~~in Small Aircraft~~

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

~~F3117-18b Standard Specification for Crew Interface in Aircraft~~

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

Remarks

~~Different from ASTM F3264-18b paragraph 9.2, ASTM F3230-17 is included as a means of complying with CS 23.2505~~

~~F3117 revised from -15 to -18b~~

ASTM F44 published standards for showing compliance for electrical systems that are installed on aeroplanes with electric or hybrid-electric propulsion systems. EASA has not yet accepted F3316-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

EASA does not consider that F3235-17a alone provides a complete means of compliance for electrical storage batteries in small aircraft (e.g. paragraph 4.2.1). Therefore, additional and complementary means of compliance should be developed and agreed with EASA for the specific application.

[…]

AMC1 23.2510 Equipment, systems, and installations

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.3 Equipment, Systems, and Installation~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3230-17~~F3230-20a Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft

~~F3231/F3231M-17 Standard Specification for Electrical Systems in Small Aircraft~~

~~F3235-17a Standard Specification for Electrical Storage Batteries in Small Aircraft~~

~~F3232/F3232M-17 Standard Specification for Flight Controls in Small Aircraft~~

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

~~F3229/F3229M-17 Standard Practice for Static Pressure System Tests in Small Aircraft~~

~~F3227/F3227M-17~~F3227/F3227M-21 Standard Specification for Environmental Systems in ~~Small~~ Aircraft

F3309/F3309M-21 Standard Practice for Simplified Safety Assessment of Systems and Equipment in Small Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

Remarks

At variance with F3230-20a, paragraph 4.2.4.1, the use of service history data is limited to the fleet of an aeroplane type/aeroplane types for which the applicant is the holder of one or more type certificates (TCs), the owner of the data, or, if accepted by EASA, has concluded with the owner of the data an agreement that permits its use by the applicant for that purpose.

At variance with the note under Table 1 of F3309/F3309M-21, that Table 1 provides the applicable criteria for classification of a failure condition based on the severity of the effects.

At variance with F3309/F3309M-21, paragraph 3.2.4, the term 'on the order of' means that, for various reasons, the component failure rate data is not precise enough to allow accurate estimates of the probabilities of failure conditions. This inability to establish accurate estimates of the probabilities of failure conditions results in some degree of uncertainty and the expression 'on the order of' is included in the descriptions of the quantitative probability terms that are provided to reflect this uncertainty. When calculating the estimated probability of each failure condition, that uncertainty should be accounted for in a way that does not compromise safety. In this context, 'on the order of' does not mean that for instance, the quantitative assessment of a major failure condition can be exceeded by a certain percentage to be 'on the order of' 1E-5. It means that there is uncertainty when determining the component failure rate, and that uncertainty should be accounted for in a way that does not compromise safety.

At variance with Example 2 in paragraph 4.5.3.3 of F3309/F3309M-21, the use of service history data is limited to the fleet of an aeroplane type/aeroplane types for which the applicant is the holder of the TC(s), the owner of the data, or, if accepted by EASA, has concluded with the owner of the data an agreement that permits its use by the applicant for that purpose.

~~Different from ASTM F3264-18b paragraph 9.3, ASTM F3231-17 and F3229-17 are included as a means of complying with CS 23.2510~~

[…]

CS 23.2515 Electrical and electronic system lightning protection

For an aeroplane where the exposure to lightning is likely:

(a) each electrical or electronic system that performs a function, the failure of which would prevent the continued safe flight and landing of the aeroplane, must be designed and installed such that:

(1) the function at the aeroplane level is not adversely affected during and after the time the aeroplane is exposed to lightning; and

(2) the system recovers normal operation of that function in a timely manner after the aeroplane is exposed to lightning unless the system's recovery conflicts with other operational or functional requirements of the system;

(b) each electrical and electronic system that performs a function, the failure of which would ~~significantly~~ reduce the capability of the aeroplane or the ability of the flight crew to respond to an adverse operating condition, must be designed and installed such that the system recovers normal operation of that function in a timely manner after the aeroplane is exposed to lightning.

AMC1 23.2515 Electrical and electronic system lightning protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.4 Electrical and Electronic System Lightning Protection~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

Remarks:

F3367-21a Standard Practice for Simplified Methods for Addressing High-Intensity Radiated Fields (HIRF) and Indirect Effects of Lightning on Aircraft, as referenced in F3061/F3061M-20, paragraph 17.3.4, is not an EASA accepted practice.

At variance with F3061-20:

(a) paragraph 17.3.1 should be replaced with the following:

each electrical or electronic system that performs a function, the failure of which would prevent the continued safe flight and landing of the aeroplane, must be designed and installed such that:

(1) the function at the aeroplane level is not adversely affected during and after the time the aeroplane is exposed to lightning; and

(2) the system recovers normal operation of that function in a timely manner after the aeroplane is exposed to lightning unless the system's recovery conflicts with other operational or functional requirements of the system;

(b) paragraph 17.3.2 should be replaced with the following:

each electrical and electronic system that performs a function, the failure of which would reduce the capability of the aeroplane or the ability of the flight crew to respond to an adverse operating condition, must be designed and installed such that the system recovers normal operation of that function in a timely manner after the aeroplane is exposed to lightning; and

(c) paragraphs 17.3.3 and 17.3.4 should be removed.

[…]

AMC1 23.2520 High-intensity radiated fields (HIRF) protection

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.5 High-Intensity Radiated Fields (HIRF) Protection~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3236-17 Standard Specification for High Intensity Radiated Field (HIRF) Protection in Small Aircraft

Remarks:

F3367-21 Standard Practice for Simplified Methods for Addressing High-Intensity Radiated Fields (HIRF) and Indirect Effects of Lightning on Aircraft, as referenced in F3061/F3061M-20, paragraph 18.1, is not an EASA accepted practice.

AMC1 23.2525 System power generation, storage, and distribution

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.6 System Power Generation, Storage, and Distribution~~:~~

~~F2490-05 Standard Guide for Aircraft Electrical Load and Power Source Capacity~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

F2490-20 Standard Guide for Aircraft Electrical Load and Power Source Capacity Analysis

~~F3235-17a Standard Specification for Electrical Storage Batteries in Small Aircraft~~

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~F3120-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

Remarks

~~Different from ASTM F3264-18b paragraph 9.6, ASTM F3235-17a is included as a means of complying with CS 23.2525~~

~~F3120-15 added as AMC~~

At variance with F3231-21:

(a) paragraph 4.4.2 should be replaced with the following:

4.4.2 A protective device for a circuit essential to flight safety shall not be a fuse and it may not be used to protect any other circuit.

(b) paragraph 4.4.5 should be replaced with the following:

4.4.5 If the ability to reset a circuit protective device is essential to safety in flight, a means shall be provided so that it can be readily reset in flight; refer to Specification F3117/F3117M.

ASTM F44 published standards for showing compliance for electrical systems that are installed on aeroplanes with electric or hybrid-electric propulsion systems. EASA has not yet accepted F3316-19; however, EASA would take into consideration applications from applicants that use this standard as the basis for the development of their means of compliance subject to agreement with EASA.

AMC2 23.2525 System power generation, storage, and distribution

CS-23 Amdt 4

23.1303 Flight and navigation instruments

23.1331(b), (c) Instruments using a power source

23.1351(a), (b), (c) Electrical Systems ~~—~~ General

23.1353 Storage battery design and installation

23.1357 Circuit protective devices

Remarks

At variance with CS 23.1357(b) and (d), EASA does not accept a protective device for a circuit essential to flight safety in designs applications after the date of entry into force of the AMC & GM to CS-23 Issue 4; automatic fuses or circuit breakers should be used instead.

AMC3 23.2525 System power generation, storage, and distribution

CS~~-~~-VLA Amdt 1

VLA~~.~~ 1303 Flight and navigation instruments

VLA~~.~~ 1331 Instruments using a power supply

VLA~~.~~ 1351 Electrical Systems ~~—~~ General

VLA~~.~~ 1353 Storage battery design and installation

VLA~~.~~ 1357 Circuit protective devices

Remarks

At variance with CS-VLA 1357(b) and (d), EASA does not accept a protective device for a circuit essential to flight safety in designs applications after the date of entry into force of the AMC & GM to CS-23 Issue 4; automatic fuses or circuit breakers should be used instead.

[…]

AMC1 23.2530 External and cockpit lighting

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.7 External and Cockpit Lighting~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

F3234/F3234M-17 Standard Specification for Exterior Lighting in Small Aircraft

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~F3120-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

~~**Remarks**~~

~~F3117 revised from -15 to -18b~~

~~F3120-15 added as AMC~~

[…]

AMC1 23.2535 Safety equipment

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.8 Safety Equipment~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3083/F3083M-20a Standard Specification for Emergency Conditions, Occupant Safety and Accommodations

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

[…]

AMC1 23.2540 Flight in icing conditions

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.9 Flight in Icing Conditions~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

~~F3120/F3120M-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

AMC2 23.2540 Flight in icing conditions

CS-23 Amdt 4

23.1323 Airspeed indicating system

23.1325(b), (g) Static pressure system

~~23.1419 Ice protection~~

23.775(f) Windshields and windows

Remarks

Following the cancellation of FAA AC-1419-2D, applicants should now use the icing conditions that are outlined in AMC1 23.2165.

[…]

AMC1 23.2545 Pressurised systems elements

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.10 Pressurized System Elements~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3229/F3229M-17 Standard Practice for Static Pressure System Tests in Small Aircraft

~~**Remarks**~~

~~F3229-17 added as AMC~~

[…]

AMC1 23.2555 Installation of recorders (e.g. cockpit voice recorders and flight data recorders)

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

9.12 Installation of Cockpit recorders~~:~~ & 9.13 Installation of Flight Data Recorders

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3228-17 Standard Specification for Flight Data and Voice Recording in Small Aircraft

9.13 Installation of Flight Data Recorders:

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

F3228-17 Standard Specification for Flight Data and Voice Recording in Small Aircraft

[…]

SUBPART G — FLIGHT CREW INTERFACE AND OTHER INFORMATION

[…]

AMC1 23.2600 Flight crew compartment

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.1 Flight C~~c~~rew Compartment Interface~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

F3114-21 Standard Specification for Structures

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

Remarks

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3064 revised from -15 to -18a~~

~~F3117 revised from -15 to -18b~~

~~Except as follows:~~

~~ASTM F3264-17 does not contain standards for windshield luminous transmittance. Windshield luminous transmittance must be addressed in showing compliance with CS 23.2600(a). Applicants may use the provisions of CS 23.775(e) at amendment as a means of complying with CS 23.2600(a), or may propose a different means of compliance in accordance with CS 23.2010.~~

ASTM F3264-21 does not contain standards that ensure that the required pilot compartment view is provided in conditions of fog or frost formation on the internal portion of the windshield and side windows. Pilot compartment view with formation of fog or frost must be addressed in showing compliance with CS 23.2600(a). Applicants may use the provisions of CS 23.773(b) at Amendment 4 as a means of complying with this aspect of CS 23.2600(a), or may propose a different means of compliance in accordance with CS 23.2010.

F3117/F3117M-20 does not contain Section 4.3 on Level 4 aeroplanes, which is included in the next revision (F3117/F3117M-21a).

[…]

AMC1 23.2605 Installation and operation information

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.2 Installation and Operation Information~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3232/F3232M-17~~F3232/F3232M-20 Standard Specification for Flight Controls in Small Aircraft

~~F3233/F3233M-17~~F3233/F3233M-21 Standard Specification for Flight and Navigation Instrumentation in ~~Small~~ Aircraft

~~F3231/F3231M-17~~F3231/F3231M-21 Standard Specification for Electrical Systems for~~in Small~~ Aircraft with Combustion Engine Electrical Power Generation

~~F3227/F3227M-17~~F3227/F3227M-21 Standard Specification for Environmental Systems in ~~Small~~ Aircraft

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~F3120/F3120M-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

Remarks

~~F3062 revised from -16 to -18~~

~~F3063 revised from -16a to -18a~~

~~F3064 revised from -15* to -18a~~

~~*~~ F3064-15 § 6.2.1 must be complemented. F3064-18a § 6.2.1.6 and subsequent revisions provide~~s~~ this AMC.

~~F3117 revised from -15 to -18b~~

[…]

AMC1 23.2610 Instrument markings, control markings and placards

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.3 Instrument Markings, Control Markings, and Placards~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3063/F3063M-18a~~F3063/F3063M-20 Standard Specification for Aircraft Fuel ~~and Energy~~ Storage and Delivery

~~F3117-18b~~F3117-20 Standard Specification for Crew Interface in Aircraft

~~F3120-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3063 revised from -16a to -18a~~

~~F3117 revised from -15 to -18b~~

~~F3120-15 added as AMC~~

[…]

AMC1 23.2615 Flight, navigation, and powerplant instruments

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.4 Flight, Navigation, and Powerplant Instruments~~:~~

~~F3061/F3061M-17~~F3061/F3061M-20 Standard Specification for Systems and Equipment in Small Aircraft

~~F3062/F3062M-18~~F3062/F3062M-20 Standard Specification for Aircraft Powerplant Installation

~~F3064/F3064M-18a~~F3064/F3064M-21 Standard Specification for Aircraft Powerplant Control, Operation, and Indication

F3432-20a Standard Practice for Powerplant Instruments

F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

Remarks

~~F3062 revised from -16 to -18~~

~~F3064 revised from -15* to -18a~~

~~*~~ F3064-15 § 6.2.1 must be complemented. F3064-18 § 6.2.1.6 and subsequent revisions provide~~s~~ this AMC.

AMC2 23.2615 Flight, navigation, and powerplant instruments

CS-23 Amdt 4

23.1141(g) Powerplant controls: general

23.1142 Auxiliary power unit controls

23.1303 Flight and navigation instruments

23.1305 Powerplant instruments

23.1311 Electronic display instrument systems

23.1323 Airspeed indicating system

23.1325 Static pressure system

23.1327 Magnetic direction indicator

23.1337 Powerplant instruments installation

Remarks

23.1305 must be complemented. F3064-18 § 6.2.1.6 and subsequent revisions provide~~s~~ this AMC.

AMC3 23.2615 Flight, navigation, and powerplant instruments

CS~~-~~VLA Amdt 1

VLA~~.~~ 1141 Powerplant controls~~:~~ – general

VLA~~.~~ 1303 Flight and navigation instruments

VLA~~.~~ 1305 Powerplant instruments

VLA~~.~~ 1323 Airspeed indicating system

VLA~~.~~ 1325 Static pressure system

VLA~~.~~ 1327 Magnetic direction indicator

VLA~~.~~ 1337 Powerplant instruments

Remarks

VLA~~.~~ 1305 must be complemented. F3064-18 § 6.2.1.6 and subsequent revisions provide~~s~~ this AMC.

[…]

AMC1 23.2620 Aeroplane Flight Manual

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.5 ~~Airplane~~Aeroplane Flight Manual~~:~~

~~F3117-18b~~F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

~~F3174/F3174M-18~~F3174/F3174M-19 Standard Specification for Establishing Operating Limitations and Information for Aeroplanes

~~F3120-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3117 revised from -15 to -18b~~

~~F3174 revised from -15 to -18~~

~~F3120-15 added as AMC~~

[…]

AMC1 23.2625 Instructions for Continued Airworthiness

ASTM F44 ~~F3264-18b~~F3264-21 Standard Specification for Normal Category Aeroplanes Certification

10.6 Instructions for Continued Airworthiness~~:~~

~~F3120/F3120M-15~~F3120/F3120M-20 Standard Specification for Ice Protection for General Aviation Aircraft

~~F3117-18b~~F3117/F3117M-20 Standard Specification for Crew Interface in Aircraft

F3408/F3408M-21 Standard Specification for Aircraft Emergency Parachute Recovery Systems

~~**Remarks**~~

~~F3117 revised from -15 to -18b~~

[…]