



CS 23 Amendment 5

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Why

- The FAA started this initiative in the US in 2011 as a response to the stagnated certification of new part 23 entry level airplanes and the displacement of certified airplanes by experimental and light sport aircraft.
- The charter for the Part 23 Reorganization ARC was to :
 - Reorganize part 23 based on performance and complexity instead of weight and propulsion
 - Create tiering in part 23
 - First tier: low-complexity, low-performance.
 - Next tier: medium-complexity, medium-performance
 - Highest tier: high-complexity, high-performance



Why - Objectives

FAR 23 and CS-23 should provide requirements that:

1. bring safe designs for aeroplanes
2. support innovation
3. are proportionate with risks
4. can follow technological developments
5. lower administrative burden



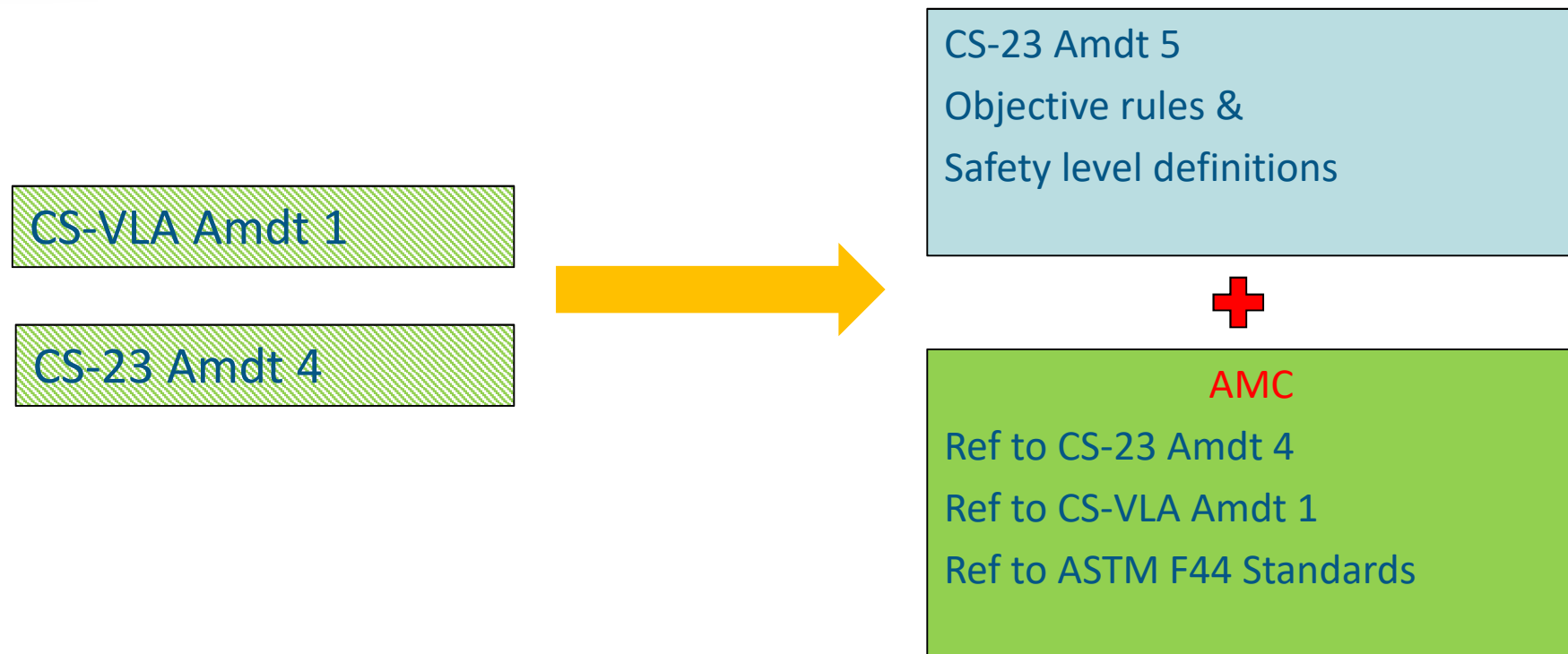
How

The reorganisation of CS-23 and CS-VLA is initially moving the current information into a new organisational structure. Nothing is lost!

- The safety and performance objectives are provided by the new CS-23 requirements
- The design specific details and means of compliance are captured in the AMC.



How



- Aeroplane certification levels

Level 1 — for aeroplanes with a maximum seating configuration of 0 to 1 passengers.

Level 2 — for aeroplanes with a maximum seating configuration of 2 to 6 passengers.

Level 3 — for aeroplanes with a maximum seating configuration of 7 to 9 passengers.

Level 4 — for aeroplanes with a maximum seating configuration of 10 to 19 passengers.



CS-23 & CS-VLA New Concept

23.2335 Lightning protection

For operations where the exposure to lightning is likely, the aeroplane must be protected against catastrophic effects from lightning.

CS 23.867 Electrical bonding and protection against lightning and static electricity

- (a) The aeroplane must be protected against catastrophic effects from lightning.
- (b) For metallic components, compliance with sub-paragraph (a) may be shown by –
 - (1) Bonding the components properly to the airframe; or
 - (2) Designing the components so that a strike will not endanger the aeroplane.
- (c) For non-metallic components, compliance with sub-paragraph (a) may be shown by –
 - (1) Designing the components to minimise the effect of a strike; or
 - (2) Incorporating acceptable means of diverting the resulting electrical current so as not to endanger the aeroplane.

CS-VLA 857 Electrical bonding

- (a) Electrical continuity must be provided to prevent the existence of difference of potential between components of the powerplant including fuel and other tanks, and other significant parts of the aeroplane which are electrically conductive.
- (b) The cross-sectional areas of bonding connectors if made from copper must not be less than 1.3 mm².
- (c) There must be provisions for electrically bonding the aeroplane to the ground fuelling equipment.

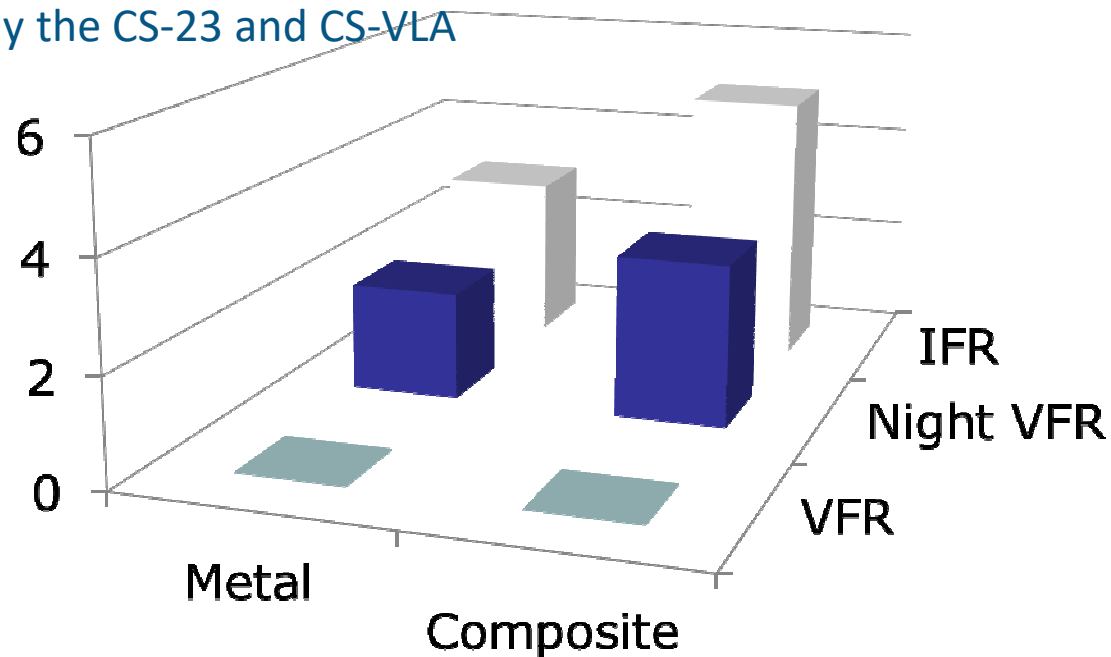


CS-23 & CS-VLA New Concept

23.2335 Lightning protection

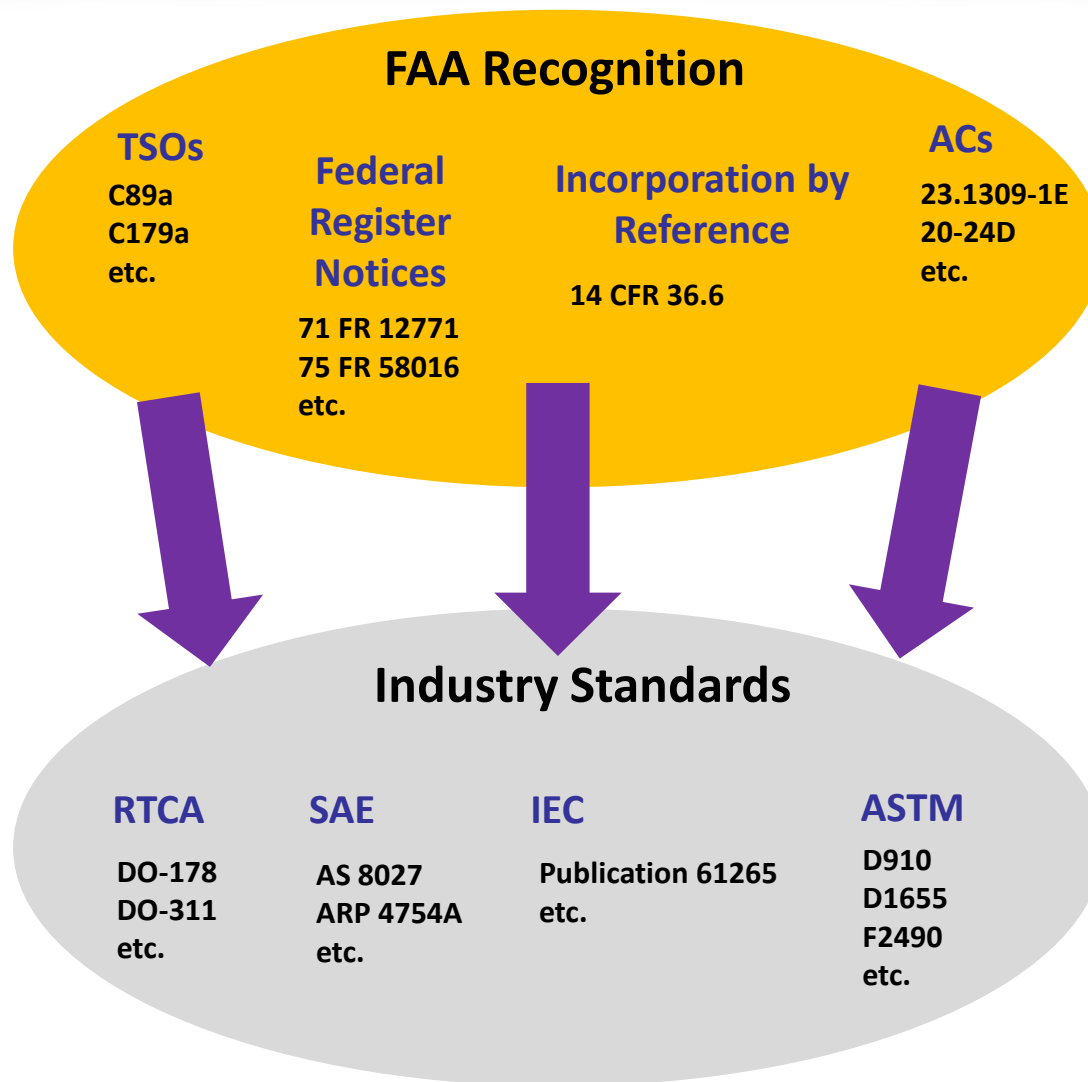
For operations where the exposure to lightning is likely, the aeroplane must be designed to support continued safe flight and landing when subject to the effects from lightning.

Provide AMC for specific application and/or technology, using initially the CS-23 and CS-VLA content





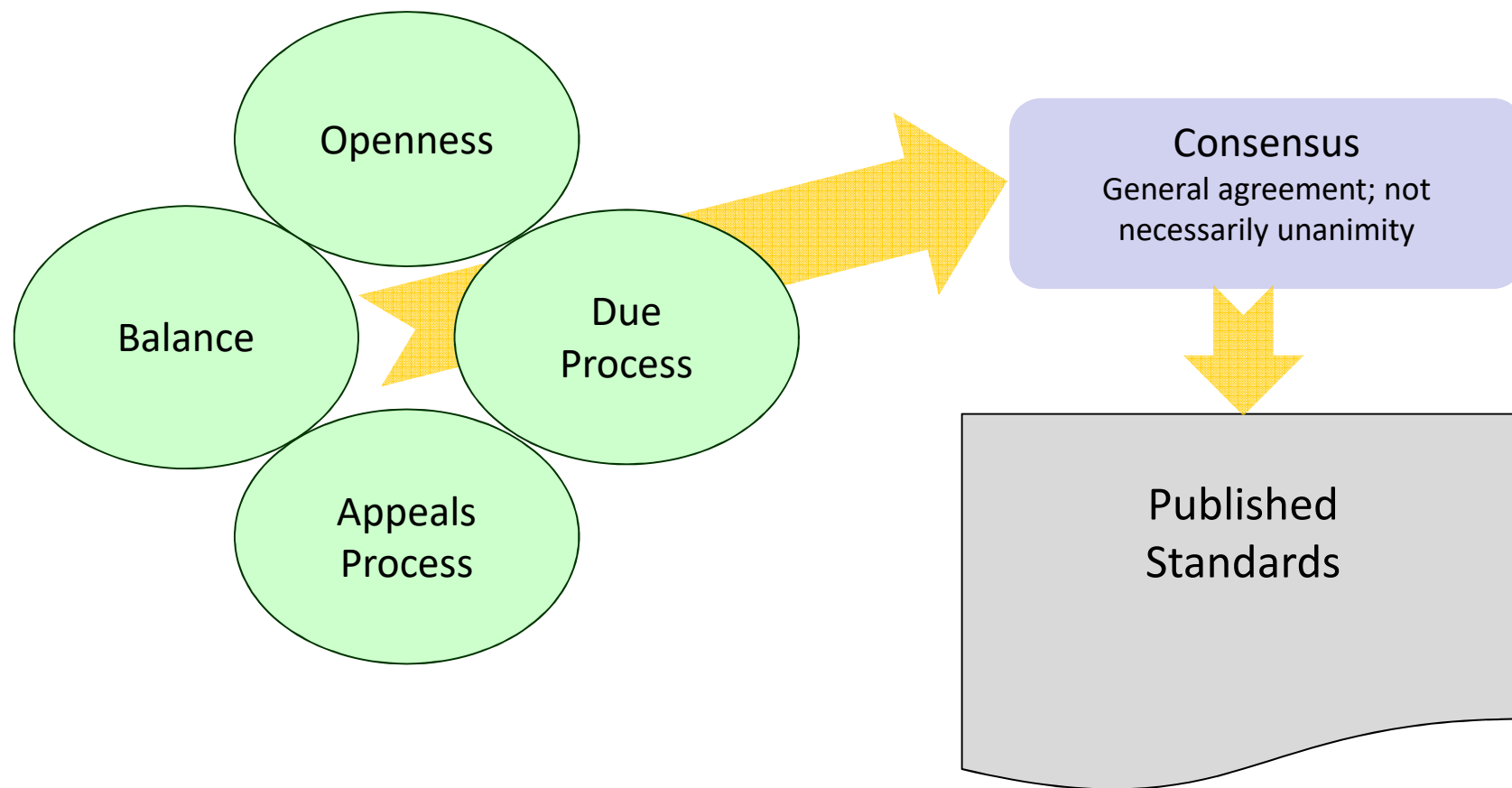
We've used standards for decades





Consensus Standards

► Not all industry standards are consensus standards ◀





- ASTM meets EASA criteria for consensus standards bodies through:
 - Collaboration and consensus of those affected
 - Openness
 - Balance among competing interests
 - Transparency
 - Due process
 - Timeliness
 - Global relevance



ASTM F44 on GA Aircraft

- 262 members / 9 subcommittees
- Multinational effort
 - FAA, EASA, TCCA, CAAC, ANAC, NZ-CAA, CASA
 - Textron, Diamond, Flight Design, Embry Riddle, Pipistrel, Garmin, GAMA, AOPA, NASA, AEA, etc.
- Total of 29 standards needed initially
 - All are now published
 - None have been officially accepted by EASA for use as means of compliance with part 23



Players

Applicants

Participate in standards development (optional)

Use standards (optional)
Cert plan
Compliance checklist

ASTM

Develop standards content

Achieve consensus

Publish standards

Receive Feedback

EASA

Participate in standards development

Review published standards

Issue AMC accepting standards

Use standards

Continuous Improvement

Comments



Published Standards

➤ Structures

- F3083/F3083M-16 Standard Specification for Emergency Conditions, Occupant Safety and Accommodations
- F3093/F3093M-15 Standard Specification for Aeroelasticity Requirements
- F3114-15 Standard Specification for Structures
- F3115/F3115M-15 Standard Specification for Structural Durability for Small Airplanes
- F3116/F3116M-15 Standard Specification for Design Loads and Conditions



AMC No 1

CS-23 amd 5	AMC No 1 (Ref ASTM F44 F1234-17)	Remarks
SUBPART C - Structure		
23.2200 <i>Structural design envelope</i>	F3116/F3116M-15 Standard Specification for Design Loads and Conditions	
23.2205 <i>Interaction of systems and structures</i>	None	
23.2210 <i>Structural-design loads</i>	F3116/F3116M-15 Standard Specification for Design Loads and Conditions	
23.2215 <i>Flight load conditions</i>	F3116/F3116M-15 Standard Specification for Design Loads and Conditions	
23.2220 <i>Ground and water load conditions</i>	F3116/F3116M-15 Standard Specification for Design Loads and Conditions	
23.2225 <i>Component loading conditions</i>	F3116/F3116M-15 Standard Specification for Design Loads and Conditions · F3232/F3232M-17 Standard Specification for Flight Controls in Small Aircraft F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft	Additional specs
23.2230 <i>Limit and ultimate loads</i>	F3114-15 Standard Specification for Structures	
23.2235 <i>Structural strength</i>	F3114-15 Standard Specification for Structures	
23.2240 <i>Structural durability</i>	F3115/F3115M-15 Standard Specification for Structural Durability for Small Aeroplanes	
23.2245 <i>Aeroelasticity</i>	F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft F3093/F3093M-15 Standard Specification for Aeroelasticity Requirements	
23.2250 <i>Design and construction principles</i>	F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft · F3232/F3232M-17 Standard Specification for Flight Controls in Small Aircraft F3114-15 Standard Specification for Structures	Additional specs
23.2255 <i>Protection of structure</i>	F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft · F3232/F3232M-17 Standard Specification for Flight Controls in Small Aircraft F3114-15 Standard Specification for Structures F3066/F3066M-15 Standard Specification for Powerplant Systems Specific Hazard Mitigation	Additional specs
23.2260 <i>Materials and processes</i>	F3114-15 Standard Specification for Structures	
23.2265 <i>Special factors of safety</i>	F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft F3114-15 Standard Specification for Structures	
23.2270 <i>Emergency Conditions</i>	F3061/F3061M-17 Standard Specification for Systems and Equipment in Small Aircraft · F3232/F3232M-17 Standard Specification for Flight Controls in Small Aircraft F3083/F3083M-16 Standard Specification for Emergency Conditions, Occupant Safety and Accommodations	Additional specs

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MOC List format example

CS 23 section	AMC ref.	AMC ref. section	MOC	Method or additional specifications	Compliance Document	Remarks / Comments / Statement
23.2215 Flight load conditions						
(a)(1) (a)(2) (a)(3)	F3116-15	4.2 Flight loads - General 4.3 Symmetrical Flight Conditions 4.9 Unsymmetrical Flight Conditions 4.10 Rolling conditions 4.11 Yawing conditions	2		EASA-Flight loads	Requirements for aerobatics not applicable (4.9.2, 4.10.1.2).
(b)	F3114-15	4.5 Vibration and buffeting	2,4,6			
(c)	F3116-15	4.12 Pressurized Cabin Loads 4.13 Unsymmetrical Loads Due to Engine Failure				Not pressurized. Single engine.
23.2220 Ground and water load conditions						
(a)	F3116-15	8.2 Ground load conditions and Assumptions 8.3 Landing gear arrangement 8.4 to 8.6 8.7 Side load conditions 8.8 Braked roll conditions 8.10 Supplementary conditions for nose wheels	2	F3116-15 Appendix X5	EASA-Ground Loads	Aircraft certified for grass and concrete runway. Conventional main and nose gear arrangement. Tail-wheel type requirements are not applicable.
23.2225 Component loading conditions						
(a)(1)			0			Interaction of systems and structures is taken into account when determining component loading conditions in flight and on ground.
(a)(2)			0			Structural design loads have been taken into account when determining component loading



Changed Product

Change from reciprocating to turbine engine on an aircraft of 3500 Kg MTOW

23.2225 Component Load Conditions

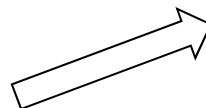
(a) The applicant must determine the loads acting upon all relevant structural components, in response to:

...

(3) Flight load conditions

Requirement	Sub-para	Compliance Ref.	Compliance ref. Sect.	MOC
23.2225 Component Load Conditions				
	(a)(3)	CS – 23 amdt 4	23.361 23.363 23.371	2

Only engine loads requirements actually affected with respect to the wider scope of 23.2225



Former Section	Former Title	New Section	New Title
23.373	Speed control devices	23.2225	Component loading conditions
23.391	Control surface loads	23.2225	Component loading conditions
23.393	Loads parallel to hinge line	23.2225	Component loading conditions
23.395	Control system loads	23.2225	Component loading conditions
23.397	Limit control forces and torques	23.2225	Component loading conditions
23.399	Dual control system	23.2225	Component loading conditions
23.405	Secondary control system	23.2225	Component loading conditions
23.407	Trim tab effects	23.2225	Component loading conditions
23.409	Tabs	23.2225	Component loading conditions
23.415	Ground gust conditions	23.2225	Component loading conditions



EASA

European Aviation Safety Agency

Thank you for your attention!

Any questions....?

Your safety is our mission.

An agency of the European Union

