



# Explanatory Note to Decision 2016/029/R

## CS-ETSO Amendment 12

RELATED RMT.0457 (REGULAR UPDATE OF CS-ETSO) — 15.12.2016

### EXECUTIVE SUMMARY

This Decision addresses improved industry standard related to European Technical Standard Orders (ETSOs), improves harmonisation with the FAA TSOs and deletes obsolete ETSO's which are no longer used by industry.

More specifically, this Decision

- (a) modifies of a number of ETSOs in order to harmonise them with the corresponding FAA TSOs;
- (b) introduces new ETSOs which are technically similar to existing FAA TSOs; and
- (c) deletes obsolete ETSOs which are no longer used by industry.

The changes introduced by CS-ETSO Amendment 12 are expected to reduce regulatory burden for installation of FAA TSO parts and appliances by EASA and vice versa, to increase cost-effectiveness, and to align CS-ETSO to the state of the art. The affected stakeholders include Certification Authorities, Manufacturers of parts and appliances.

CS-ETSO Amendment 12 contains only subjects considered as non-complex, non-controversial, and mature.

Therefore, to further increase the efficiency of the rulemaking process, this amendment of CS-ETSO is issued without prior consultation of an NPA, by using the procedure as provided for by Article 15 ('Special rulemaking procedure: direct publication') of Management Board Decision No 18-2015 of 15 December 2015.

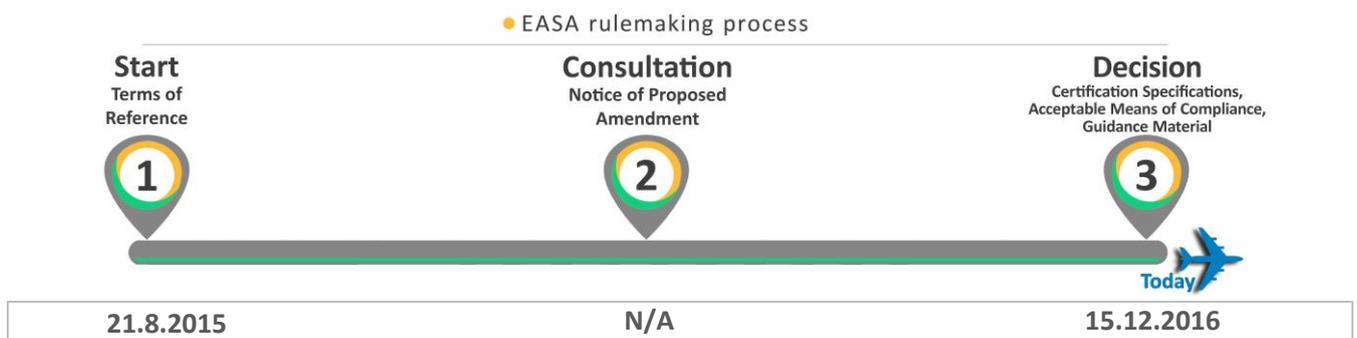
**Action area:** Regular updates/review of Rules

**Affected rules:** CS-ETSO

**Affected stakeholders:** Certification authorities, Manufacturers of parts and appliances

**Driver:** Efficiency/Proportionality    **Reference:** None

**Rulemaking group:** No    **Impact assessment:** Light    **Procedure:** Direct



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## 1. Procedural information

### 1.1 The rule development procedure

The European Aviation Safety Agency (EASA) developed ED Decision 2016/029/R in line with Regulation (EC) No 216/2008<sup>1</sup> (hereinafter referred to as the ‘Basic Regulation’) and the Rulemaking Procedure<sup>2</sup>.

This rulemaking activity is included in the EASA [Rulemaking Programme](#) under RMT.0457. The scope and timescale of the task were defined in the related Terms of Reference (ToR) (see title page).

The text of this Decision has been developed by EASA under Rulemaking Task RMT.0457.

In line with the ToR, CS-ETSO Amendment 12 considers only non-complex, non-controversial.

Therefore, to further increase the efficiency of the rulemaking process, this amendment of CS-ETSO is issued without prior consultation of an NPA, by using the ‘Special rulemaking procedure: direct publication’ procedure as provided for by Article 15 of MB Decision No 18-2015. Instead, and as foreseen by this article, the EASA advisory bodies have been consulted on the draft decision.

The title page summarises the major milestones of this regulatory activity.

### 1.2 Structure of the document

Chapter 1 contains the procedural information related to this task. Chapter 2 explains the core technical content.

The text of the amended CS-ETSO is annexed to the Decision.

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<sup>1</sup> Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).

<sup>2</sup> EASA is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the EASA Management Board (MB) and is referred to as the ‘Rulemaking Procedure’. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by the Agency for the issuing of opinions, certification specifications and guidance material (‘Rulemaking Procedure’) (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).



## 2. Explanatory Note

### 2.1 Overview of the issues to be addressed

The purpose of this Decision is to amend Decision 2003/010/RM of the Executive Director of the Agency of 24 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance, for European Technical Standard Orders (CS-ETSO)<sup>3</sup>.

ETSOs are defined by Article 1.2(g) of Regulation (EC) No 748/2012 as detailed airworthiness specifications, issued by EASA to ensure compliance with the requirements of the 'Part-21' as minimum performance standards for specified articles (i.e. parts and appliances as defined by Article 1(f) of the Regulation EC) No 748/2012.

Article 5.6(b) of the Basic Regulation requires the periodical update of the EASA rules by taking into account worldwide aircraft experience in service, scientific and technical progress. This also applies to CS-ETSO for parts and appliances, which need to be regularly updated.

### 2.2 Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation;

Article 2.1 of the Basic Regulation mandates EASA to establish and maintain a high uniform level of civil aviation safety in Europe. EASA responds to this legal provision through this draft Executive Director Decision by issuing updates to various equipment as further detailed.

Article 2.2(e) of the same Regulation mandates EASA to promote the Union views regarding civil aviation safety standards and rules, with a view to not only establishing and maintaining a high uniform level of civil aviation safety, but also to promoting EU industry. It is hence necessary to constantly align CS-ETSO with the evolution of the state of the art worldwide.

This Decision will contribute to the achievement of the overall objectives by incorporating new standards and updated FAA TSO into CS-ETSO.

This Decision:

- (a) modifies 11 ETSOs in order to harmonise them with the corresponding FAA TSOs;
- (b) introduces 2 new ETSOs (Index 1) which are, where possible, technically similar to existing FAA TSOs<sup>4</sup>; and
- (c) deletes 2 obsolete ETSOs.

### 2.3 Outcome of the consultation

During Advisory Bodies' consultation 7 comments have been submitted by 4 stakeholders.

The following table provides an overview of EASA responses to the comments received:

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<sup>3</sup> Decision as last amended by Decision 2016/006/R of 25 April 2016.

<sup>4</sup> FAA TSOs are available at <http://www.airweb.faa.gov>.



	ACCEPTED	PARTIALLY ACCEPTED	NOTED	NOT ACCEPTED	Σ
Occurrences	1	1	3	2	7
%	14	14	43	29	100

The review of the comments received have led to readability improvement of the proposed changes to Subpart A § 2.4.

No changes have been made to the affected ETSOs.

One stakeholder asked for a more systematic template on ETSO to better identify the applicable specifications on hardware, software and environmental conditions.

According to the EASA approach, the paragraphs on hardware, software and environmental conditions are added in the ETSO specifications only if the related provisions in the industry standards have to be modified.

None of the comments received was in contrast with the proposed changes to CS-ETSO.

#### 2.4 Summary of the regulatory impact assessment (RIA)

No impact analysis has been conducted in line with Article 3(5) of EASA MB Decision No 18-2015.

#### 2.5 Overview of the amendments

The basis for the introduction and/or revision of each ETSO and the main differences with the current ETSOs are specified below.

The following tables summarise the proposed ETSOs to be updated through this Decision, resulting from harmonisation of the EASA system with the corresponding FAA TSO updates.

Changes to ETSOs in Index 1 of CS-ETSO		
ETSO Reference <sup>5</sup>	ETSO Title	Type of Change
C26d	Aircraft Wheels, Brakes and Wheel/Brake Assemblies for Parts 23, 27 and 29 Aircraft	amendment
C64b	Passenger Oxygen Mask Assembly, Continuous Flow	amendment
C65a	Airborne doppler radar ground speed and/or drift angle measuring equipment (for air carrier aircraft)	cancellation
C68a	Airborne automatic dead reckoning computer equipment utilizing aircraft heading and doppler ground	cancellation
C85b	Survivor Locator Lights	amendment
C132a	Geosynchronous Orbit Aeronautical Mobile Satellite Services Aircraft Earth Station Equipment	amendment
C147a	Traffic Advisory System (TAS) Airborne Equipment	amendment
C157b	Flight Information Services-Broadcast (FIS-B) Equipment	amendment
C172a	Cargo Restraint Strap Assemblies	amendment

<sup>5</sup> The reference provided in this column refers to CS-ETSO Amendment 12.



Changes to ETSOs in Index 1 of CS-ETSO		
ETSO Reference <sup>5</sup>	ETSO Title	Type of Change
C177a	Datalink Recorder Equipment	amendment
C195b	Avionics supporting ADS-B	amendment
C200a	Airframe Low Frequency Underwater Locating Device (Acoustic) (Self-Powered)	amendment
C203	Fire containment covers (FCC)	new
C207	Aeronautical Mobile Airport Communication System (AeroMACS)	new

Although this Decision does not introduce new ETSOs having no equivalent FAA TSO, the Index 2 is amended to reflect the updating of existing ETSOs in line with the FAA TSOs.

Changes to ETSOs in Index 2 of CS-ETSO		
ETSO Reference	ETSO Title	Type of Change
2C19c	Portable Water Solution Type Hand Fire Extinguisher	amendment

Additionally, to facilitate the consultation of CS-ETSO, a column has been added in the Indexes 1 and 2 to indicate the latest CS-ETSO amendment affecting each ETSO.

### **Detailed description of proposed amendments**

#### **Subpart A**

##### **Para 2.1 Environmental Standards**

The reference to the more recent standards on environmental protection has been added.

##### **Para 2.4 Failure Conditions classification and development assurance**

Further clarifications have been added on guidance to classification of failure conditions for equipment to be installed on aircraft certified under Part-23.

Additionally the text has been reworded to clarify that the same failure condition can have different classifications depending on the intended installation.

#### **Subpart B**

##### **Index 1**

##### **ETSO-C26d: Aircraft Wheels And Wheel-Brake Assemblies (CS-23, -27 and -29 aircraft)**

This update of ETSO-C26c is based on FAA TSO-C26d, issued on 14.10.2004.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

The minimum performance standard (MPS) is based, in part, on the Society of Automotive Engineers (SAE), Aerospace Recommended Practice (ARP) 5381, Minimum Performance Recommendations for Part 23, 27, and 29 Aircraft Wheels, Brakes, and Wheel-Brake Assemblies, dated October 2000



**ETSO-C64b: Passenger Oxygen Mask Assembly, Continuous Flow**

This update of ETSO-C64a is based on FAA TSO-C64b, issued on 21.05.2008.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO and to increase the safety level.

In line with FAA TSO-C64b, a new Appendix 1, modifying SAE AS8025A, has been introduced to:

- add flammability property requirements for O2-mask material;
- add life limit and inspection requirements for elastomeric material; and
- add compliance with AS 916B for flow indication.

**ETSO-C65a: Airborne doppler radar ground speed and/or drift angle measuring equipment (for air carrier aircraft)**

Since the adoption of this ETSO in 2003, EASA had no authorisations for this ETSO. Additionally some comments to NPA 2015-02 suggested to delete it due to obsolescence.

Currently there are no authorisations listed for ETSO-C65a, therefore EASA proposes the deletion of ETSO-C65a.

TSO-C65a is cancelled (effective February 1, 2013: ref to Federal Register / Vol. 77, No. 171 / Tuesday, September 4, 2012).

The motivation for the FAA cancellation is reported here after:

*'The Doppler radar ground speed and/or drift angle measuring equipment described by this TSO was used to provide inputs to semiautomatic selfcontained dead reckoning navigation systems which were not continuously dependent on information derived from ground based or external navigation aids. The system employed radar signals to detect and measure ground speed and drift angle, using the aircraft compass system as its directional reference. This approach is less accurate than Inertial Navigation Systems (INS), and the use of an external reference is required for periodic updates if acceptable position accuracy is to be achieved on long range flights. Use of INS and Global Positioning System (GPS) has rendered TSO-C65a Doppler sensor equipment that provides inputs to dead reckoning navigation systems obsolete. On August 18, 1983, the FAA published TSO-C65a. The FAA has no record of any TSO-C65a applications dating back to 1990. Our research indicates there are no new TSO-C65a applications in progress, and there are no authorized manufacturers manufacturing, advertising, or selling TSO-C65a compliant equipment. Given the obsolescence of the equipment, and the lack of industry interest in new TSO-C65a product design, the FAA is cancelling TSO-C65a.'*

**ETSO-C68a: Airborne automatic dead reckoning computer equipment utilizing aircraft heading and doppler ground**

Since the adoption of this ETSO in 2003, EASA had no authorisations for this ETSO. Additionally some comments to NPA 2015-02 suggested to delete it due to obsolescence.

Currently there are no authorisations listed for ETSO-C68a, therefore EASA proposes the deletion of ETSO-C68a.



TSO-C68a is cancelled (effective February 1, 2013: ref to Federal Register / Vol. 77, No. 171 / Tuesday, September 4, 2012).

The motivation for the FAA cancellation is reported here after:

*'Doppler radar is a semiautomatic selfcontained dead reckoning navigation system (radar sensor plus computer) which is not continuously dependent on information derived from ground based or external aids. The system employs radar signals to detect and measure ground speed and drift angle, using the aircraft compass system as its directional reference. Doppler is less accurate than Inertial Navigation System (INS), and the use of an external reference is required for periodic updates if acceptable position accuracy is to be achieved on long range flights.*

*Use of INS and Global Positioning System (GPS) has rendered TSO-C68a systems obsolete. The FAA has no record of any applications for TSO-C68a since it was published in 1983.*

*Given the obsolescence of the equipment, and the lack of industry interest in TSO-C68a product designs, the FAA is cancelling TSO-C68a.'*

#### **ETSO-C85b: Survivor Locator Lights**

This update of ETSO-C85a is based on FAA TSO-C85b, issued on 22.10.2007.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO and to increase the safety level.

In line with FAA TSO-C85b, a new Appendix 1 has been introduced to add flammability property requirements for non-metallic materials of:

- light housing,
- battery pack,
- as well as for insulation of electrical wiring.

#### **ETSO-C132a: Geosynchronous Orbit Aeronautical Mobile Satellite Services Aircraft Earth Station Equipment**

This update of ETSO-C132 is based on FAA TSO-C132a, issued on 22.12.2015.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

This Change will make Change 3 and 4 of the RTCA MOPS applicable to the new equipment. FAA will require this starting June 23, 2017. The old FAA TSO 132 will be cancelled only on June 22, 2017.

#### **ETSO-C147a: Traffic Advisory System (TAS) Airborne Equipment**

This update of ETSO-C147 is based on FAA TSO-C147a, issued on 09.05.2014.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

In line with other ETSOs, failure condition classification and airborne electronic hardware qualification have been added.

Additionally in this Change a note has been introduced to clarify that DO-197A Change 1 is not equivalent to ETSO-C147a Appendix 1, this is harmonised with FAA TSO C147a.



**ETSO-C157b: Flight Information Services-Broadcast (FIS-B) Equipment**

This update of ETSO-C157a is based on FAA TSO-C157b, issued on 28.05.2015.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

It introduces the DO-358 minimum operational performance standards (MOPS) for flight information services-broadcast (FIS-B) with Universal Access Transceiver (UAT), dated March 24, 2015.

A note has been added to state that this ETSO is intended for equipment used in the US National Airspace System. UAT is not intended to be operated in European Airspace.

**ETSO-C172a: Cargo Restraint Strap Assemblies**

This update of ETSO-C172 is based on FAA TSO-C172a, issued on 22.12.2015.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO and to increase the safety level.

In line with FAA TSO-C172a, a new Appendix 1 has been introduced to add flammability property requirements for non-metallic materials of:

- strap webbing;
- sewing material.

Paragraph 3 has been revised for the same reason, adding requirements for environmental degradation of non-metallic materials.

Based on TSO-C172a inadvertent disengagement of cargo restraint straps will be prevented by removal of the end fitting D6 as referred to in Figure 1 of SAE AS5385 Rev C (Cargo Restraint Straps - Design Criteria and Testing Methods).

**ETSO-C177a: Datalink Recorder Equipment**

This update of ETSO-C177 is based on FAA TSO-C177a, issued on 19.12.2013.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

In line with other ETSOs, clarification of the failure conditions and addition of a reference to Subpart A has been introduced.

**ETSO-C195b: Avionics Supporting Automatic Dependent Surveillance - Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)**

This update of ETSO-C195a is based on FAA TSO-C195b, issued on 29.09.2014.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

In line with the corresponding FAA TSO, the ADS-B Traffic Advisory System (ATAS) Annunciator Panel class has been introduced as well as the following applications:

- ADS-B Traffic Advisory System (ATAS);
- CDTI Assisted Visual Separation (CAVS).

Additionally a new appendix amending ED-194A/DO-317B has been introduced.

**ETSO-C200a: Low-Frequency Underwater Locating Devices (Acoustic) (Self-Powered)**

This update of ETSO-C200 is based on FAA TSO-C200a, issued on 03.05.2016.

The scope of this revision is to harmonise this ETSO with the corresponding FAA TSO.

In line with the corresponding FAA TSO, this ETSO introduces the MPS Rev A which extends the requirements for ULD to 90 days and a new Appendix 1 adding more stringent containment requirements for the embedded Lithium Batteries, on top of the compliance to ETSO-C142a.

### **ETSO-C203: Fire containment covers (FCC)**

This new ETSO is based on FAA TSO C203, issued on 01.07.2014.

Newly designed and manufactured fire containment covers (FCC) must meet the requirements of this ETSO in order to be identified with the applicable ETSO marking.

The MPS are set forth in the SAE International AS6453, Fire Containment Cover-Design, Performance, and Testing Requirements, August 2013, as amended by Appendix 1 of this ETSO. EASA was involved in the SAE WG which developed the AS6453.

### **ETSO-C207: Aeronautical Mobile Airport Communication System (AeroMACS)**

This new ETSO is based on FAA TSO C207, issued on 13.05.2014.

Newly designed and manufactured aeronautical mobile airport communication system (AeroMACS), must meet the requirements of this ETSO in order to be identified with the applicable ETSO marking.

The MPS are set forth in the EUROCAE ED-223, Minimum Operational Performance Standard for Aeronautical Mobile Airport Communication System (AeroMACS), dated October 2013.

## **Index 2**

### **ETSO-2C19c: Portable Water Solution Type Hand Fire Extinguisher**

This update of ETSO-2C19b is based on FAA TSO-C19c, issued on 26/02/2009.

To harmonise with the FAA, the more recent SAE Aerospace Standard document AS245B, dated April 2004, has been referred in the MPS.

Additionally, a new Appendix 1 has been introduced to clarify burst pressure and proof pressure requirements.

This article remains under Index 2 due to different pressure requirements compared to the FAA TSO.

Annex I (Preamble) to ED Decision lists the CS-ETSO Subparts and Indexes affected by this amendment.

Annex II to ED Decision contains the updated and complete CS-ETSO Indexes as well as the amended and newly introduced ETSO articles as listed hereinafter.

The Change Information document allows readers to see the detailed changes to CS-ETSO.



### 3. References

#### 3.1 Related regulations

None.

#### 3.2 Affected decisions

Decision No. 2003/10/RM of the Executive Director of the Agency of 24 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance, for European Technical Standard Orders ([‘CS-ETSO’](#))

#### 3.3 Reference documents

Not applicable.

