



# Notice of Proposed Amendment 2014-24

## Certification Specifications for Standard Changes & Standard Repairs (CS-STAN) — Phase 1

RMT.0245 (MDM.048) — 6.10.2014

### EXECUTIVE SUMMARY

This Notice of Proposed Amendment (NPA) addresses a proportionality issue: it will allow a simpler process for the design and embodiment of some changes and repairs when applicable to certain aircraft (aeroplanes up to 5 700 kg MTOM, rotorcraft up to 3 175 kg MTOM, most sailplanes, balloons and airships).

The concept of Standard Changes and Standard Repairs was introduced with Regulation (EU) No 748/2012 (paragraphs 21A.90B and 21A.431B). In order to use these concepts, the establishment of the related Certification Specifications (CS-STAN) by the Agency was required. This NPA contains a first proposal (phase 1) on CS-STAN.

In the future, CS-STAN could be enlarged based on experience and with new proposals provided by affected stakeholders (phase 2).

The proposed changes are expected to reduce the regulatory burden for the embodiment of simple changes and repairs in certain aircraft when fulfilling the acceptable methods, techniques and practices included in CS-STAN. It is expected that this will have a positive impact on the operation of the affected aircraft in Europe, promoting general aviation. Additionally, the existence of a simplified procedure for the embodiment of Standard Changes and Standard Repairs could limit the illegal practices of some owners that have not followed the applicable rules when modifying the aircraft and may encourage the installation of safety equipment.

Applicability			Process map	
Affected regulations and decisions:	Commission No 748/2012	Regulation (EU)	Concept Paper:	No
Affected stakeholders:	Light aircraft organisations, organisations and individuals involved in maintenance, CAMOs, NAAs.	owners, design maintenance	Terms of Reference:	28.7.2011
Driver/origin:	Proportionality		Rulemaking group:	No
Reference:	N/A		RIA type:	Light
			Technical consultation during NPA drafting:	No
			Duration of NPA consultation:	3 months
			Review group:	No
			Focussed consultation:	No
			Publication date of the Opinion:	N/A
			Publication date of the Decision:	2016/Q1



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## 1. Procedural information

### 1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Notice of Proposed Amendment (NPA) 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 Agency's [4-year Rulemaking Programme](#) under RMT.0245 (former task number MDM.048).

The text of this NPA has been developed by the Agency. It is hereby submitted for consultation of all interested parties<sup>3</sup>.

The process map on the title page contains the major milestones of this rulemaking activity to date and provides an outlook of the timescale of the next steps.

### 1.2. The structure of this NPA and related documents

Chapter 1 of this NPA contains the procedural information related to this task. Chapter 2 (Explanatory Note) explains the core technical content. Chapter 3 contains the proposed text for the new Certification Specifications and Chapter 4 contains the Regulatory Impact Assessment showing which options were considered and what impacts were identified, thereby providing the detailed justification for this NPA.

### 1.3. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/><sup>4</sup>.

The deadline for submission of comments is **6 January 2015**.

### 1.4. The next steps in the procedure

Following the closing of the NPA public consultation period, the Agency will review all comments.

The outcome of the NPA public consultation will be reflected in the respective Comment-Response Document (CRD).

The Agency will publish the CRD together with the Decision.

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<sup>1</sup> Regulation (EC) No 216/2008 of the European Parliament and 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), as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

<sup>2</sup> The Agency 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 Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of Opinions, Certification Specifications and Guidance Material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

<sup>3</sup> In accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.

<sup>4</sup> In case of technical problems, please contact the CRT webmaster ([crt@easa.europa.eu](mailto:crt@easa.europa.eu)).



The Decision containing Certification Specifications (CS) for Standard Changes and Standard Repairs will be published by the Agency as the outcome of this rulemaking process.

Depending on the feedback from stakeholders, the Agency will expand in the future the list of Standard Changes and Standard Repairs. For this purpose, another NPA will be published in a second phase, once some feedback is obtained on this first proposal and new inputs are gathered to expand the list of Standard Changes and Standard Repairs. Stakeholders are invited to send mature proposals of other Standard Changes/Standard Repairs for consideration by the Agency and possible adoption after following the rulemaking process.



## 2. Explanatory Note

### 2.1. Overview of the issues to be addressed

The Agency is proposing this NPA containing Certification Specifications (CS) with Standard Changes and Standard Repairs, as defined in 21.A.90B and 21.A.431B of Annex I (Part-21) to Regulation (EU) No 748/2012. The NPA also contains GM to Part-M and Part-21 to guide the process of their implementation.

The concepts of Standard Changes & Standard Repairs were introduced with the Implementing Rules in Regulation (EU) No 748/2012 and permit under certain conditions and for certain aircraft types the modification of the design of an aircraft without following the design approval process described in 21.A.95, 21.A.97 and 21.A.437. These standard changes and repairs do not require a design approval issued by the Agency or a DOA.

Except for the case of repair and change design acceptable under bilateral agreements, and in the absence of CS for Standard Changes & Standard Repairs, the rules mandate the approval of a change design or of a repair design as a prerequisite for their embodiment in the aircraft. Without the adoption of the Certification Specifications for Standard Changes and Standard Repairs, there will be no alleviation to this process.

Feedback from industry and operators has suggested that the regulatory framework for general aviation aircraft has become too heavy with the introduction of EASA rules creating a regulatory burden for the owners of these aircraft and, thus, discouraging the development of this sector of aviation.

### 2.2. Objectives

The overall objectives of the EASA system are defined in Article 2 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Chapter 2 of this NPA.

The specific objective of this proposal is to create safe and cost-efficient Certification Specifications defining detailed acceptable methods, techniques and practices, including requirements for parts marking and instructions for continued airworthiness to serve as maintenance data for implementing standard changes and repairs to:

- aeroplanes of 5 700 kg Maximum Take-Off Mass (MTOM) or less;
- rotorcraft of 3 175 kg MTOM or less; and
- sailplanes, powered sailplanes, balloons and airships as defined in ELA1 or ELA2.

### 2.3. Summary of the Regulatory Impact Assessment (RIA)

Option 0 — Do nothing: No alleviation to the current process.

Option 1: The adoption of the rules proposed in this NPA on Certification Specifications for Standard Changes and Standard Repairs will simplify the process of embodiment of changes/repairs for a number of cases in certain aircraft. The design approval process by a DOA or EASA is no longer



required. The level of safety is believed to be maintained considering that the design will follow acceptable methods proven by experience.

The new process will only be applicable to certain aircraft: aeroplanes with MTOM equal or below 5 700 kg, rotorcraft with MTOM equal or below 3 175 kg and most sailplanes, powered sailplanes, balloons and airships and when certain conditions are fulfilled. Among these conditions, the Standard Changes and Standard Repairs will have to comply with the acceptable methods, techniques and practices for the particular Standard Change or Standard Repair as included in the Certification Specifications.

The Standard Changes and Standard Repairs concept is part of the Agency's endeavours to **reduce the regulatory burden for general aviation**. It will eliminate the process of approving a modification to the aircraft type design for cases where the Agency acknowledges there is little added value in a formal design approval process if the change or repair is performed using well-established best practice.

Considering that so far, changes to the type design have required design approval (by a DOA or by EASA), the Agency is taking a cautious step with this CS and is proposing only a limited number of Standard Changes and Standard Repairs with this NPA. A gradual implementation of this concept, that will allow the industry, the national aviation authorities and the Agency to find adequate solutions for unforeseen scenarios and will allow to confirm that the levels of safety are maintained to an acceptable level, is considered appropriate.

The proposed changes are expected to reduce the regulatory burden for the embodiment of simple changes and repairs in certain aircraft when fulfilling the acceptable methods, techniques and practices included in CS-STAN. It is expected that this will have a **positive impact on the operation of the affected aircraft in Europe, promoting this way general aviation**. Additionally, the existence of a simplified procedure for the embodiment of Standard Changes and Standard Repairs **could limit the illegal practices** of some owners that have not followed the applicable rules when modifying the aircraft and may encourage the installation of safety equipment.

Refer to Chapter 4 for a detailed Regulatory Impact Assessment.

*Stakeholders are kindly invited to provide data on impacts introduced by these draft rules and any other quantitative information they may find necessary to bring to the attention of the Agency.*

*As a result, the relevant parts of the RIA might be adjusted.*

#### 2.4. Overview of the proposed amendments

The Certification Specifications proposed with this NPA contain acceptable methods, techniques and practices for carrying out and identifying Standard Changes and Standard Repairs for embodiment in certain aircraft without a design approval.

The Certification Specifications may sometimes contain additional limitations, in terms of aircraft type or permitted operation, as identified in the relevant chapter of the Specifications.

The NPA contains a CS with Standard Changes (Subpart A) and Standard Repairs (Subpart B). In addition, the CS contains a Preamble with information on how to use/understand the CS. The NPA also includes Guidance Material to Part-M in respect of eligibility of parts, installer responsibility, amendment of aircraft manuals, records, etc. These provisions are proposed considering, to their maximum extent, the possibilities given with the current Part-21, Part-M and Part-145 framework.



### 3. Proposed amendments

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

- deleted text is marked with ~~strike through~~;
- new or amended text is highlighted in grey;

an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

Given that CS-STAN is a new document, there is no indication, marking or highlighting of amendments for this part of the NPA.

#### 3.1. Draft Regulation (Draft EASA Opinion)

Not applicable.



### 3.2. Draft Rules (Draft EASA Decisions)

#### 3.2.1. Decision 2012/020/R

Decision 2012/020/R is amended as follows:

Two new paragraphs, GM 21.A.90B and GM. 21.A.431B, are introduced:

##### **GM 21.A.90B Standard changes – Certification Specifications**

CS-STAN contains the certification specifications referred to in 21.A.90B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in GM M.A.801.

##### **GM 21.A.431B Standard repairs – Certification Specifications**

CS-STAN contains the certification specifications referred to in 21.A.431B(a)2. Guidance on the implementation of Standard Changes and Standard Repairs can be found in GM M.A.801.

#### 3.2.2. Decision No 2003/19/RM

Decision No 2003/19/RM is amended as follows:

A new paragraph, GM M.A.801, is introduced:

##### **GM M.A.801 Aircraft certificate of release to service after embodiment of a Standard Change or Standard Repair**

###### **1. Release to service and eligible persons**

Only natural or legal persons entitled to release to service an aircraft after maintenance in accordance with Part-M or Part-145 are considered as an eligible installer responsible for the embodiment of a Standard Change or Standard Repair when in compliance with applicable requirements. Depending on its nature, for certain Standard Changes and Standard Repairs, the Certification Specification CS-STAN might restrict the eligibility for the issuance of the release to service to certain persons.

Since the design of the Standard Change or Standard Repair does not require specific approval, the natural or legal person releasing the aircraft to service after the embodiment of the change or repair is taking the responsibility that the Certification Specifications are fulfilled. This includes responsibility in respect of an adequate design, the selection/manufacturing of suitable parts and their identification, documenting the change or repair, generation or amendment of aircraft manuals and instructions as needed, embodiment of the change/repair, releasing the aircraft to service and record keeping.

###### **2. Parts and appliances to be installed as part of Standard Change/Standard Repair**

The design of the parts and appliances to be used in a Standard Change or Standard Repair is considered a part of the change/repair, and, therefore, there is no need of a specific design approval. However, it is possible that for a particular Standard Change, these Certification



Specifications specifically require the use of parts and appliances that meet an ETSO. In this case, the parts and appliances require to be approved as an ETSO article.

Eligibility for installation of parts and appliances belonging to a Standard Change or Standard Repair is subject to compliance with the Part-21 and Annex I (Part-M) and Annex II (Part-145) to Regulation (EC) No 2042/2003 related provisions and the situation varies depending on the aircraft on which the Standard Change or Standard Repair is to be embodied and on who the installer is. The need for an EASA Form 1 is addressed in Part-21 and Part-M, while less restrictive rules may, for instance, apply for ELA1 and ELA2 aircraft parts (e.g. 21.A.307) and sailplanes parts (e.g. AMC 21A.303). Also, Part-M Subpart F and Part-145 contain provisions (i.e. M.A.603 (c) and 145.A.42 (c)) allowing maintenance organisations to fabricate certain parts to be installed on the aircraft as part of their maintenance activities.

### **3. Parts and appliances identification**

The parts modified or installed during the embodiment of the Standard Change/Standard Repair need to be permanently marked in accordance with Part-21 Subpart Q.

### **4. Documenting the Standard Change/Standard Repair and declaring compliance with the Certification Specifications**

In accordance with Part-M or Part-145 (e.g. AMC M.A.801(f) and 145.A.50(b)), the legal or natural person responsible for the embodiment of a change or a repair should compile details of the work accomplished. In the case of Standard Changes and Standard Repairs, this includes, as necessary based on its complexity, an engineering file containing drawings, a list of the parts and appliances used for the change or repair, the results of tests performed or any other evidence suitable to show that the design fulfils the Certification Specifications, a statement of compliance based on the compliance means and/or engineering judgement, together with amendments to aircraft manuals, to instructions for continuing airworthiness and to other documents such as aircraft parts list, wiring diagrams, etc. as deemed necessary. The EASA Form 123 is prepared for the purpose of documenting the preparation and embodiment of the Standard Change or Standard Repair. The aircraft logbook should contain an entry referring to EASA Form 123; and both EASA Form 123 and the release to service required after the embodiment of the Standard Change or Standard Repair, should be signed by the same person.

Form 123 and all the records referred on it should fulfil elementary principles of controlled documentation, e.g. contain reference number of document, issue date, revision number, name of person preparing/releasing the document, etc.

### **5. Record keeping**

The legal or natural person responsible (see paragraph 1.) for the embodiment of the change/repair should keep the records generated with the Standard Change/Standard Repair as required by Part-M or Part-145 and the Certification Specifications CS-STAN.

In addition, paragraph M.A.305 requires that the aircraft owner keeps the status of the changes/repairs embodied on the aircraft in order to control the aircraft configuration and manage its continuing airworthiness.



With regard to Standard Changes and Standard Repairs, the information provided to the owner may be listed in Form 123 and should include, as required, a copy of any modified aircraft manual and/or instructions for continuing airworthiness. All this information would normally be consulted when the aircraft undergoes an airworthiness review, and, therefore, a clear system to record the embodiment of Standard Changes/Standard Repairs which is also easily traceable, would help during subsequent aircraft inspections.

#### 6. Instructions for the continuing airworthiness

Due to the Standard Change/Standard Repair being embodied, the aircraft instructions for continuing airworthiness may need to be updated. This update is considered part of the Standard Change/Standard Repair, and, therefore, requires no specific approval. As stipulated in paragraph M.A.302, the aircraft owner or CAMO need to assess if the changes in the instructions for continuing airworthiness of the aircraft require to amend the Aircraft Maintenance programme and obtain its approval.

#### 7. Aircraft Flight Manual supplement

Due to the Standard Change/Standard Repair being embodied, the Aircraft Flight Manual may need to be updated. This manual supplement is considered part of the Standard Change/Standard Repair, and, therefore, requires no specific approval.

#### 8. Embodiment of more than one Standard Change

The embodiment of two or more related Standard Changes described in Subpart A of CS-STAN is permitted as a single change (the use of one Form 123 only), as long as adequate references and records for all Standard Changes embodied are captured. Restrictions and limitations of the two (or more) Standard Changes would apply. It is permitted to issue a single release to service containing adequate traceability to all the Standard Changes embodied.

#### 9. Recommended form to be used to record the embodiment of Standard Changes/Standard Repairs

##### EASA Form 123 — Standard Change/Standard Repair (SC/SR) embodiment record

<b>EASA Form 123 — Standard Change/Standard Repair (SC/SR) embodiment record</b>	<sup>1.</sup> SC/SR number(s):
<sup>2.</sup> SC/SR title & description:	
<sup>3.</sup> Applicability:	
<sup>4.</sup> List of parts (description/Part-No/Qty):	
<sup>5.</sup> Operational limitations/affected aircraft manuals. Copies of these manuals are provided to the aircraft owner:	



<p>6. Documents used for the development and embodiment of this SC/SR:</p>   	
<p>* - Copies of the documents marked with an asterisk are handed to the aircraft owner.</p>	
<p>7. Instructions for continuing airworthiness. Copies of these manuals are provided to the aircraft owner:</p>  	
<p>8. Other information:</p>  	
<p>9a. <input type="checkbox"/> This SC complies with the criteria established in 21A.90B(a) and with chapter(s) ..... of Certification Specifications CS-STAN.</p>	
<p>9b. <input type="checkbox"/> This SR complies with the criteria established in 21A.431B(a) and with chapter(s)..... of Certification Specifications CS-STAN.</p>	
<p>10. Date of SC/SR embodiment:</p> 	<p>11. Identification data and signature for the person responsible for the embodiment of the SC/SR:</p> 
<p>12. Signature of the aircraft owner. This signature attests that all relevant documentation is handed over from the organisation to the aircraft owner, and, therefore, the latter becomes aware of any impact or limitations on operations or additional continuing airworthiness requirements which may apply to the aircraft due to the embodiment of the change/repair.</p>  	

Form 123 Issue 00

**Notes:**

Original remains with the legal or natural person responsible for the embodiment of the SC/SR.

The aircraft owner should retain a copy of this form.

The aircraft owner should be provided with copies of the documents referenced in box 6 marked with an asterisk '\*'.

**Completion instructions:**

Use English or the official language of the State of registry to fill in the form.

1. Identify the SC/SR with a unique number and reference this number in the aircraft logbook.
2. Specify the applicable EASA CS-SC/SR chapter, title & revision.
3. Identify the a/c serial number and aircraft type.
4. List the parts' numbers and parts' description for the parts installed. Refer to an auxiliary document if necessary.
5. Identify affected aircraft manuals.
6. Refer to the documentation developed to support the SC/SR and its embodiment, including design data required by the CS-SC/SR: design definition, documents recording the showing of compliance with the Certification Specifications or any test result, etc. The documents' references should quote their revision/issue.
7. Identify instructions for continuing airworthiness that need to be considered for the aircraft



maintenance programme review.

8. To be used as deemed necessary by the installer.

9a., 9b., 10. and 12. Self-explanatory

11. Give full name details and certificate reference used for issuing the aircraft release to service.

### 3.2.3. CS-STAN

A new CS, CS-STAN, is established.



*European Aviation Safety Agency*

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**Certification Specifications  
for  
Standard Changes  
and  
Standard Repairs**

**CS-STAN**

**CERTIFICATION SPECIFICATIONS FOR STANDARD CHANGES AND STANDARD REPAIRS  
(CS-STAN)**

**ACCEPTABLE METHODS, TECHNIQUES AND PRACTICES FOR CARRYING OUT AND IDENTIFYING  
STANDARD CHANGES AND STANDARD REPAIRS AS PERMITTED IN PART-21.**

*<Publication date>*



**CONTENTS (general layout)**

**CS-STAN — Standard Changes and Standard Repairs**

**PREAMBLE**

**SUBPART A — STANDARD CHANGES**

**SUBPART B — STANDARD REPAIRS**



## PREAMBLE

### CS STAN.00 Scope

These Certification Specifications for Standard Changes and Standard Repairs contain design data with acceptable methods, techniques and practices for carrying out and identifying Standard Changes and Standard Repairs. Standard Changes and Standard Repairs, which are described in these Certification Specifications, are not subject to an approval process, and, therefore, can be embodied on an aircraft when the conditions set out in the relevant paragraphs of Part-21 for Standard Changes or Standard Repairs, i.e. 21.A.90B or 21.A.431B, are met.

### CS STAN.10 Applicability

In addition to the conditions of 21.A.90B and 21.A.431B, for each Standard Change or Standard Repair, these Certification Specifications may further restrict its applicability to certain aircraft, or to some areas of an aircraft, or to certain aircraft operations.

### CS STAN.20 Operational limitations or restrictions

Standard Changes and Standard Repairs as described in these certification Specifications may contain operational limitations or restrictions with regard to the use of an aircraft instrument/equipment.

Equipment installed as part of a Standard Change cannot be used to eliminate or reduce the existing airworthiness limitations and operational limitations of the aircraft. As a consequence, a Standard Change might introduce limitations for the use of the installed equipment (e.g. a navigation equipment may be installed following a Standard Change, but this installation may not permit that the equipment is used as primary navigation means).

Any restriction or limitation applicable due to the embodiment of the Standard Change or Standard Repair is included in the aircraft manuals or records, as necessary, and in EASA Form 123.

### CS STAN.30 Referenced documents

The acceptable methods, techniques and practices contained in these Certification Specifications may refer to other documents. Design and production considerations or operational restrictions/limitations established in these documents are applicable and, therefore, may further restrict the applicability of the Standard Change or Standard Repair. The same applies to other documents referred to in these primary referenced documents. Any restriction or limitation established in the referenced document, directly or 'in cascade', affecting the operation or airworthiness of the aircraft is included in the aircraft manuals or records, as necessary, and in Form 123.

Other references mentioned by these documents and quoted 'as example', 'for information', 'as acceptable means', etc. are to be considered, but the installer may decide to use equivalent alternatives under their responsibility.

The latest available versions of the third-party references should be considered unless otherwise stated by the Agency.



References to foreign legislation in the referenced documents are not applicable and are replaced by the relevant European rules (e.g. approval process described in FAA Advisory Circular AC43.13 to obtain an FAA field approval should be ignored and, instead, the installer shall follow the European rules).

#### **CS STAN.40 – Guidance Material**

Guidance for the release to service of the aircraft after embodiment of the Standard Change or Standard Repair, the eligibility of the persons entitled to this release, the parts and appliances suitable for use in an Standard Change or Standard Repair and their identification, the documents to be produced and kept with the change/repair, the required amendment to aircraft manuals, the EASA form 123 (change/repair embodiment record), etc. is contained in paragraph GM M.A.801 to Decision No 2003/19/RM.



**SUBPART A — STANDARD CHANGES****List of Standard Changes**

## Group Systems—Communication:

- CS-SC001a — Installation of VHF voice communication equipment
- CS-SC002a — Installation of a Mode S elementary surveillance equipment
- CS-SC003a — Replacement of Audio Selector Panels and Amplifiers
- CS-SC004a — Installation of antennas

...

## Group Systems — Electrical:

- CS-SC031a — Exchange of conventional Anti Collision lights, Position lights and Landing & Taxi lights by LED type lights

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## Group Systems — Avionics/NAV/Instruments:

- CS-SC051a — Installation of 'FLARM' equipment
- CS-SC052a — Installation of moving map systems to enhance situational awareness
- CS-SC053a — Replacement of Radio Marker Receiving equipment
- CS-SC054a — Replacement of Distance Measurement Equipment (DME)
- CS-SC055a — Replacement of ADF equipment
- CS-SC056a — Replacement of VOR equipment

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## Group Cabin:

- CS-SC101a — Installation of emergency locator transmitter equipment (ELT)

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## Group Survivability Equipment:

- CS-SC151a — Installation of headrest
- CS-SC152a — Changes to seat cushions including the use of alternative foam materials
- CS-SC153a — Replacement of safety belts — torso restraint systems

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## Group Powerplant:

- CS-SC201a — Replacement of powerplant instruments
- CS-SC202a — Use of Avgas UL 91
- CS-SC203a — Use of Avgas Hjelmcø 91/96 UL and 91/98 UL
- CS-SC204a — Installation of external powered engine preheater

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## Group Flight:



CS-SC251a — Installation of an angle of attack indicator system (AoA)

...

Group Miscellaneous:

CS-SC401a — Replacement of basic flight instruments

CS-SC402a — Installation of 'sailplane equipment'

...

## APPENDIX I



## APPENDIX I

# European Aviation Safety Agency

## Standard Change CS-SC001a

Subject: **Installation of VHF voice communication equipment**

### 1 – Purpose

Exchange of communications (COM) equipment, and for aircraft limited to VFR operation also installation of COM equipment. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft with a maximum cruising speed in ISA conditions below 250 kts and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

1. FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally, the following considerations apply:

2. The equipment is approved in accordance with ETSO-2C37e, ETSO-2C38e or ETSO-2C169a or later amendments
3. The equipment is capable of 8.33 kHz and 25 kHz channel spacing.
4. The minimum output power specified for the radio is sufficient for the operation depending on maximum flight level of the aircraft. The table below is valid for standard antenna installations (antenna type and position) with standard cable length less than 4 m and 2 connectors:

Max. aircraft flight level (FL)	Minimum output power
0 to 100	4 Watt
100 to 150	6 Watt
150 to 200	8 Watt
200 to 250	10 Watt
250 to 300	12 Watt
300 to 400	16 Watt

For different installations (cable length, connectors) the required output power needs to be assessed by additional analysis:

- The equipment is qualified for the environmental conditions to be expected during normal operation.



- Instructions and tests defined by the equipment manufacturer have to be followed.

#### **4 – Limitations**

Any limitations defined by the equipment manufacturer apply.

The equipment installation cannot be used to extend the operational capability of the specific aircraft (e.g. from VFR to IFR operation).

#### **5 – Manuals**

Amend the AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continued airworthiness.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC002a

Subject: **Installation of Mode S elementary surveillance equipment**

### 1 – Purpose

Installation or exchange of Mode S transponder. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft with a maximum cruising speed in ISA conditions below 250 kts and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment and its installation are in compliance with paragraph CS ACNS.D.ELS.010 of Certification Specification CS-ACNS.
- The elementary surveillance system provides data according to CS ACNS.D.ELS.015. The transmission of additional ADS-B data (e.g. GPS position and velocity) can be accepted when the position and velocity quality indicators report lowest quality, the equipment manufacturer has stated compatibility with the directly connected GPS source and the transponder is not qualified according to ETSO C166b.
- If automatic determination of the on-the-ground status is not available, the on-the-ground status is set to 'airborne'.
- The reported pressure altitude is obtained from an approved source connected to the static pressure system providing pressure to the instrument used to control the aircraft.
- Any antenna connected to the transponder has a resulting pattern which is vertically polarised, omnidirectional in the horizontal plane and has sufficient vertical beam width to ensure proper system operation during normal aircraft manoeuvres.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions from equipment manufacturer have to be followed.
- A system ground test verifying all transmitted data has to be performed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals



Amend AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC003a

Subject: **Replacement of audio selector panels and amplifiers**

### 1 – Purpose

Replacement of audio selector panels and amplifiers

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment is qualified according the applicable ETSO/JTSA or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment has the same functionality, is installed at the same location and is compatible with the existing installation.
- The equipment is compatible with connections to existing communication and navigation systems.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

Any limitations of the existing installation remain valid.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC004a

Subject: **Installation of antennas**

### 1 – Purpose

This Standard Change covers the installation and exchange of antennas other than RADAR and directional SAT/COM antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43.13-2B, chapter 3.

Additionally the following considerations apply:

- The antenna is installed in non-pressurised secondary structure areas unless the location is provisioned for this purpose in the airframe documentation or the antenna is being replaced and has the same footprint.
- The antenna is compatible with the connected equipment and is suitable for the environmental conditions to be expected during normal operation.
- Instructions and tests from the equipment manufacturer have to be followed.
- The performance of the new antenna installation or of the new antenna type has to be confirmed during testing after installation together with the connected equipment (e.g. range of radio).

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC031a

Subject: **Exchange of conventional Anti Collision Lights, Position lights and Landing & Taxi lights by LED type lights**

### 1 – Purpose

Replacement of anti-collision lights (ACL), Position lights and Landing & Taxi lights by LED type lights.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43.13-2B Chapter 4.

Additionally the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSA or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment is installed at the same location with identical light distribution angles and colours.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.
- Any modification of electrical wiring is performed in accordance with acceptable practices such as the aircraft maintenance manual or chapter 11 of FAA Advisory Circulars AC 43.13-1B and chapter 4 of AC 43.13-2B.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

If needed, amend the AFM with AFMS containing equipment instructions for operation and maintenance, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness. In particular, consider description of required maintenance actions after failure of single LED segments.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC051a

Subject: **Installation of 'FLARM' equipment**

*Note: Originally FLARM® was developed for sailplanes but nowadays such devices are more and more installed in light aeroplanes as well. While FLARM® devices are considered Standard Parts in case of sailplanes, Part 21.A.307(c) might also be used in case of small aeroplanes.*

### 1 – Purpose

Installation of FLARM® Anti-Collision Awareness Systems. The system is based on the specifications as defined by FLARM Technology GmbH, Lindenstrasse 4, CH-6340 Baar, and it is not compatible with Transponder Mode A/C/S, ADS-B or TCAS/ACAS.

The installation of external antennas or additional batteries is not covered by this Standard Change.

### 2 – Applicability/Eligibility

Sailplanes, powered sailplanes and aeroplanes considered as ELA2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- For the mechanical installation, acceptable practices such as the aircraft maintenance manual or FAA Advisory Circular AC 43.13-2B should be taken into account.
- FLARM® and TR-DVS® Installation Policy for Aircraft, TMG, Helicopters, (Gliders); Swiss Federal Office of Civil Aviation FOCA 42-00.02\_FLARM Installation FOCA Policy

Additionally, the following considerations apply:

- A data link between the FLARM® based system and other equipment which is ETSO certified, or mandated by EASA OPS rules, or mandated by the Aircraft Flight Manual (AFM), or mandated by the respective Minimum Equipment List (MEL), is only allowed unidirectional into the FLARM® device unless the installed FLARM device is explicitly listed as compatible equipment by the manufacturer of the connected equipment.
- Instructions and tests defined by the equipment manufacturer have to be followed.
- The equipment is suitable for the environmental conditions to be expected during normal operation.

### 4 – Limitations

- The FLARM® based system cannot be used to substitute any Anti-Collision Device mandated by EASA OPS rules for the operation intended. The system is not to be used in conjunction with night vision systems and not to be used in night or IMC conditions.
- Any limitations defined by the manufacturer of the FLARM® device.

### 5 – Manuals



The AFM Supplement shall, at least, contain:

- the system description, operating modes and functionality;
- The operating procedures and limitations;
- instructions for software and database updates; and
- warnings and placards, if applicable.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC052a

Subject: **Installation of moving map systems to enhance situational awareness**

### 1 – Purpose

Installation or exchange of moving map system to enhance situational awareness. This Standard Change does not include installation of external antennas.

### 2 – Applicability/Eligibility

ELA 2 aircraft

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment should not be connected to any required equipment unless the installed device is explicitly listed as compatible equipment by the manufacturer of the connected equipment.
- The equipment is suitable for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.
- The equipment is not used as primary means of navigation.

### 4 – Limitations

- The provided information is used only in an advisory or supplementary manner (no hazard, no credit basis).
- Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

The AFM Supplement shall at least contain:

- system description, operating modes and functionality;
- operating procedures and limitations;
- instructions for software and database updates; and
- warnings and placards, if applicable.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

### 6 – Release to service



This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC053a

Subject: **Replacement of Radio Marker Receiving equipment**

### 1 – Purpose

Replacement of Radio Marker Receiving equipment.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSO or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment has the same functionality and is compatible with the existing installation.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

The equipment installation cannot be used to extend the operational capability of the specific aircraft.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the relevant equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC054a

Subject: **Replacement of Distance Measuring Equipment (DME)**

### 1 – Purpose

Replacement of Distance Measuring Equipment (DME) operating within the radio frequency range 960-1215 MHz. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSO or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment has the same functionality, is installed at the same location and is compatible with the existing installation.
- The equipment is compatible with connections to existing flight management/navigation systems.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

The equipment installation cannot be used to extend the operational capability of the specific aircraft.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the relevant equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC055a

Subject: **Replacement of ADF equipment**

### 1 – Purpose

Replacement of Airborne Automatic Direction Finding (ADF) equipment. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally, the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSO or equivalent equipment approval acceptable under EASA rules.
- The equipment has the same functionality, is installed at the same location and is compatible with the existing installation (i.e. approval grandfathered under Regulation (EU) No 748/2012). The equipment is compatible with connections to existing flight management/navigation systems.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

The equipment installation cannot be used to extend the operational capability of the specific aircraft.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC056a

Subject: **Replacement of VOR Equipment**

### 1 – Purpose

Replacement of VOR Equipment including LOC/Glideslope indicator and converter. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSSO or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment has the same functionality, is installed at the same location and is compatible with the existing installation.
- The equipment is compatible with connections to existing flight management/navigation systems.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturer have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

The equipment installation cannot be used to extend the operational capability of the specific aircraft.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC101a

Subject: **Installation of emergency locator transmitter equipment (ELT)**

### 1 – Purpose

Installation or exchange Emergency Locator Transmitter (ELT) equipment. This Standard Change does not include installation of antennas.

### 2 – Applicability/Eligibility

Aeroplanes with MTOM below 2 730 kg and ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- Instructions from equipment manufacturer have to be followed.
- The equipment is approved in accordance with ETSO-2C126, ETSO-C126a or later amendments or the equipment is qualified according to the applicable ETSO/JTSO or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The ELT is considered a passive device whose status is in standby until it is required to perform its intended function. As such, its performance is highly dependent on proper installation and post-installation testing. Guidance on this subject is contained in RTCA DO-182, *Emergency Locator Transmitter (ELT) Equipment Installation and Performance* or in Chapter 6 of EUROCAE ED-62A, *Minimum operational performance specification for aircraft emergency locator transmitters 406 MHz and 121.5 MHz (Optional 243 MHz)*

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

Amend AFM with AFMS containing or referencing the equipment instructions for operation, as required.

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC151a

Subject: **Installation of headrests**

### 1 – Purpose

A significant portion of the existing sailplane and powered sailplane fleet is not equipped with headrests as required by newer certification specifications. The intention of this Standard Change is to enable the simple adaption and installation of headrests and backrests with integrated headrests that are available for similar designs using established practice.

### 2 – Applicability/Eligibility

Sailplanes and Powered Sailplanes

### 3 – Acceptable methods, techniques and practices

The following considerations apply:

- The installed part is manufactured according to design data in compliance with CS 22.788 Headrests .
- Modified attachments are assessed or tested against loads referred in CS22.788.
- Adaptions are made using established practices for repairs as described in
  - Maintenance or Repair manual;
  - “Kleine Fiberglass Flugzeug Flickfibel” Ursula Hänle<sup>5</sup>; and
  - FAA Advisory Circular AC 43.13-2B/1B.

### 4 – Limitations

N/A

### 5 – Manuals

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness, as required.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.

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<sup>5</sup> Also available in English under the title ‘Plastic Plane Patch Primer’.



# European Aviation Safety Agency

## Standard Change CS-SC152a

Subject: **Changes to seat cushions including the use of alternative foam materials**

### 1 – Purpose

Installation of alternative materials in the construction of seat cushion. For the refurbishment of seats with new seat cushions, alternative foam materials can be used.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft, without dynamically tested seats (according CS 23.562 or equivalent).

### 3 – Acceptable methods, techniques and practices

For aeroplanes, all materials used in the construction of seat cushions must be flame resistant. Flame resistance can be demonstrated according to FAA Advisory Circular AC 23-2A or alternatively such materials must pass the flammability test according to Appendix F, Part I of CS-25 (see FAA Advisory Circular AC 23-17C, paragraph 23.853). Each material used in the construction of seat cushions must meet the above flammability tests separately.

Materials (including foam materials) that will be used in sailplanes or powered sailplanes do not have to meet flammability requirements.

To improve occupant safety, it is recommended to use energy absorbing foams in the construction of seat cushions. Energy absorbing foam materials have the potential to reduce the possibility of spine injuries in case of hard landings or minor crash landing.

Additionally the following considerations apply:

- The design of replacement seat cushions should follow the geometrical dimension of the original seat cushion.
- In case the geometrical dimensions are altered, it must be ensured that access to and egress from the seat will not be altered. On pilot seats, it must be ensured that the cushion has no influence on the use of any of the controls.
- This Standard Change is not applicable for installation on dynamically tested seats (according to CS 23.562 or equivalent).

### 4 – Limitations

N/A

### 5 – Manuals

N/A



## 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner for aircraft other than sailplanes or powered sailplanes.



# European Aviation Safety Agency

## Standard Change CS-SC153a

Subject: **Replacement of safety belts/torso restraint systems**

### 1 – Purpose

Replacement of safety belts / torso restraint systems.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft, without dynamically tested seats (according to CS 23.562 or equivalent).

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 9

Additionally the following considerations apply:

- The equipment is qualified according to the applicable ETSO/JTSA or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The equipment is compatible with existing installation and attachment points.
- The equipment is qualified for the environmental conditions to be expected during normal operation.
- Instructions and tests from equipment manufacturers have to be followed.

### 4 – Limitations

Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

Based on the maintenance instructions of the equipment and its installation, consider the need to amend the aircraft instructions for continuing airworthiness, as required.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC201a

Subject: **Replacement of powerplant instruments**

### 1 – Purpose

Replacement of powerplant instruments with new ones applicable to:

- temperature instruments;
- fuel and oil quantity instruments;
- fuel flowmeters;
- manifold pressure instruments;
- tachometer (RPM);
- pressure instruments ; and
- carbon monoxide detector instruments.

### 2 – Applicability/Eligibility

Piston engine aeroplanes with MTOM below 2 730 kg and ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally the following considerations apply:

- The instrument is qualified according to the applicable ETSO/JTSO or equivalent instrument approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The instrument has the same functionality, is installed at the same location and is compatible with existing installation.
- Display of information is consistent with the overall flight deck design philosophy.
- The instrument is suitable for the environmental conditions to be expected during normal operation.
- The indicators have the required markings (e.g. limits, operating ranges) of the original instrument.
- Selection/calibration of the instrument must be such that, under the same conditions, the indications provided by the old and the new instrument are the same.
- Instructions and tests defined by the instrument manufacturer have to be followed.
- The instrument should provide the measurement of the related magnitude in the same units as the replaced instrument or other units when such units are used in the AFM and placards have been updated as necessary.



#### **4 – Limitations**

Any limitations defined by the instrument manufacturer apply.

Any limitations of the existing installation remains valid.

#### **5 – Manuals**

Amend AFM with AFMS containing or referencing the instrument instructions for operation, as required.

Based on the maintenance instructions of the instrument and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC202a

Subject: **Use of Avgas UL 91**

### 1 – Purpose

Unleaded Avgas UL 91 (according to ASTM D7547) may be used, if approved for the particular engine types and the installation on aircraft level is already approved for operation with conventional Aviation Gasoline (Avgas) or Motor Gasoline (Mogas).

Avgas UL 91 may also be used in all engines and aeroplane types approved for use with Mogas RON 95 (MON 85) in accordance with Standard EN 228.

Even if approved for the engine, the operation with Avgas UL 91 is a modification at aircraft level and placards and manuals have to be amended which could be done using this Standard Change.

### 2 – Applicability/Eligibility

Aeroplanes other than complex motor-powered aircraft and powered sailplanes powered by spark-ignited piston engines using Avgas or Mogas.

### 3 – Acceptable methods, techniques and practices

To enable the use of unleaded Avgas UL 91 with this Standard Change the following conditions are to be met:

- the engine installed on the aeroplane is approved for use of unleaded Avgas UL 91 and the aeroplane is already approved for operation with conventional Avgas (according to ASTM D910, Def Stan 91-90, Mil-G-5572, GOST1012-72 or equivalent) or Mogas; or
- the engine as well as the aeroplane are approved for operation with Mogas RON 95 (MON 85) in accordance with standard EN 228;
- the installed engine has not been modified and meets the specifications of the original engine type certificate; and
- placards are installed/amended as needed to allow the use of the approved fuels.

#### **Warning 1:**

***Use of unleaded Avgas UL 91 in engines that have not been approved for its use may cause extensive damage to the engine or lead to in flight failure, due to the lower Motor Octane Number (MON) of the fuel, compared to Avgas 100LL.***

#### **Warning 2:**

***This Standard Change is not intended for approving the use of Automotive fuel.***

### 4 – Limitations



None

**5 – Manuals**

Amend AFM with AFMS introducing the operation of unleaded Avgas UL 91.

**6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC203a

Subject: **Use of Avgas Hjelmc0 91/96 UL and 91/98 UL**

### 1 – Purpose

Unleaded Avgas Hjelmc0 91/96 UL and 91/98 UL (meeting the requirements of MIL-G-5572 and ASTM D910 for grade 91/96 and 91/98 fuel (except of colour), as well as the requirements of ASTM D7547) may be used, if approved for the particular engine types and the installation on aircraft level is already approved for operation with conventional Aviation Gasoline (Avgas) or Motor Gasoline (Mogas).

Avgas Hjelmc0 91/96 UL and 91/98 UL may also be used in all engines and aeroplane types approved for use with Mogas RON 95 (MON 85) or RON 98 (MON 88) in accordance with Standard EN 228.

Even if approved for the engine, the operation with Avgas 91/96 UL or 91/98 UL is a modification at aircraft level, and placards and manuals have to be amended. This could be done using this Standard Change.

### 2 – Applicability/Eligibility

Aeroplanes other than complex motor-powered aircraft and powered sailplanes powered by spark-ignited piston engines using Avgas or Mogas.

### 3 – Acceptable methods, techniques and practices

Before releasing the use of unleaded Avgas Hjelmc0 91/96 UL and 91/98 UL with this Standard Change the following conditions are to be met:

- the engine installed on the aeroplane is approved for use of unleaded Avgas 91/96 UL or 91/98 UL (or UL 91) and the aeroplane is already approved for operation with conventional Avgas (according to ASTM D910, Def Stan 91-90, Mil-G-5572, GOST1012-72 or equivalent) or Mogas, or
- the engine as well as the aeroplane are approved for operation with Mogas RON 95 (MON 85) or RON 98 (MON 88) in accordance with standard EN 228;
- the installed engine has not been modified and meets the specifications of the original engine type certificate; and
- placards are installed/amended as needed to allow the use of the approved fuels.

#### **Warning 1:**

***Use of unleaded Avgas 91/96 UL or 91/98 UL in engines that have not been approved for its use may cause extensive damage to the engine or lead to in flight failure, due to the lower Motor Octane Number (MON) of the fuel, compared to Avgas 100LL.***

#### **Warning 2:**

***This Standard Change is not intended for approving the use of Automotive fuel.***

### 4 – Limitations

None



## 5 – Manuals

Amend AFM with AFMS introducing the operation of unleaded Avgas Hjelmc0 91/96 UL and 91/98 UL (unless the use of Avgas UL91 is already approved).

## 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC204a

Subject: **Installation of external powered engine preheater**

### 1 – Purpose

This change is related to the installation of engine preheating systems that are externally powered and not connected to the aircraft electrical system. These preheating systems do not function during flight. The consideration with respect to safety of flight is that the preheating system neither interferes with functional equipment nor comes loose or detached and creates some other flight hazard. The engine preheater is installed on a non-functional, no-hazard basis.

### 2 – Applicability/Eligibility

Aeroplanes other than complex motor-powered aircraft and piston engine-powered sailplanes.

### 3 – Acceptable methods, techniques and practices

Installation of the preheating system in accordance with the installation instructions of the equipment manufacturer.

### 4 – Limitations

None

### 5 – Manuals

Amend AFM with AFMS explaining the operation of the engine preheating system.

### 6 – Release to service

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC251a

Subject: **Installation of an angle of attack indicator system (AoA)**

### 1 – Purpose

This Standard Change applies only to supplemental angle of attack (AoA) indicator system, not to the angle of attack system required for type certification of the aircraft.

### 2 – Applicability/Eligibility

Sailplanes, powered sailplanes and aeroplanes not considered as complex motor-powered aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

FAA Memo AIR100-14-110-PM01

Additionally the following considerations apply:

- The installation of the system neither requires an interface with the pitot-static system nor relies on direct pressure input from the pitot-static-system.
- The probe is located such that it interferes neither with the functioning of the flight controls nor with the pitot-static-system or aircraft stall warning system.
- Accuracy of indication of stall coincides to existing stall warning.
- The installed AoA indicator system shall not interfere negatively with previously installed existing stall warning or AoA systems.
- The installation of the probe is in a non-pressurised area, preferably on an inspection panel.
- The system is not used as an input source to any other system such as an autopilot or stick pusher, unless certified separately.
- The installation and electrical wiring is installed in accordance with acceptable practices such as the aircraft maintenance manual or FAA Advisory Circulars AC 43.13-1B and AC 43.13-2B.
- The system is suitable for the environmental conditions to be expected during normal operation.
- Instructions and tests defined by the system manufacturer have to be followed.

### 4 – Limitations

The provided information is used in an advisory or supplementary manner (no hazard, no credit basis).

No operational credit may be taken for the installation, such as reduced stall speeds, reduced approach speeds, reduced take-off or landing distances, etc.

Any limitations defined by the AoA system manufacturer apply.



**5 – Manuals**

The AFM Supplement shall, at least, contain:

- system description, operating modes and functionality;
- operating procedures and limitations; and
- warnings and placards, if applicable.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

**6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC401a

Subject: **Replacement of basic flight instruments**

### 1 – Purpose

Replacement of basic flight instruments with new equipment applicable to:

- airspeed instruments;
- turn and slip instruments;
- bank and pitch instruments;
- direction instruments;
- vertical velocity instruments; and
- pressure-actuated altimeter instruments.

This Standard Change does not entitle the instalment of digital multifunction displays.

### 2 – Applicability/Eligibility

Aeroplanes not being complex motor-powered aircraft with a maximum flight altitude below FL 280 and any ELA 2 aircraft.

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-2B Chapter 2

Additionally, the following considerations apply:

- The instrument is qualified according to the applicable ETSO/JTSO or equivalent equipment approval acceptable under EASA rules (i.e. approval grandfathered with Regulation (EU) No 748/2012).
- The instrument has the same functionality, is installed at the same location and display of information is consistent with the overall flight deck design philosophy.
- The instrument is suitable for the environmental conditions to be expected during normal operation.
- The indicators have the required markings (e.g. limits, operating ranges) of the original instrument.
- Selection/calibration of the instrument must be such that, under the same conditions, the indications provided by the old and the new instrument are the same.
- Instructions and tests defined by the equipment manufacturer have to be followed.
- The instrument should provide the measurement of the related magnitude in the same units as the replaced instrument or other units when such units are used in the AFM and placards have been updated as necessary.



#### **4 – Limitations**

Any limitations defined by the instrument manufacturer apply.

Any limitations of the existing installation remains valid.

#### **5 – Manuals**

Amend AFM with AFMS containing or referencing the instrument's instructions for operation, as required.

Based on the maintenance instructions of the instrument and its installation, consider the need to amend the aircraft instructions for continuing airworthiness.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Change CS-SC402a

Subject: **Installation of 'sailplane equipment'**

### 1 – Purpose

Installation of gliding equipment considered standard Parts in accordance with AMC 21.A.303 (c) 2, (i.e. electrical variometers, bank/slip indicators ball type, total energy probes, capacity bottles (for variometers), final glide calculators, navigation computers, data loggers, barographs, cameras and bug wipers).

The installation of external antennas or additional batteries is not covered by this Standard Change.

### 2 – Applicability/Eligibility

Sailplanes and powered sailplanes

### 3 – Acceptable methods, techniques and practices

The following standards contain acceptable data:

- FAA Advisory Circular AC 43.13-2B

Additionally, the following considerations apply:

- The total weight of the system is not exceeding 1 500 g.
  - Devices of a weight below 150 g can be installed in the instrument panel by applying an additional cut-out.
  - Devices of a weight of more than 150 g cannot be installed in the instrument panel unless there are instrument panel's cut-outs foreseen by the airframe manufacturer.
- A data link/data connectivity between the installed equipment and other equipment which is ETSO certified, or mandated by EASA OPS rules, or mandated by the Aircraft Flight Manual (AFM), or mandated by the respective Minimum Equipment List (MEL), is not allowed.
- A switch is required which allows to turn off the sailplane installed equipment independently.
- Instructions and tests defined by the equipment manufacturer have to be followed.
- The equipment is suitable for the environmental conditions to be expected during normal operation.

### 4 – Limitations

- The provided information is used in an advisory or supplementary manner (no hazard, no credit basis).
- Any limitations defined by the equipment manufacturer apply.

### 5 – Manuals

The AFM Supplement shall, at least, contain:



- the system description, operating modes and functionality;
- the operating procedures and limitations;
- instructions for software and database updates; and
- warnings and placards, if applicable.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

#### **6 – Release to service**

This Standard Change is not suitable for release to service by the Pilot-owner.



## SUBPART B — STANDARD REPAIRS

### List of Standard Repairs

CS-SR801a — Aircraft Repair according to FAA Advisory Circular AC 43.13-1B

CS-SR802a — Repair of Sailplanes Powered Sailplanes, LSA and VLA

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### APPENDIX II



## APPENDIX II

**European  
Aviation  
Safety  
Agency****Standard Repair CS-SR801a**

Subject: **Aircraft Repair according to FAA Advisory Circular AC 43.13-1B**

**1 – Purpose**

This Standard Repair is issued to allow the use of FAA Advisory Circular AC 43.13-1B for repair of aircraft structure in metal, composite and wood construction.

**2 – Applicability/Eligibility**

Aeroplanes not being complex motor-powered aircraft and any ELA 2 aircraft.

**3 – Acceptable methods, techniques and practices**

The following standards contain acceptable data:

- FAA Advisory Circular AC 43-13-1B.

**4 – Limitations**

N/A

**5 – Manuals**

Assess if the repair could require the issuance of an AFMS.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

**6 – Release to service**

This Standard Repair is not suitable for release to service by the Pilot-owner.



# European Aviation Safety Agency

## Standard Repair CS-SR802a

Subject: **Repair of Sailplanes, Powered Sailplanes, LSA and VLA**

### 1 – Purpose

This Standard Repair is issued to allow the use of established practice for repair of light aircraft structures in metal, composite and wood construction.

### 2 – Applicability/Eligibility

Sailplanes, Powered Sailplanes, LSA and VLA.

### 3 – Acceptable methods, techniques and practices

Any of the following standards contain acceptable data:

For composite structures:

- “Kleine Fiberglass Flugzeug Flickfibel”, Ursula Hänle<sup>6</sup>

For wooden and mixed structures on sailplanes and powered sailplanes:

- ‘Standard Repairs to Gliders’, British Gliding Association; or
- “Werkstattpraxis”, Hans Jacobs.

### 4 – Limitations

N/A

### 5 – Manuals

Assess if the repair could require the issuance of an AFMS.

Amend the Instructions for Continuing Airworthiness to establish required maintenance actions/inspections and intervals, as required.

### 6 – Release to service

This Standard Repair is not suitable for release to service by the Pilot-owner.

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<sup>6</sup> Also available in English under the title ‘Plastic Plane Patch Primer’.



## 4. Regulatory Impact Assessment (RIA)

### 4.1. Issues to be addressed

See section 2.1.

#### 4.1.1. Safety risk assessment

The process to obtain an approval for a change/repair to the design by the traditional methods (i.e. DOA or Agency approval) is considered very onerous by some owners and, as a consequence, design changes for simple installation of safety equipment not required by the type design or new more reliable equipment, as well as approval of repair design, may not take place or might be performed circumventing the applicable rules.

#### 4.1.2. Who is affected?

- Around 70 000 aircraft in Europe could be in the scope of these provisions.
- Approved Design Organisations working with affected aircraft.
- Natural or legal persons issuing certificates of release to service of aircraft.
- CAMOs, NAAs, EASA.

### 4.2. Objectives

See section 2.2.

### 4.3. Policy options

Option 0 — Do nothing: Current rules mandate the approval of a design change or the design of a repair as a prerequisite for their embodiment in the aircraft. Without the adoption of the Certification Specifications for Standard Changes and Standard Repairs there will be no alleviation to this process.

Option 1: The adoption of the rules proposed in this NPA on the Certification Specifications for Standard Changes and Standard Repairs will simplify the process of embodiment of changes/repairs for a number of cases in certain aircraft. The design approval process by a DOA or EASA disappears but this is mainly compensated considering that the design will follow acceptable methods proven by experience.

**Table 1: Selected policy options**

<b>Option No</b>	<b>Description</b>
0	Baseline option (no change in rules; risks remain as outlined in the issue analysis).
1	Adopt the Certification Specifications for Standard Changes and Standard Repairs.



#### 4.4. Analysis of impacts

##### 4.4.1. Safety impacts

###### Option 0

This option 0 has the potential for negative safety impacts if the current rules prevent the implementation of design changes for simple installation of safety equipment and continue to require approval of all repair design.

###### Option 1

The use of Standard Changes and Standard Repairs will permit the embodiment of modifications or repairs to the affected aircraft following a new approach: obtaining a specific design approval and demonstrating continued compliance to the original certification basis are not required. This is, however, compensated with the facts that the permitted changes/repairs are simple, their applicability is limited, the methods, techniques and practices are proven safe by history/experience and the legal or natural person embodying the change/repair will be responsible for ensuring that their design follows the CS.

In addition, the Agency considers that this simplified approach will encourage aircraft owners to modernise their aircraft and will embody some safety features that will improve the safety of operations.

Based on this discussion, the Agency expects that the levels of safety will improve or will not be affected.

##### 4.4.2. Economic impacts

###### Option 0

The process to obtain an approval for a change/repair to the design by the traditional methods (i.e. DOA or Agency approval) will continue to be considered very onerous by some owners.

###### Option 1

Around 70 000 aircraft in Europe could benefit from these provisions, making it easier for the owners to modify their aircraft when fulfilling the applicable conditions.

Approved Design Organisations, as well as the Agency to some extent, working with affected aircraft might lose some requests for design approval, since their involvement will not be required in these cases. However, the Standard Change/Standard Repair concept will promote general aviation and this will have a positive impact to the whole affected industry in the future, including DOAs that will be requested for higher value changes/repairs.

Other stakeholders will be affected in the following way in terms of responsibility:

- Natural or legal persons issuing certificates of release to service of aircraft who will become responsible to ensure that the Standard Change or Standard Repair embodied fulfils the Certification Specifications.
- CAMOs and NAAs as they will be required to recognise Standard Changes/Standard Repairs during Airworthiness Reviews or ACAM inspections



Overall, the Agency expects that the introduction of the Certification Specifications will have a positive effect on the promotion of general aviation, by simplifying the administrative process of embodiment of changes/repairs to the aircraft and, therefore, reducing operating costs.

#### **4.5. Conclusion**

Option 1 is the preferred option. The draft Certification Specifications issued for open consultation are included in section 3.2 of this NPA.



## 5. References

### 5.1. *Affected regulations*

The Certification Specifications proposed with this NPA are the ones referred by paragraphs 21.A.90B and 21.A.431B of Part-21 (Regulation (EU) No 748/2012).

### 5.2. *Affected CS, AMC and GM*

The text proposes new Certification Specifications. Also, a new GM paragraph to Part-M, GM M.A.801, and two new GM paragraphs to Part-21, GM 21.A.90B and GM. 21.A.431B, are introduced.

### 5.3. *Reference documents*

Refer to the Preamble of the proposed Certification Specifications.

