

Guidance to Applicants when Preparing Applications for the Approval of Minor Changes/Modifications to EASA and Non-EASA Aircraft

Purpose

This document and its appendices provide guidance, to applicants who do not hold EASA Part 21 or CAA BCAR A-8 Design Organisation approvals, for the preparation of the data required to support applications for the approval of minor changes (modifications) to aircraft. The guidance is equally applicable to submissions for the approval of minor changes to EASA aircraft and equivalent minor modifications to non-EASA aircraft.

This guidance is provided to enable applicants to prepare data that can be approved without unnecessary delay that may result from the submission of incomplete or ambiguous data.

For consistency the guidance within this document uses the term 'change', from its use within Part 21, to mean a modification.

EASA Aircraft

Applications for the approval of minor changes are made directly to EASA using the EASA Form 32, which is available from the EASA website.

EASA typically allocates to CAA the technical assessment of minor changes for UK originated applications. Minor change applications are assessed by the CAA's Aircraft Evaluation and Survey certification specialists at Aviation House, Gatwick. The CAA is expected to determine that each minor change applicant has demonstrated compliance with the applicable airworthiness requirements as required by Part 21A.93 before recommending approval to EASA. When satisfied that compliance has been demonstrated, CAA will compile a Technical Visa and submit it to EASA. The change approval certificate is issued by EASA.

Non EASA Aircraft

Applications for the approval of minor modifications to Non-EASA aircraft should be made on CAA Form SRG 1726 and, together with the appropriate fee, directed to:

Civil Aviation Authority
Safety Regulation Group
Applications and Approval: 2E
Aviation House
Gatwick Airport South
West Sussex
RH6 0YR

Applications may also be submitted by email to aanda@caa.co.uk.

The [SRG 1726](#) application form is available on the CAA website.

Details of charges can be found in the CAA [Scheme of Charges - Airworthiness, Noise Certification and Aircraft and Aircraft Engine Emissions](#) ORS 5.

Approval of a minor modification will be indicated by the CAA's issuance of a signed Minor Modification Approval Certificate.

1 Introduction

- 1.1 A change to an aircraft may be classified as 'minor' when it does not have an 'appreciable effect' on:
- Mass
 - Balance
 - Structural strength
 - Reliability
 - Operational Characteristics, or
 - Environment (noise, emissions, fuel venting).

The guidance material (GM) for Part 21A.91 provides further considerations that affect the design change classification.

EASA has published specific guidance regarding the classification of common changes for general aviation aircraft on the 'General Aviation FAQs' page of the Certification part of its website.

<http://easa.europa.eu/certification/faq/general-aviation-FAQ.php>

- 1.2 The data submitted in support of an application for the approval of a minor change needs to convey the following information:
- A definition of the change – what it is doing and on what aircraft,
 - Details of how the change is embodied (accomplishment instructions),
 - Details of how the changed aircraft is maintained (Instructions for Continued Airworthiness – or ICA),
 - Details of how the changed aircraft is operated (e.g. Flight Manual Supplement), and
 - Details of how the change complies with the applicable airworthiness and operational or airspace requirements.
- 1.3 There is no pre-defined format for the presentation of much of the information detailed in 1.2 (above), however the guidance in the following paragraphs should be taken into consideration when preparing the data pack. It is typical that a single 'change document' would contain the definition and accomplishment information, with the ICA and airworthiness compliance details as separate sections, documents or attachments. The Flight Manual Supplement is always a separate document.

Appendices to this guidance provide illustrations of how some of the data could be presented.

2 Definition of the Minor Change

- 2.1 The minor change must be clearly defined, addressing the following aspects:
- Unique identification (modification number),
 - A concise title,
 - A description of the change, and
 - Aircraft type and model applicability
- 2.2 The approval certificate for the change will refer to a specific set of data. The applicant must therefore assign and identify each individual document associated with the change with:

- A unique document number,
- A revision or issue status, and
- The date of the particular issue or revision

It is useful if all documents and drawings associated with a change are listed within a single document (typically incorporated within the 'change document'), so that it may become the definition reference for the change – similar in concept to a Master Data List.

- 2.3 The change should be given a title that concisely describes the scope and purpose of the change. Generic titles such as 'Avionics Upgrade' should be avoided and more specific titles such as 'Installation of Bloggs ELS123 Transponder to Comply with Elementary Mode S' should be used. This title should be reflected on the application form.
- 2.4 The change document should include a brief, but complete, introductory description of the proposed change, including:
- Details of what is being installed and where,
 - Details of what is being removed,
 - Details of interfaces to existing aircraft systems/equipment, and
 - Details regarding the purpose of the change (for example 'to comply with Elementary Mode S requirements' or 'to qualify the navigation equipment for BRNAV operation i.a.w. AMC 20-4').
- 2.5 The aircraft to which the change is applicable must be fully detailed. This includes the aircraft type, any applicable model(s) of that type and the respective Type Certificate Data Sheet (or equivalent – noting that for some non-EASA aircraft, this may be a reference to the CAA Airworthiness Approval Note, or AAN). For example:

Aircraft Type: Piper PA-24
Applicable Models: PA-24-250, PA-24-260 and PA-24-400
TCDS: FAA TCDS 1A15 Revision 34

- 2.5.1 Where the aircraft type has an EASA TCDS, this should be used as the primary reference. EASA provides lists of EASA aircraft types, models and their associated type certification references on the Product Certification page of the EASA website:

<http://easa.europa.eu/certification/product-certification.php>

The type certification references for non-EASA aircraft are detailed within Section 1 of CAA document CAP747 (Mandatory Requirements for Airworthiness).

- 2.5.2 It is usually permissible for a minor change to be applicable to more than one aircraft model if the applicable models are covered by the same aircraft type TCDS and it can be shown that the change is compatible with that model – for example, where other models of the type have a similar instrument panel.
- 2.5.3 In some limited circumstances it may be permissible to extend the applicability beyond that of a single TCDS (perhaps to include more than one aircraft type of a single manufacturer) but only where those aircraft are similar with respect to the effect of the change (use a common instrument panel and have similar power supply arrangements and aircraft system interfaces, for example) and a common certification basis for the change can be applied.

- 2.5.4 In some very limited circumstances applicability may be extended further, for example where the change details the installation of one equipment type as a direct replacement for another (i.e. a 'box swap') with very little or no associated mechanical or electrical modification (typically limited to a change of the mating electrical connector on the aircraft) to the aircraft or change in the use of the equipment.

EASA policy on the extension of applicability for GA aircraft is detailed on the General Aviation FAQ page of the EASA website:

<http://easa.europa.eu/certification/faq/general-aviation-FAQ.php>

Note: In any case, an extension of applicability beyond a single aircraft type must be justified at the time of change approval application and the substantiation recorded on the change document.

- 2.5.5 Where the change is only applicable to a single aircraft, or finite group of aircraft within a model range, then the serial number(s) of the aircraft must be identified. As modified aircraft may change registries, it is not sufficient to refer to the aircraft by registration number(s) alone.
- 2.5.6 If there is any other limitation to the applicability, for example 'VFR Aircraft Only', then this must also be stated.

3 Change Detail – Advisory Information and Accomplishment Instructions

- 3.1 The change document must fully describe the means by which the change can be consistently embodied and provide any necessary supplementary advisory information. The change document text may be supplemented by drawings or references to aircraft or equipment manufacturer's documentation as necessary. The accomplishment instructions will include, but not be limited to, details of:

- Verification that the existing aircraft configuration is compatible with the proposed design changes before embodiment begins
- Access or preparation work
- Special precautions
- Required tooling, test equipment or aircraft/equipment manufacturer's data
- Parts to be manufactured
- Parts or equipment to be fitted (by part number) including location and the associated methods of attachment/installation
- Required materials
- Modification to existing aircraft parts or structure
- Required placards
- Any necessary wiring. The wiring diagrams will include:
 - Wire type and size
 - Wire, connector, earth point, switch etc identification
 - Screening and shielding information
 - Circuit breaker types and rating
 - Wire routing/installation information (i.e. standard practices)

- Any required testing, including that necessary to:
 - confirm compliance with airworthiness or operational requirements (typically only done on first of type installations, but may be necessary on subsequent installations for certain elements such as electrical load which will have to consider individual aircraft configurations)
 - confirm correct installation (e.g. wiring continuity/insulation/bonding or pressure/leak testing)
 - confirm proper function of installed equipment and any interfacing systems
 - ensure that disturbed systems have been properly restored and are not adversely affected by the change (including EMC interference checks)

3.1.1 Flight-testing it is not normally necessary for the certification of a minor change. If it does become necessary, the change may be re-classified Major, requiring a different application process.

3.2 The change document should provide full details of the effect the change has on the aircraft's weight and balance and the electrical load – showing that the neither the existing CoG range or the generator/busbar ratings are exceeded. See paragraphs 5.2 and 6.4 for further detail of compliance with CAA Generic Requirements for electrical load.

3.3 If the change introduces anything that is subject to an Airworthiness Directive (AD), then that effect should be highlighted. For example, if a transponder installation is interfaced with an altitude encoder providing Gillham-coded data then the change should inform the installer/operator that the modified aircraft would be subject to EASA AD 2006-0265.

3.4 If the change includes optional content it should be 'parted' such that the embodiment of certain parts of the change can be properly and separately recorded.

3.4.1 An example of acceptable parting would be to provide options for a Nav/Com to interface with different or optional indicators, displays or audio systems – where the Nav/Com provides the common element to the change.

3.4.2 If the change introduces separate and un-related features - such as the introduction of a transponder, an ELT and a DME - then the minor change should be composed as a single (un-parted) minor change or be split into separate minor changes covered by separate approval applications. It should be noted that if the cumulative effect of the new features is 'appreciable' (see 21A.91) then the change might be re-classified as Major.

4 Instructions for Continued Airworthiness

4.1 The change data pack must provide information on how the continued airworthiness of the changed aircraft is assured. This data is commonly referred to as the Instructions for Continued Airworthiness (ICA).

4.2 The ICA will include the following elements:

- Instructions on the removal and installation of equipment which may fail or otherwise need replacement during service (including subsequent testing – which may not necessarily be the same test as that required during embodiment of the change)
- Any instructions necessary for access
- Instructions on and frequency of any required scheduled maintenance
- Instructions on and parts required for any servicing (charging, lubrication etc)
- Details of any tooling or test equipment
- Details of any supplementary data such as equipment or aircraft manufacturers instruction manuals
- Details of any Airworthiness Limitations

4.3 This data should comply with the relevant airworthiness requirements (e.g. CS xx.1529 and the associated appendix). The instructions should be provided in the form of a manual or a supplement to an existing manual, be arranged in a practical manner and address each topic of CS xx.1529 (as applicable). An example of an ICA document is given in Appendix 3.

Note: The use of 'xx' above (and further within this guidance) refers to the appropriate Certification Specification – i.e. CS 23 for small aeroplanes, CS 25 for large aeroplane, CS 27 for small rotorcraft, CS 29 for large rotorcraft etc.

Note: Appendix 3 is illustrative only. It does not constitute a template as the specific layout and information will vary from project to project.

4.4 It is not sufficient to only refer to LAMP (or other specific existing aircraft maintenance programme) for the scheduled maintenance aspects of continued airworthiness. The scheduled maintenance requirements must always be explicitly noted. Where such maintenance is covered by an existing maintenance programme entry, a note may be included in the ICA stating which particular task(s) of that programme cover the scheduled maintenance requirements introduced by the change. An example is illustrated in Appendix 3.

Note: Minor changes approved by EASA are valid throughout the EU. References to UK specific (non design) publications should therefore be avoided.

5 Operational Instructions (including Flight Manual Supplements)

5.1 The change may introduce equipment or affect its usage which may require the provision of a supplement to the Aircraft/Rotorcraft Flight Manual or Pilots Operating Handbook to convey to the pilot/crew any necessary operating instructions, procedures or limitations. The supplements should be presented in a format similar to the parent A/RFM or POH.

5.2 Appendices to this guidance provide illustrations of common supplements:

- Appendix 4 GR No 4
- Appendix 5 GR No 6
- Appendix 6 Compliance with BRNAV and NPA

Note: These appendices are illustrative only. They do not constitute templates as the specific information and layouts will vary from project to project.

6 Recording Compliance with Applicable Airworthiness and/or Operational Requirements

- 6.1 Applicants are required to demonstrate how the design change complies with all of the applicable airworthiness (certification basis) and/or operational requirements plus any associated means of compliance material.
- 6.1.1 The certification basis applied is usually that specified in the Type Certificate Data Sheet (TCDS) for the aircraft type. However, the applicant may elect to comply with later requirements for that particular class of aircraft (eg EASA CS 23) for the affected areas. The amendment status of the Certification Specifications used should be stated. See paragraph 2.5 regarding the identification of the applicable TCDS.
- 6.2 The applicable airworthiness requirements for the affected areas (i.e. those impacted by the design change) should be identified from the certification basis and the corresponding details of how compliance has been demonstrated should be recorded. These statements of compliance should directly address the respective requirements. This can be recorded in a simple matrix. Appendix 1 illustrates how this can be presented using CS-23 Amendment 2 as an example.

Note: Appendix 1 is illustrative only. It is not the only means by which compliance can be shown and nor does it constitute a template as the applicable requirements and compliance statements will clearly vary from project to project. The list of applicable airworthiness requirements in the appendix is not complete and does not, for example, identify those relating to structural integrity. Similarly, the compliance statements in the appendix have been simplified.

For a design change introducing equipment, the airworthiness requirements xx.1301, xx.1309 and xx.1529 (or equivalents of the applicable Certification Specification) are always applicable. In showing compliance with xx.1301 with regard to equipment, the respective equipment approval (ETSO or equivalent) and the manufacturer's DDP (Declaration of Design and Performance) should be quoted. With regard to xx.1309 compliance, the effect of the loss of function, malfunction of the system (e.g. display of misleading information) and the effects on interfacing systems should be properly considered and recorded.

For those changes that have a primary avionics/electrical content but also a secondary structural content (e.g. drilling holes in frames or fuselage, adding equipment racks etc) then compliance with all relevant structural requirements must also be demonstrated.

- 6.3 Compliance with the applicable published guidance material (e.g. Technical Guidance Leaflet) or advisory material (e.g. FAA Advisory Circular or EASA AMC-20 Acceptable Means of Compliance) material should also be recorded. Appendix 2 illustrates how this could be presented using the example of compliance with TGL13 for Elementary Surveillance.

Note: Appendix 2 is illustrative only. It is not the only means by which compliance can be shown and nor does it constitute a template as the compliance statements will clearly vary from project to project. The data contained in the appendix is not necessarily complete.

- 6.4 CAA Generic Requirements (GR) are applicable to UK registered aircraft. They are detailed within CAA document CAP 747. Typically for design changes on GA aircraft introducing equipment, an electrical load analysis may need to be prepared to show compliance with GR No 4 (Electrical Generation Systems- Aircraft not Exceeding 5700kg Maximum Authorised Weight) or GR No 6 (Electrical Generation Systems - Bus-bar Low Voltage Warning Single-Engined Aircraft) as applicable. The change document must record how continued compliance with GR No 4 or GR No 6 is achieved. A new Flight Manual Supplement may be required – see paragraph 5.2.

Further guidance on compliance with GR No 4 and GR No 6 is given in CAP 562 (Civil Aircraft Airworthiness Information and Procedures) Leaflets 24-30 and 24-50 respectively.