

Revision 3

Modifications, Repairs, and the Form CAA 337

11 November 2013

General

Civil Aviation Authority advisory circulars contain information about standards, practices, and procedures that the Director has found to be an **Acceptable Means of Compliance** with the associated rule.

An acceptable means of compliance is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate advisory circular.

An advisory circular may also include **guidance material** to facilitate compliance with the rule requirements. Guidance material must not be regarded as an acceptable means of compliance.

Purpose

This advisory circular provides methods acceptable to the Director for showing compliance with Part 43 and Part 21 when applying for approval of and embodying modifications and repairs.

This material is intended for those persons wishing to have technical data approved and to perform modifications and repairs.

Related Rules

This advisory circular relates specifically to Part 43 Subpart E, and Part 21 Subparts C, M, and N.

Change Notice

Revision 3 re-writes this advisory circular to account for the change to Form 337 and makes the AC clearer and more concise.

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Abbreviations & Definitions

For the purpose of this Advisory Circular the following definitions apply:

IA means the holder of a Certificate of Inspection Authorisation:

The following terms are referred to in this Advisory Circular and are defined in CAA rule Part 1:
Definitions and Abbreviations.

Design change

Maintenance

Major modification

Major repair

Technical data

Introduction

Anyone who wants to modify or change an aircraft, or any type certificated product, is confronted with rules, procedures, and terminology that may be confusing. Questions are raised such as:

- What is an aircraft modification?
- What is the difference between approved data and acceptable data?
- How do you determine if a modification is major?
- Who is responsible for determining if a modification is major?
- What kind of modification requires a form CAA 337?
- Who can complete a form CAA 337?
- What is the correct procedure for obtaining the various modification approvals?
- What are the differences between one-aircraft-only approval and an approval for duplication?

The design change process requires judgement and a good understanding of the applicable Civil Aviation Rules. The licensed aircraft maintenance engineer is required to use experience, training, and familiarity with the Rules to complete the various activities involved. The CAA, holders of inspection authorisations and Part 146 certificated design organisations are others who may play a part in the process and be called upon for assistance.

This advisory circular provides guidance on—

- the technical data to use to embody a design change, in Section B
- the process of applying for approval of a design change by the approval of the associated technical data, in Section B
- determining if a modification is major or not, in Section C
- completing the form CAA 337 in Section D.

Section A – General

General

Part 43 provides for general maintenance of an aircraft and includes the means to embody a design change to an aircraft. However, it is important to differentiate between a design change to an aircraft and maintenance which ensures the continued airworthiness of an aircraft.

Rule Part 1 defines a design change as a change to the type design. In other words, has the aircraft or component changed from how it left the factory or from how the original manufacturer designed it? For example, the addition of a skin doubler repair patch or the replacement of a GPS unit with a newer model are design changes. Maintenance is ensuring the aircraft or component stays airworthy as designed. For example, replacing a faulty piece of equipment with an identical, airworthy component or carrying out routine inspections, are maintenance activities.

The first question to ask is whether or not the work being performed is a design change or simply maintenance?

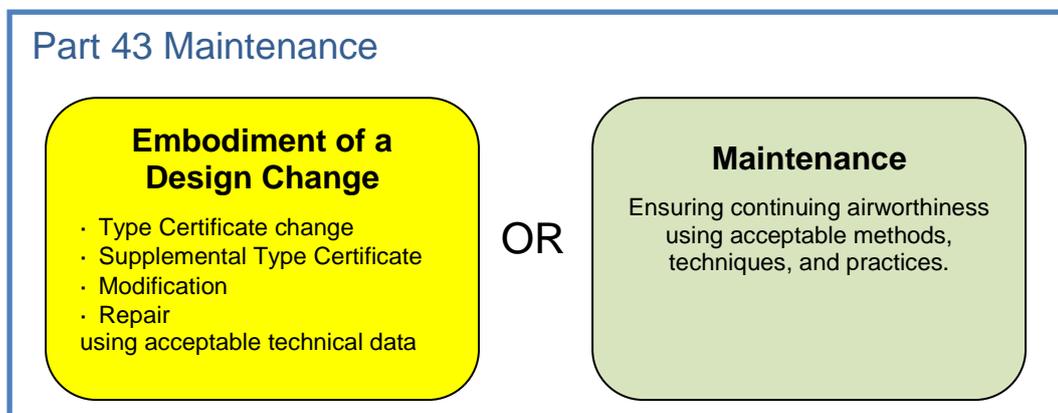


Figure 1: Initial decision process for a design change

As mentioned above, Part 43 provides for the practical application of design changes in the aircraft maintenance environment. It is Part 21 that provides the certification basis and the procedures that enable design changes to be approved.

Aircraft and other type certificated products can be changed in a number of ways:

- **Changes to a type certificate.** These are design changes that are proposed by the type certificate holder. Part 21 Subpart D provides the process and criteria for changes to a type certificate. This type of design change is typically issued as a Service Bulletin.
- **Supplemental type certificates (STC).** These are design changes that are (usually but not always) developed by some-one other than the type certificate holder. Supplemental type certificates can be proposed by anyone and would typically include those proposals that form a kit to be sold for incorporation by third parties into a type certificated product. Part 21 Subpart E provides the requirements for approval of an STC, including the responsibilities of an STC holder.
- **Repairs.** These are a design change required to rectify a discrepancy, usually on an individual aircraft, and often structural. A repair, while resulting in a change to the type design, is intended to restore the product to the same operational capability as before. For example by the addition of a skin doubler and fasteners to restore strength to a cracked panel, or by a bush in a worn bearing component. Part 21 Subpart M states that repairs are

to be treated as design changes and approved in accordance with Part 21 Subparts C, D and E.

- **Modifications.** These are design changes that are not changes to type certificates nor supplemental type certificates. (Although the term modification is often used generally by industry to describe any design change.) Like repairs, modifications are normally individual changes, although under specific conditions modifications can be duplicated on aircraft of identical make, model and modified configuration. Modifications are approved by approving the technical data in accordance with Part 21 Subpart N.

This advisory circular covers the approval process for modifications and repairs only. For STCs, refer to advisory circular AC 21-8. For changes to a type certificate, consult the CAA Aircraft Certification Unit.

Modification and Repair Process

There are two important aspects to carrying out a design change on an aircraft. Firstly the technical data used to manufacture and install the change must be acceptable and secondly, the effect of the modification must be classified (i.e. major or not). The simplified process is shown in Figure 2.

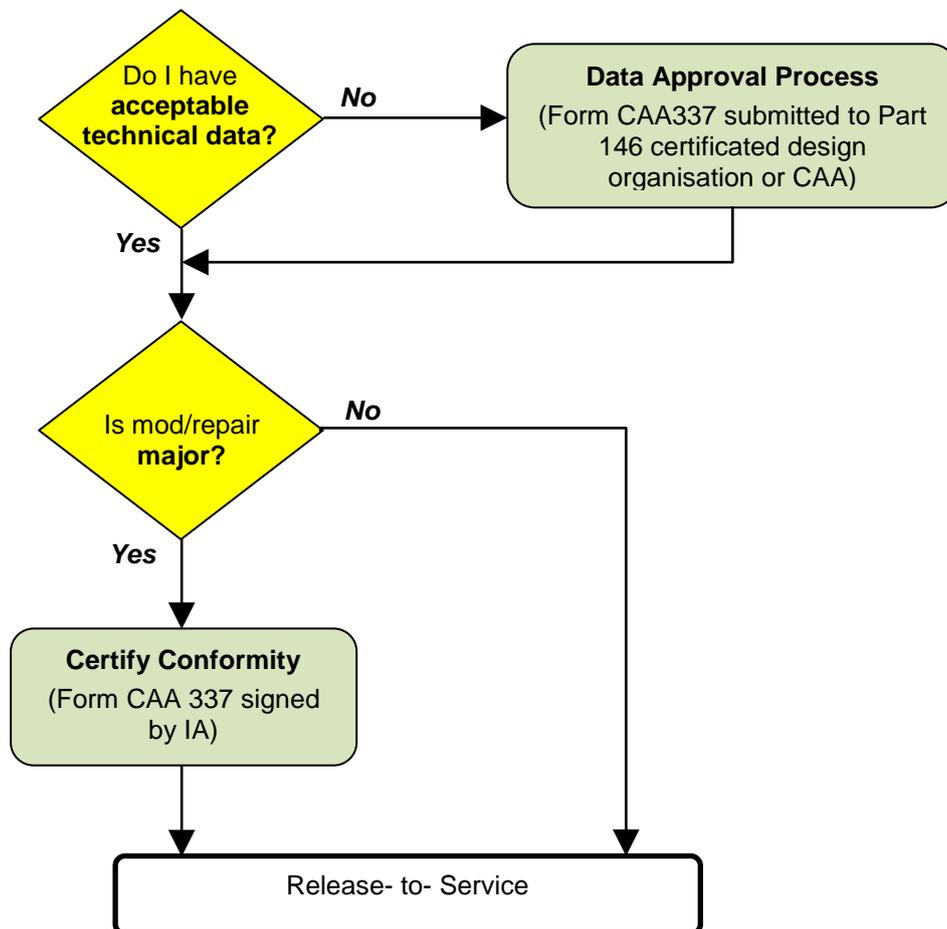


Figure 2. Simplified Modification or Repair Process

Acceptable Technical Data?

Rule 21.503 requires that technical data be used only if it is approved, or is acceptable to the Director.

If the modification or repair is not defined by approved or acceptable technical data then, referring to Figure 2, to proceed with the embodiment of the modification, approval of the data is first required. The approval of technical data in accordance with Part 21 Subpart N may be done by the Director or an aircraft Part 146 certificated design organisation who employs a senior person holding a delegation from the Director to approve modifications and repairs.

Acceptable technical data and the technical data approval process are discussed further in Section B.

Is the modification or repair major?

The embodiment of the design change must then be assessed for the possible effect of a failure. This is done using the criteria given in the definition of a major modification or repair.

The assessment is made using the experience and judgement of the licenced aircraft maintenance engineer involved. Consideration should be given to the type of modification, the difficulty of application, the likelihood of an error being introduced, and other safety implications.

Referring to Figure 2, when the modification is determined to be major, an IA or a person authorised by a Part 145 certificated maintenance organisation, will have to be consulted and used to certify conformity of the major modification to the acceptable technical data.

Section C provides further guidance on the definition of a major modification or repair.

Form 337: Approval of Data / Conformity Certificate

Referring to Figure 2, there are two separate purposes for which the form CAA 337 is required. Firstly, Part 21 specifies the use of the form CAA 337 for the approval of technical data. Secondly, Part 43 Subpart E specifies the use of the form CAA 337 to record the check of a major modification for conformity with the acceptable technical data.

Once the conformity inspection and the form CAA 337 have been completed, the CAA 337 form must be included in the aircraft maintenance records. The form CAA 337 provides sufficient detail to maintenance persons and the IA when assessing the continuing airworthiness of the airframe, engines, propellers, rotors, and other equipment.

This advisory circular examines the form CAA 337 in particular but the requirements should be read across to those Part 145 certificated maintenance or Part 146 certificated design organisations using other forms, for conformity or approval respectively.

Section D provides detailed instructions for filling out the form CAA 337.

Section B – Technical Data

General

For any design change, there must be technical data which completely defines the design change. This enables it to be manufactured and installed on an aircraft, and to be used for conformity for any design change classified as a major modification or major repair. Rule 21.503(a) requires that technical data shall only be used if it is approved or acceptable to the Director.

Acceptable Technical data

Part 21 Appendix D lists technical data which the Director has found to be acceptable for use in New Zealand. This list basically includes:

- technical data that has been approved by the Director
- technical data that other people have approved and that the Director has found acceptable to use
- technical data that the Director has reviewed and found acceptable to use

To have something *approved* and to have something *accepted* both require the presentation of that data to the Director. The obvious difference is that the Civil Aviation Rules has defined **approved** to mean approved in writing by the Director unless used with reference to another person.

Part 21 Appendix D places conditions on the use of acceptable data that include—

- the data must be appropriate to the product, component, or appliance, and directly applicable to the work being carried out
- for a foreign supplemental type certificate or supplemental type approval the data must—
 - not introduce a complete new flight manual (because the flight manual is referenced on the airworthiness certificate)
 - not re-designate the aircraft type (because the Director would need to amend the Aircraft Register and the aircraft documents would need to be re-issued)
 - reference the particular foreign type certificate accepted by the Director. (This is to ensure the same certification basis was used for approval of the STC. This also means having the same certification category. eg an STC approved in the restricted category would not be acceptable technical data for an aircraft which had been type accepted in the standard category.)

NOTE: STCs which do not meet the above conditions, or which are from a country not listed in Appendix D, may still be eligible for acceptance under rule 21.503(a). An application should be made to the Director for review and acceptance of the data.

- The installer has the written permission of the supplemental type certificate or approval holder. (So that the holder can contact the installer on matters of continuing airworthiness)
- The data provided by the manufacturer of a component must not conflict with data provided by the manufacturer of the product or assembly of which the component is to form a part

Acceptable technical data is not necessarily in a form that is able to be used immediately. For example, AC43-12 states that the use of non-aeronautical lead acid batteries is acceptable. This does not say that the installation of non-aeronautical lead acid batteries is approved in all aircraft. For the particular installation the technical data describing the actual installation would require approval as a design change.

Another example of inappropriate use of acceptable technical data is the installation of electrical equipment where that equipment has the possibility of overloading the aircraft electrical system. For all design changes which result in a change in electrical load, an Electrical Load Analysis (ELA) should be conducted to verify the aircraft's electrical system can cope. It may only take an additional 1amp load to invalidate an aircraft's emergency battery time. This is often forgotten but is just as important as checking for weight and balance effects.

Subject to the conditions on the use of technical data, the following are acceptable technical data—

- type certificate data sheets
- foreign type certificate data sheets used for the issue of a type acceptance certificate
- type design data for type certificated products e.g. approved drawings issued by the type certificate holder
- design change data that support a design change approved by the means specified in rule 21.73 (i.e. modifications approved under Part 21, Subpart N, STCs approved under Part 21 Subpart E, changes to a type certificate approved under Part 21 Subpart B, or data included in an airworthiness directive issued under Part 39.)
- data approved by the Director under rule 21.505 i.e. approved by a form CAA 337
- data provided by the Director in an Advisory Circular
- airworthiness directives that give specific instructions for modification or repair
- supplemental type certificates issued by the—
 - United States of America Federal Aviation Administration
 - Australian Civil Aviation Safety Authority
 - Transport Canada
- supplemental type approvals issued by Transport Canada
- data giving specific instructions for modification or repair contained in a maintenance manual, repair manual, overhaul manual, continuing airworthiness document, service bulletin, or an equivalent provided by the manufacturer of the product for which it is to be used and which is listed in the type certificate or by reference in the type acceptance certificate i.e. data that has been approved for use by the type certificate holder. Note: This includes data provided by the manufacturer of a component of a product where that component is a part of the approved type design of the product.
- AC43.13-1B, issued by the United States of America Federal Aviation Administration
- data included in, and specific to the category of, an airworthiness certificate
- data that has been accepted by the Director under rule 21.503(a) by issue of a letter of acceptance e.g. EASA supplemental type certificates which have been individually accepted by the Director.
- data that has been accepted by the Director under rule 21.503(a) by issue of notice given in a type acceptance report e.g. acceptance of EASA & FAA STCs for the Bell 429 series when the type acceptance is based on a Transport Canada Type Certificate. A similar notice is listed in the AS350 type acceptance report.

Notes:

The list above contains data additional to that included in Part 21 Appendix D, plus some further explanatory material and examples.

As a general rule, the test as to whether any technical data issued by a manufacturer is covered by this list is whether it has been approved. For example a signed and approved drawing would be considered part of the approved type design, as would a formal modification bulletin. However a letter from their sales support department saying it is a good idea, would not. Neither would a letter from their design office stating that the office had no objection to the technical change.

Approval of Technical Data

Modification or repair data may be developed by any person. However, as the data must still be reviewed and approved by either the Director or a Part 146 certificated design organisation, the developer should consult with the approving organisation at an early stage to ensure the data will be suitable for approval and use. For other than very basic modifications or repairs, it is recommended that a Part 146 certificated design organisation should be contracted to develop, show compliance and approve the technical data based upon the customer's requirements.

Note: The Director will only accept applications to approve technical data for minor modifications or repairs which do not require any flight testing or compliance inspections, and for which the documentation is complete. For all applications, a minimum application period of 60 days will apply prior to the CAA reviewing the application. Alternatively, the applicant can seek a Part 146 certificated design organisation for the review and approval of the technical data.

Development of data

As the modification is developed the assembled technical data forms the modification or repair package. This package includes descriptive data, compliance data, operating and maintenance data and any other data needed to support the embodiment of the modification.

Descriptive data, such as manufacturing drawings and installation instructions, is required to be sufficient for the manufacture of parts and the embodiment of the modification. If the modification/repair is limited to a single installation the descriptive data may be less formal but must still completely define the design change (for example by marked-up photographs).

Compliance data, such as engineering reports, load analyses and testing results, refers to data that shows the design change is compliant with the applicable airworthiness design standards. This data is generally prepared by the Part 146 certificated design organisation.

Operating data, such as flight manual supplements, weight and balance changes, and Instructions for continued airworthiness, is required to ensure the safe operation of the product with the design change embodied.

Data approval

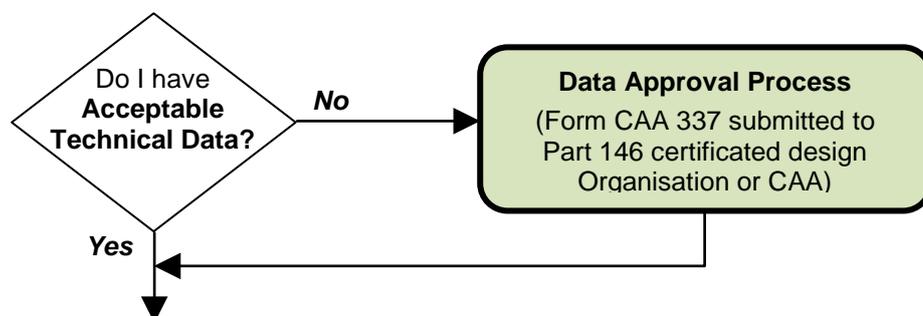


Figure 3. Data approval

Rule 21.81 states that the approval of a modification is by the approval of the technical data. This reinforces the fact that the technical data itself is approved, not the embodiment of that

modification/repair. The embodiment of the modification/repair relies on acceptable techniques, methods, and practices in accordance with Part 43.

In most cases approvals will be for a single installation in a product. However, an approval may be granted which allows duplication of the modification/repair on other identical aircraft makes and models providing it is not major and the data presented with the form CAA 337 is in sufficient detail to ensure accurate and repeatable installation.

For the approval of a major design change or for acceptance by a foreign regulatory authority, a Supplemental Type Certificate (STC) would generally be necessary. Part 21 Subpart E and AC21-8 cover STCs in more detail.

Approval will be based upon the modification package meeting the applicable airworthiness requirements. Part 21 requires compliance with these standards, and other airworthiness requirements, to be indicated by a statement of compliance issued by a Part 146 certificated design organisation or the Director. The approving person will consider all aspects of the proposal's design, its application, and its possible effects. A person approving a design may indicate on the form CAA 337, in their opinion, whether the modification or repair is classified as a major modification, or repair, or not.

Proprietary information

To what extent is the technical data available after it is approved?

The actual approval certificate of a modification is publicly available information because it is an aviation document defined by the Civil Aviation Act 1990.

Persons submitting technical data on the form CAA 337 should ensure that information they consider to be commercially sensitive is only listed on and attached to, rather than entered on, the form CAA 337.

For any modification or repair which has been approved for multiple installations, the form CAA 337 standard wording requires the installer to have the permission of the owner of the design approval.

Figure 4 shows the relationship between proprietary information and public information.

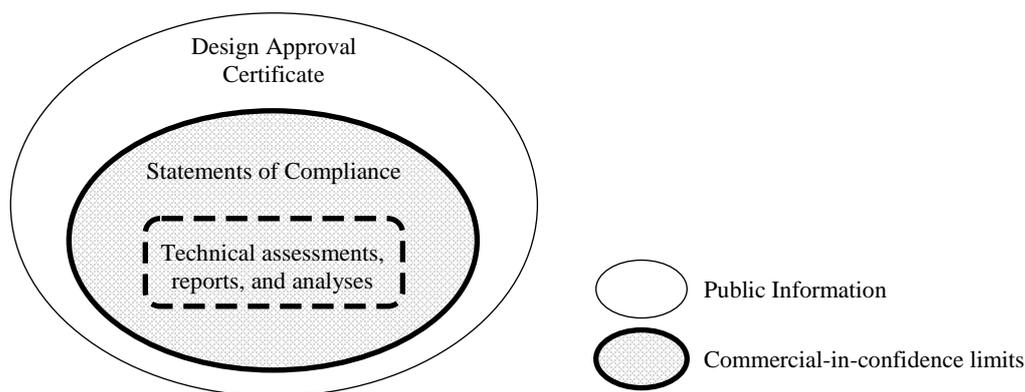


Figure 4. Proprietary information

In any application to the Director for modification approval, the technical data is treated as proprietary information and only the approval certificate itself could be made available.

Section C – Major Modifications/Repairs

Once acceptable technical data is available, one of the steps in the embodiment of that modification/repair is to decide if it is classed as major. This involves an assessment of its likelihood to affect the safety of the modified aircraft.

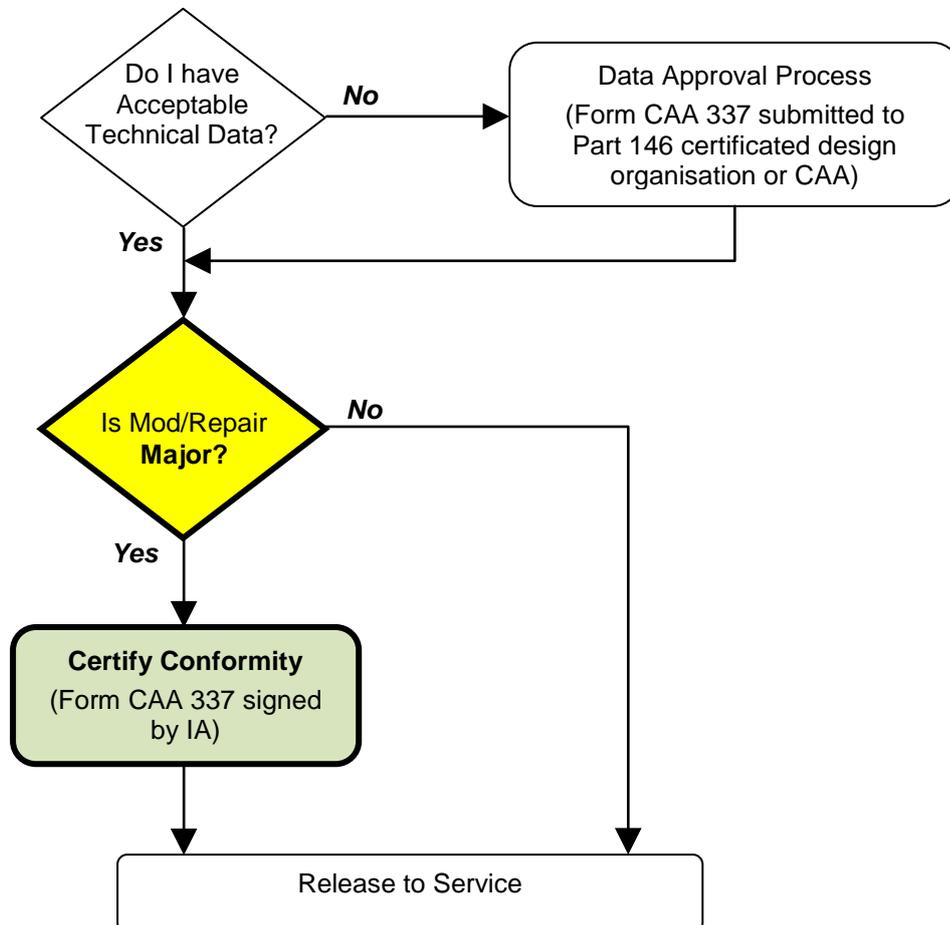


Figure 5. Major modification/repair assessment

So how is the determination of whether a modification/repair is major or not made?

In respect of the modification, the embodiment should be assessed for its potential to cause —

- structural collapse
- loss of control
- failure of motive power
- unintentional operation of, or inability to operate, any systems or equipment essential to the safety or operational function of the aircraft
- incapacitating injury to any occupant
- unacceptable unserviceability or maintainability

In cases where the modification or repair is not classified as major, a conformity certification is not required and the embodiment of the modification/repair and release- to- service is recorded in the

maintenance records. If the technical data used was approved on a form CAA 337, it should be included in the maintenance records to indicate that the previously unapproved data has been approved.

The person performing the modification is primarily responsible for making the determination of whether the modification or repair is major or not. If the modification or repair is considered to be major, or the person embodying the modification is in anyway unsure, an IA should be consulted and will be required to certify conformity of the modification/repair to the applicable technical data.

This assessment relies upon the experience, training, and familiarity of the licensed aircraft maintenance engineer with the tasks involved to determine if the modification or repair is major or not.

Appendix A to this advisory circular provides examples of modifications that may be considered to be major, and is useful for judging whether to consult an IA.

Section D – The Form CAA 337; Instructions for Use

General

The form CAA 337 serves to track the modification or repair process from conception to embodiment. The form CAA 337 can record both technical data approval and conformity certification. The form should be raised when no acceptable technical data exists, or when the use of that data constitutes a Major modification/repair.

The form CAA 337 provides owners and operators with a record indicating details and approval of major modifications and major repairs and provides the CAA with a copy of the details and approval for the aircraft records.

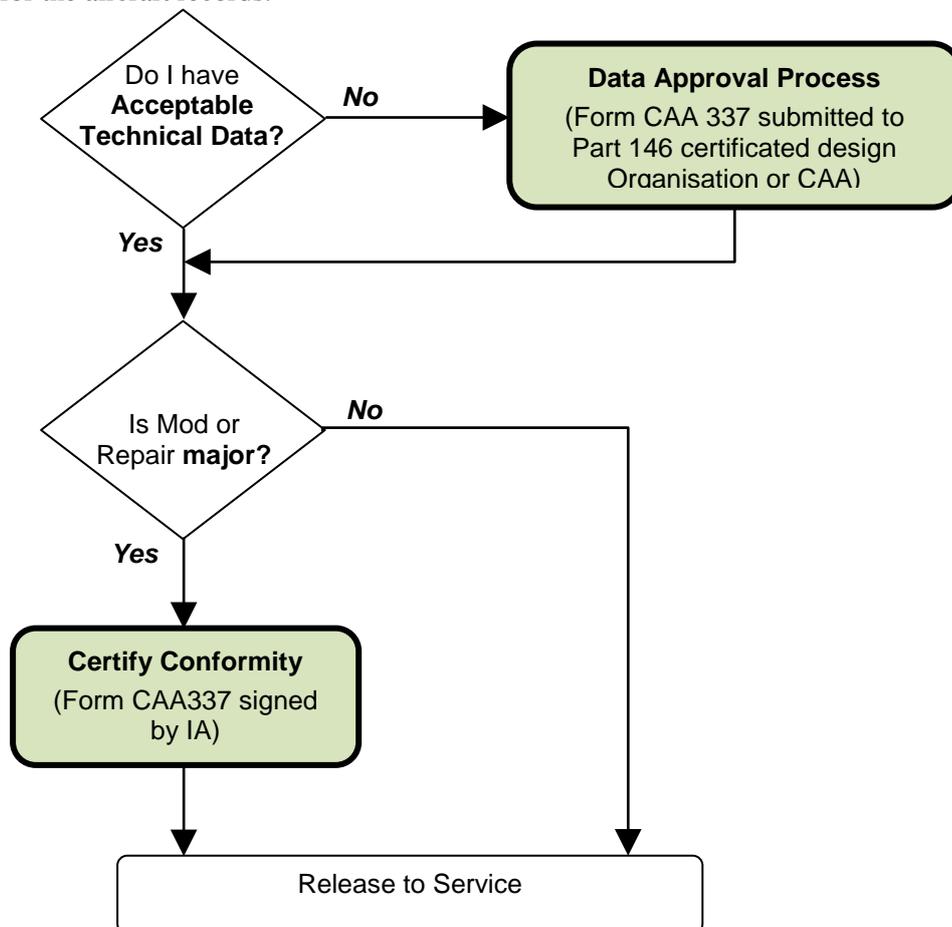


Figure 6. Form CAA 337 Usage

Referring to Figure 6, the two uses for the form CAA 337 are—

- **Technical data approval.** Rule 21.81 requires modifications to be approved by the approval of the technical data in accordance with rule 21.505 which specifies the use of the form CAA 337.
- **Conformity certification.** Part 43 Subpart E requires that major modifications and major repairs be certified for conformity by an IA or a person authorised by a Part 145

certificated maintenance organisation. The IA should determine the airworthiness of the product by inspecting major repairs or major modifications for conformity to the applicable technical data and compatibility with previous repairs or modifications made to the aircraft. As part of this task, the IA should ensure that the applicable technical data is approved or acceptable.

Each term referred to above describes a different aspect of the modification process. There are, therefore, four possible combinations for modifications or repairs —

Technical Data	Effect	Form 337 Purpose
Acceptable	Major	Conformity certification
Acceptable	Not major	Form CAA 337 not required
Not acceptable	Major	Technical data approval & conformity certification
Not acceptable	Not major	Technical data approval

Part 146 certificated design organisations and Part 145 certificated maintenance organisations may use documents other than the form CAA 337.

Process

The person wishing to perform a modification or repair should determine if acceptable data is available prior to commencement of the work. If there is no acceptable data, or the acceptable data is not applicable to the work being carried out, a form CAA 337 will need to be raised to approve the technical data. The descriptive, compliance, and other data may be entered on, or preferably contained in other documents which are referenced on the form CAA 337. The technical data and the form CAA 337 approval certificate comprise the modification package or repair scheme.

The data must be approved by the Director or a senior person employed by a Part 146 certificated design organisation delegated the power to approve design changes. An IA cannot approve data. The approving person will assess the content of the modification package and, depending on the requirements of the originator and the detail of the package, approve the technical data for embodiment on one or more aircraft. The approving person may also suggest whether the modification or repair constitutes a major modification or major repair. Section B of this advisory circular provides an overview of the approval of technical data.

Once the technical data has been approved, the person who is authorising the modification/repair for release to service should determine whether the work is major or not. Section C of this advisory circular provides more guidance on this determination.

The work may be performed by a person in accordance with Part 43 but if the modification or repair is determined to be major, an IA is required to subsequently certify conformity on the form CAA 337.

The inspection of a major modification or major repair by an IA consists of the following basic operations—

- determining that the modification or repair has acceptable data
- inspecting the configuration of the modification or repair for conformity to the acceptable technical data and the maintenance performance standards of Part 43
- ensuring that the aircraft still complies with the applicable airworthiness requirements and the modification or repair does not conflict with other installations

- ensuring any flight manual supplement is added to the aircraft flight manual
- determining that the proper aircraft maintenance record entries have been made and that the weight and balance data, electrical load analysis and equipment list has been revised, when appropriate. A statement on the form CAA 337 should reflect any such revisions
- certifying conformity using the form CAA 337 and returning it to the person who performed the work.

Dual Use of the Form CAA 337

There may be a case where the form CAA 337 is used for both the approval of the technical data describing a design change and then for conformity of the installation to the same technical data. In this case one form may be used for both purposes and all blocks will be completed. It is important that the technical data describing the design change is approved first to ensure it becomes acceptable technical data.

Alternatively, the conformity can be done on a new form CAA 337 which references the original design change. Reference and attaches a copy of the form CAA 337 that was used for data approval.

Form 337 Fields

The instructions on the following pages apply to the corresponding blocks of the form CAA 337.

Following form completion

The Part 146 certificated design organisation is responsible for ensuring a copy of the form CAA 337 is –

- forwarded to the CAA within 28 days of the design change being approved

The conformity signee is responsible for ensuring a copy of the form CAA 337 is –

- forwarded to the CAA within 7 days of the work being inspected
- attached to the engine/propeller/component if not installed
- given to the aircraft owner to form part of the aircraft maintenance records after installation.

The person certifying release- to- service is responsible for making the proper entry in the aircraft maintenance records making reference to the form CAA 337.

Form 337 Block	Approval of Technical Data	Conformity of Major Modification or Major Repair
Design change Reference/Title	Enter a unique identifying number and short title specified by the Applicant.	Enter the design change reference of the technical data to be used for conformity.
1. Aircraft	<p>Complete details of the aircraft applicability.</p> <p><i>Note: This can be one or more aircraft of the same make and model. For modifications that can be duplicated, the serial no. & registration fields can be left blank.</i></p>	<p>Complete details of the Aircraft that the modification/repair is installed on.</p> <p>In the case of mods applicable to more than 1 aircraft, complete a separate form CAA 337 for each aircraft and clearly identify the applicable aircraft registration/serial no.</p> <p><i>Note: When a major modification/repair is made to a component not fitted to the aircraft, the serial number and registration sections of this block will be left blank.</i></p>
2. Applicant	<p>Complete details of the organisation or person applying for approval of the modification/repair data.</p> <p><i>Note: The Form CAA 337 does not constitute commercial or intellectual property ownership. This should be dealt with separately by the parties involved.</i></p>	<p>Complete details of the organisation or person performing release- to- service for the embodiment of the design change i.e. the installer of the modification/repair.</p>
3. Unit Identification	<p>Where an engine, propeller, or component is to be modified or repaired, enter the details of the item. The form CAA 337 remains with the component until such time as the component is installed on an aircraft.</p> <p><i>Note: The person installing the component should then give a copy of the form CAA 337 to the aircraft owner to be entered in the aircraft maintenance records and make an entry in the aircraft maintenance records making reference to the form CAA 337 and file a copy of the form CAA 337 with those records.</i></p>	
4. Type of Action	<p>Identify in the appropriate column if the component is modified or repaired.</p>	

Form 337 Block	Approval of Technical Data	Conformity of Major Modification or Major Repair
5. Technical Data classification	<p>Tick the check box that states the technical data <i>'requires approval and I apply for approval'</i> and fill out the name of the person who can be contacted for further details on the application (i.e. modification owner).</p>	<p>Check rule Part 21 Appendix D to make sure the modification or repair data to be used, as detailed in Section 8, is acceptable technical data and tick the check box that states the data <i>'is Acceptable Technical Data'</i>. If not, the data will require approval by a Part 146 certificated design organisation or the CAA prior to signing for conformity.</p> <p>Fill out the name of the person who can be contacted for further details on the conformity application.</p>
6. Application for approval of technical data	<p>The applicant must fill this section out with details of any substantiating data such as stress analyses, test reports, sketches, or photographs if available. Before the approval of any new technical data can be completed the data must be assessed for compliance with airworthiness design standards. The issue of a statement of compliance indicates successful completion of this assessment.</p> <p>If a Part 146 certificated design organisation is responsible for the compliance data, a reference to the compliance reports and the statement of compliance should be listed here.</p>	N/A – Do not complete.

Form 337 Block	Approval of Technical Data	Conformity of Major Modification or Major Repair
<p>7. Approval of Technical Data</p>	<p>Only the CAA or a Part 146 Design Delegation Holder (DDH) can fill out this section.</p> <p>The person approving the data will indicate in this block:</p> <ul style="list-style-type: none"> - whether the modification or repair is appropriate for one aircraft only. - can be applied to identical aircraft. <p><i>(Note: The original applicant for design approval must give written approval to the installer. This is required to ensure that a relationship is established between the design approval holder and installer. This relationship should include full disclosure of all required technical data and recording of installers for tracking of continued airworthiness.)</i></p> <ul style="list-style-type: none"> - the modification or repair is major or not. <p><i>(Note: This determination is not mandatory and only serves as advice to the installer on the need for a Conformity Inspection).</i></p> <p>The relevant checkboxes should be ticked and preferably lines should be put through the options that are not ticked.</p>	<p>Do not complete this section but if the form was also used for data approval, check to see whether, in the approver's opinion, the modification or repair is major or not. It is still the installer's responsibility to determine if the modification is major.</p>

Form 337 Block	Approval of Technical Data	Conformity of Major Modification or Major Repair
<p>8. Technical Data</p> <p>Technical Data List and Description of Changes</p>	<p>The applicant must enter a complete list of the data that requires approval, including the specific revision number/date.</p> <p>The Part 146 certificated design organisation or CAA may add to this list if further data is deemed necessary to describe the modification or repair.</p> <p>The description should state the location of the modification or repair, relative to the aircraft or component.</p>	<p>A clear, concise and legible statement describing the work carried out to embody the design change should be entered in this block.</p> <p>List the acceptable technical data to be used as the basis for certifying the modification/repair, including the revision number or date.</p> <p>For example, the reference simply to FAA AC43.13-1B is insufficient whereas the reference to a specific section and paragraph or figure number enables the clear identification of the work completed.</p> <p>The description should state the location of the modification or repair, relative to the aircraft or component.</p> <p>If the modification is a radio communication or navigation modification the appropriate approval level sought should be indicated on the form. AC43-10 details equipment approval levels.</p> <p>If the repair or modification is to be covered with other structure then a statement should be made certifying that a pre-cover inspection was carried out and the work completed is satisfactory.</p>
<p>Weight & Balance Data</p>	<p>Where the weight and balance of the aircraft are affected, state the changes here listing parts separately if located at different moment arms. If the change is negligible state the reason why.</p> <p>Weight and balance changes should be recorded in the aircraft records with a reference to this form CAA 337.</p>	
<p>Document Amendments</p>	<p>List any existing documents that require amendment as part of the modification or repair, including their revision number or date. Documents may include the Aircraft Flight Manual (AFM), Instructions for Continuing Airworthiness (ICA), Maintenance Manual, Electrical Load Analysis (ELA), Form 2129 (Radio Station Equipment), Form 2173 (Weight and Balance).</p>	

Form 337 Block	Approval of Technical Data	Conformity of Major Modification or Major Repair
9. Conditions of Approval	The Part 146 certificated design organisation or CAA may complete this section with any special conditions or restrictions applicable to the technical data (e.g. serial number limitations).	If conditions have been completed by a Part 146 certificated design organisation, ensure that the modification/repair complies with these conditions.
10. Conformity Statement	N/A – Do not complete.	<p>A conformity statement is only required if the modification or repair is major. The definition of major is discussed in this AC.</p> <p>Conformity can only be assessed against acceptable technical data (note: approved data is acceptable technical data).</p> <p>Only a person that meets the requirements of Part 43 Subpart E may certify for conformity.</p>

Appendix A – Design Changes Which May Be Considered Major

Modifications/repairs that may be considered to be major include, but are not limited to, the following—

- increases in gross weight or changes in the centre of gravity range
- changes that affect the weight and balance that have the potential to affect the handling characteristics or structural strength.
- installation or relocation of equipment and systems or changes which may adversely affect structural integrity, flight, or ground handling characteristics of the aircraft, including—
 - pressurisation systems
 - alternate static air or pressure systems
 - initial or prototype installation of an automatic pilot or automatic approach system
 - modification of automatic pilot or automatic approach system which changes servo forces, servo rates, or any flight control or performance characteristics
 - relocation or change of throttle levers, flap controls, and similar items
- changes to non-pressurised aircraft that require cutting of metal or plywood stressed skin more than 150 mm in any direction
- changes that require drilling or cutting into any pressurised skin
- changes that require the making of additional seams in or splicing of skin sheets
- changes to movable control surfaces which may adversely disturb the dynamic and static balance, alter the contour, or alter the weight distribution
- changes in the control surface travel, control system mechanical advantage, location of control system component parts, or direction of motion of controls
- changes in basic dimensions or external configuration of the aircraft, such as wing and tail plan-form or incidence angles, canopy, cowlings, contour or radii, or location of wing and tail fairings
- changes to landing gear, such as internal parts of shock struts, length, geometry, numbers, or brakes and brake systems
- changes to engine cowling and baffling which may adversely affect the flow of cooling air, and changes to manifolding
- changes to fuel, oil, hydraulic systems which may affect the fluid flow or system operation such as -
 - relocation of exterior fuel vents,
 - use of hydraulic components,
 - tube material, and fittings not previously approved,
 - use of new type fusible hydraulic plugs
 - changes in fuel dump valves,
 - new fuel cell sealants,

- new fuel or oil system components
- changes to the basic engine or propeller design controls or operating limitations
- changes to the engine exhaust system
- changes that affect carburettor air induction
- changes involving engine controls
- changes in a fixed fire extinguisher or detector system which may adversely affect the system effectiveness or reliability, including—
 - relocation of discharge nozzle or detector units
 - use of new or different detector components in new circuit arrangements
 - deletion of detector units or discharge nozzles
 - changing the extinguishing agent or decreasing the amount of extinguishing agent
- modifications to radio communications and navigational systems which may adversely affect reliability or airworthiness, such as—
 - large changes to electrical loads
 - changes involving multiple avionics equipment
 - changes to integrated avionics systems
- changes to aircraft structure or interior of aircraft which may adversely affect evacuation of occupants -
 - changes to personnel and cargo accommodations
 - changes to smoke/fire detection and suppression systems in the cabin or cargo areas
 - changes to items in the head strike paths of crew or passengers
 - changes affecting TSO seats or seatbelts
 - changes to the emergency oxygen system
 - changes to the pressurisation system
- use of synthetic covering materials
- replacement of fabric covering using other than the original types of materials, fasteners, or both
- ceramic coatings
- use of synthetic resin glues
- new stripping or plating coatings
- new welding, brazing, or other processing techniques.