

Airworthiness Procedure

Address: Civil Aviation Authority
Alameda Dr. Carlos D'Assumpção, 336-342
Centro Comercial Cheng Feng, 18º andar
Macau, CHINA

PHONE: (853) 2851 1213

FAX: (853) 2833 8089

AFTN: VMMCYAYI

澳門特別行政區
REGIÃO ADMINISTRATIVA ESPECIAL DE MACAU



民航局

AUTORIDADE DE AVIAÇÃO CIVIL
CIVIL AVIATION AUTHORITY

No. : AP5

Issue : 3

Date : 20 Feb 09

SUBJECT: *Modification and Repair of Aircraft*

1 General

- 1.1 Pursuant to Paragraph 7 of the Air Navigation Regulation of Macao (ANRM), this Chapter prescribes the requirements for approval of modifications and repairs to aircraft, components and equipment.
- 1.2 All modifications and repairs on Macao registered aircraft shall comply with airworthiness requirements acceptable to the AACM.
- 1.3 Definitions

Major modification – A type design change not listed in the aircraft, aircraft engine or propeller specifications that might appreciably affect the mass and balance limits, structural strength, performance, powerplant, operation flight characteristics or other qualities affecting airworthiness or environmental characteristics, or that will be embodied in the product using non-standard practices.

Minor modification – A modification other than a major modification.

Major repair – Any repair of an aeronautical product that might appreciably affect the structural strength, performance, powerplant, operation, flight characteristics or other qualities affecting airworthiness or environmental characteristics, or that will be embodied in the product using non-standard practices.

Minor repair – A repair other than a major repair.

2 Approval of Modifications

- 2.1 Modifications other than those made mandatory by the Authority and not traceable to any approved continuing airworthiness information disseminated by the manufacturer, such as Service Bulletin, shall be approved by the Authority.
- 2.2 The Authority will not approve any modification unless it is classified as minor or the substantiate modification design data and documents traceable to the approval of State of Design or any other States considered having equivalent safety standards under a Supplement Type Certificate (STC) or similar documents are provided. The AACM has the final decision on the modification classification.
- 2.3 Applications for approval by the Authority shall be made on Form AACM-AW-19, shown as Appendix No. 1, and submitted to the Authority together with the

modification design and supporting documents as early as possible. It is reminded that one application form is effective for one aircraft only.

- 2.4 The person responsible for the modification design must have sound knowledge of the design principles embodied in the aircraft type being modified and shall state any particular requirements to be observed when the modification is completed and before an aircraft, component or equipment is released for service. The following aspects shall be considered:
- (a) Whether tests or inspections during the progress or after the completion of the modification are necessary to ensure it complies with the specified requirements.
 - (b) The qualifications of persons who may be required to assess completed work and certify that it complies with the approved design.
 - (c) Whether significant changes in the weight and centre of gravity position of the aircraft will occur and if re-weighing or preparation of a new weight and balance report is necessary.
 - (d) Whether the flight or operating characteristics of an aircraft may have been affected by the work and the necessity to have the aircraft inspected and certified as fit for flight and flight tested.
 - (e) Whether amendments of particulars in the Certificate of Airworthiness or associated documents are required.
 - (f) Whether amendments are necessary to the approved maintenance schedule or other data or documents approved for maintenance or other work on the aircraft.
 - (g) Whether amendments are necessary to any data specified in the flight crew operating manual.
- 2.5 Where a modification affects the instrument panel, it shall be ensured that instruments which are used by any one pilot are so arranged as to permit the pilot to see their indications clearly from his or her station, with the minimum practicable deviation from the position and line of vision normally assumed when looking forward along the flight path.
- 2.6 Where a modification affects equipment required for communications or navigation purposes, or both, it shall be ensured that the failure of any single unit required for communications or navigation, or both, will not result in the failure of another unit required for communications or navigation.
- 2.7 Modification documents shall bear a modification reference number, title, issue number and date and shall indicate the reason for modification, modification instructions, any limitations and inspection requirements, manuals affected and references to other documents or design data, together with a list of parts and assemblies affected by the modification and, where necessary, drawings or sketches

giving particulars of parts before and after modification. An example of correctly structured and completed modification application leaflet is shown in Appendix 2

- 2.8 Approval of a modification will only be granted when the Authority is satisfied that in respect of the design:
- (a) The drawings, documents, reports, calculations, etc., are adequate to establish that the design complies with the appropriate airworthiness requirements.
 - (b) Any tests or inspections considered necessary for the approval have been completed satisfactorily.
 - (c) The drawings and other documents required for the work are of a satisfactory standard and in accordance with acceptable aeronautical practices.
- 2.9 The Authority may require compliance checks after the completion of the modification and before an aircraft, component or equipment is released for service. The modification approval applicant shall arrange for such checks to be carried out by the Authority.
- 2.10 All changes to an approved drawing or document will require re-approval of the original. The issue or revision number shall be raised following re-approval.

3 Approval of Repair

- 3.1 Where a repair falls outside the scope of maintenance data as specified in MAR-145.45, then such a repair will require the approval of the Authority.
- 3.2 The Authority will only approve repair design data traceable to approval from States considered having equivalent safety standards to the State of Design. Applications for repair approval by the Authority shall be made on AACM Form AACM-AW-19, shown as Appendix No. 1, and submitted to the Authority together with the repair scheme and supporting documents. It is reminded that one application form is effective for one aircraft only.
- 3.3 The design approval holder must classify the repair as major or minor in accordance with the classification system of the approving airworthiness authority. All repair design should have been classified prior to submission to the AACM.
- 3.4 The person responsible for the repair design must have sound knowledge of the design principles embodied in the aircraft type being repaired.
- 3.5 Where the repair has been a matter of urgency and the repair scheme has been initiated by telephone or telex with the manufacturer, details of the damage or such like should be forwarded to the manufacturer by letter, telex or facsimile and a subsequent confirmation obtained that the scheme is to his satisfaction. In such matters of urgency, work may commence on production of a suitable sketch but final approval may not be granted until such time as a satisfactory working drawing has been produced.

4 Compatibility of Modifications and Repairs

- 4.1 Consideration should be given during the design process to compatibility between the proposed design change and other existing design changes, such as modifications, repairs and airworthiness directives (AD).
- 4.2 The operator has responsibility to inform the design approval holder for any airworthiness deficiencies discovered in service which relate to the design change. The design approval holder has responsibility to assist the operator and the approving airworthiness authority to correct such deficiencies being informed.
- 4.3 The installer of the modifications or repairs on the aircraft has responsibility to verify compatibility with other existing modifications and repairs before installing any design change.
- 4.4 The operator has the overall responsibility to ensure the compatibility of all design changes incorporated in their aircraft. The operator should report any design change incompatibilities detected during installation or in service to the design approval holder, to the installer and to the approving airworthiness authority.

5 Records

- 5.1 Records of incorporation of all repairs and modifications affecting the airworthiness of an aircraft, its components or equipment shall be maintained in the appropriate log book or in a separate record by the owner or operator of the aircraft.
- 5.2 For all modifications and repairs, the design approval holder should retain the records of the analyses and tests performed to demonstrate compliance until the aircraft is permanently withdrawn from service.
- 5.3 All relevant modification and repair design information, drawings, test reports and records shall be held at the disposal of the Authority.
- 5.4 No such records shall be destroyed without authorisation from the Authority.

6. Request for Application Form

Applicant shall submit a request for the application form in written to the Airworthiness Department of Civil Aviation Authority.

7. Cancellation

This AP supersedes Airworthiness Procedure No. AP5 Issue 2 dated 31 Jan 2007.

- END -

Form AACM-AW-19 Modification and Repair Approval



To: Alameda Dr. Carlos D'Assumpção, 338-342
Centro Comercial Cheng Feng, 18º andar
Macau, CHINA
Tel: (853) 2851 1213
Fax: (853) 2833 8089

Official Use Only

Date received
Task No.

MODIFICATION AND REPAIR APPROVAL

1. Aircraft	Make	Model			
	Serial No.	Registration Mark			
2. Owner/Operator	Name				
	Address (As shown on registration certificate)				
3. Unit Identification					
Unit	Make	Model	Serial No.	Mod.	Repair
Airframe	(As described in item 1 above)				
Powerplant					
Propeller					
Component					
4. Description of Work					
SAMPLE					
5. Owner/Operators Signature	Name	Signature	Date		
6. AACM Approval	Ref. No.	Approved <input type="checkbox"/>	Rejected <input type="checkbox"/>		
	Airworthiness Inspection Required? Yes <input type="checkbox"/> No <input type="checkbox"/>				
	Comments				
Name		Signature	Date		

AACM-AW-19, Issue 2

MODIFICATION APPLICATION LEAFLET

Submission format

The modification application leaflet should be structured to cover the required information under at least the following suggested subject headings. If any particular item is not applicable to an application then a brief statement to indicate why this is so, must be recorded. This listing as a whole should not be considered to be exhaustive, it is conceivable that some additional information may be requested in order to substantiate, investigate and review any unusual design features of the applicants submitted modification package.

COVER PAGE

Organisation Name:

Modification Number:

Aircraft Type/Model:

Aircraft Registration:

Aircraft Serial Number:

Company:

Applicant:

Date:

Signature:

CONTENTS

1. Description of Modification.
2. Reason/Purpose for Modification.
3. Existing Approval of Modification (*Proprietary items require evidence of permission to be used*).
4. Applicability & Relevant Certification Basis (*FAA, EASA, etc*)
5. *Drawings Required.
6. Modification Procedures and Accomplishment Instructions
7. *Equipment Approval/Component listing (*Include Type approval FAATSO/ EASATSO & Class, Flammability compliance, etc*).
8. Physical Installation Issues (*Stress analysis, Interface, Egress, Support Devices, Visibility etc*).
9. *Electrical Arrangements (*Electrical load analysis, circuit protection, wire type etc*).
10. Environmental Issues (*Cooling, vibration, contamination risks etc*).
11. *Weight Schedule Amendment.
12. Structural Provisions/Implications.
13. Indicator/Display/Area Lighting.
14. Post Installation Ground Checks (*Verify design with regard to performance, interface and safety*).
15. * Flight Test Requirements (*Verify design with regard to performance, and system functions*).
16. Interface Considerations (*Effects on other systems, previous modifications, operating procedures, etc*).
17. Cockpit Notices, Labels, Placards and Passenger Information.
18. Continued Airworthiness Requirements (*Scheduled tasks and reliability assessment*)
19. *Documents to be Amended (FM, AMS, AMM, IPC, SRM, SB, O/H Manual, Wiring Manual, etc).

Note:

Copies of documents annotated thus "*" should, if applicable accompany the modification submission to support it. Additional supporting information may be required in the form of STC, other States approval supporting documentation, TSO, Declaration of Design and Performance (DDP), and general build specifications.