



ADVISORY CIRCULAR

AC 008/2020 v1.0

Aircraft Flight Manuals

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An Advisory Circular is issued by the Authority to promulgate important information to the Defence Aviation community, but does not mandate any action. This includes informing the community on aviation safety / airworthiness matters, information that enhances compliance understanding for existing regulation, or policy guidance for aviation issues not yet regulated that require further understanding.

Audience

This Advisory Circular (AC) is relevant to:

- Military Air Operators
- Military Type Certificate Holders
- Other Design Approval Holders

Purpose

The purpose of this AC is to provide a consolidated interpretation of Defence Aviation Safety Regulations pertaining to Aircraft Flight Manuals

Further information

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Status

This AC will remain current until cancelled by DASA.

Version	Date Approved	Approved By	Details
1.0	15 Dec 2020	GPCAPT D Smith	Initial release
		Mr M Wade	

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1 Reference material

1.1 Acronyms

1.1.1 The acronyms and abbreviations used in this AC are listed in the table below.

Acronym	Description
AC	Advisory Circular
AFM	Aircraft Flight Manual
APU	Auxiliary Power Unit
DASA	Defence Aviation Safety Authority
DASR	Defence Aviation Safety Regulation
MAA	Military Airworthiness Authority
MAO	Military Air Operator
MDOA	Military Design Organisation Approval
MSTC	Military Supplemental Type Certificate
MTC	Military Type Certificate
NAA	National Airworthiness Authority
OEM	Original Equipment Manufacturer
OIP	Orders, Instructions and Publications
QMS	Quality Management System
ТСВ	Type Certification Basis

Unless specified otherwise, all regulation references in this AC refer to the Defence Aviation Safety Regulation (DASR).

2 Background

- 2.1 The AFM is an authoritative source of information necessary for the safe operation of an aircraft. It contains the aircraft's operating limitations, operating procedures, performance information and other information and instructions necessary to operate the aircraft safely.
- 2.2 The AFM may be one of several documents that contain limitations, information and instructions to ensure safe aircraft operation. Other documents/publications in addition to the AFM may include a Flight Crew Operating Manual, Mission Crew Operating Manuals and Pilot Handling Notes.
- 2.3 Each MAO, as part of its safety management system, is responsible for the currency of the content of the AFM and other operational publications in use for the aircraft they operate. To effectively exercise this responsibility, each MAO must be cognisant of the breakdown of AFM sections, broad AFM certification requirements and differing approval pathways for amendments to an AFM.

3 AFM Content and Approval

- 3.1 AFMs are divided into multiple sections. DASA prescribed airworthiness requirements typically mandate the content and format for three of these sections that underpin the safety of the design. Therefore, these three mandatory sections (including revisions and supplements) require direct approval by DASA. These three sections are normally developed by the aircraft OEM and are detailed as follows:
- 3.1.1 **Operating Limitations.** The Operating Limitations section contains critical operating parameters established during the aircraft type certification process and includes (but not limited to) operating speeds, weight and centre of gravity limits, engine/APU limits, crew composition, operating altitude and flight load factors. The Operating Limitations section of the AFM is expressed in mandatory, not permissive, language and forms part of the MTC¹. Any change to the Operating Limitations section of the AFM constitutes a major change to the MTC² and must be certified under DASR 21 Subpart D.
- 3.1.2 **Operating Procedures.** The Operating Procedures section(s) includes normal and emergency procedures. Emergency procedures may be presented in a separate section to the other operating procedures. Any change to the Operating Procedures section(s) of the AFM requires approval by DASA. The Operating Procedures may be presented in narrative or checklist format,

¹ DASR 21.A.41

² GM to DASR 21.A.91, para 3.3(e)

depending on the intended use of the AFM (either in-flight use or use as a reference document). If the AFM is not intended to be used in-flight, checklists may be published in OIP separate to the principal AFM for ease of in-service use.

3.1.3 **Performance Information.** The Performance Information section contains aircraft performance data established during the aircraft type certification process and is typically presented in tabular or graphical format. Performance Information includes (but not limited to) stall speeds, take-off/landing speeds and distances, climb performance, approach speeds and power/thrust settings.

Note 1: Some airworthiness codes prescribed by DASA require an additional mandatory section, the *Loading Information* section, to be included in the AFM and approved by DASA. Other airworthiness codes incorporate this requirement into the Operating Limitations section of the AFM.

Note 2: AFMs already approved for use in-service may not divide content strictly into operating limitations, operating procedures and performance information. For example, operating limitations may be described in other sections of the manual (i.e. outside the Operating Limitations section). Therefore, this AC is directed at the types of content required by airworthiness codes, not strictly the actual location in the manual.

Note 3: Details of typical certification requirements of an AFM are contained in Annex A.

- 3.2 **Responsibility of the MTC holder.** The MTC holder must ensure the DASA-approved sections of an AFM sections remain representative of the design and performance limits of the aircraft, and where appropriate, provide operating and loading procedures to enable the aircraft to be operated within those design and performance limits. This function will often be executed through contracts or agreements with external parties (including OEMs), but the regulatory accountability cannot be outsourced. All applications for approval of amendments to DASA-approved sections of an AFM should be made by the MTC holder. Any amendment meeting the definition of a minor revision³ may continue to be approved using MDOA privilege without the need for an application to DASA.
- 3.3 **Other AFM content.** Remaining sections of an AFM, other than those requiring direct approval by DASA, contain additional information and instructions deemed necessary for safe operation of the aircraft. This information may include aircraft system descriptions and operation, flight characteristics, adverse weather operations and crew duties. These

GM to DASR 21.A.263(c)(4)

discretionary sections do not have their content and format explicitly prescribed by airworthiness codes and do not require direct approval by DASA. This additional information and instruction may be provided in separate sections of the principal manual, or in separate manuals/documents for ease of in-service management and use. Even if provided in separate manuals/documents, this content still forms part of each MAO's OIP for operating the aircraft.

3.4 **Approval requirements for current AFMs.** For AFMs already approved for use in-service, the Operating Limitations, Operating Procedures and Performance Information sections do not require retrospective approval by DASA. For future clarity and management, AFM sponsors may wish mark pages containing Authority approved content as approved by DASA.

4 Amending AFM Content

- 4.1 Different sections of the AFM have differing amendment requirements and approval authorities, depending on its link to the relevant airworthiness code. Amendments to the Operating Limitations, Operating Procedures and Performance Information sections of the AFM may affect the safety of the design, therefore require approval by DASA prior to publication in the AFM. No AFM content, whether approved by DASA or otherwise, may detract from (or be inconsistent with) the effective management of safety risk.
- 4.2 Amendments to the DASA-approved sections of an AFM will often arise from a major change to the product's type design. In this case, any AFM amendments will be approved by DASA as part of the approval of the design change. These AFM amendments should be developed in consultation with the affected MAOs and submitted to DASA as part of the application for approval of the major change. DASA must approve the design change prior to any associated AFM amendments being published in the AFM.

Note: Only the Operating Limitations are part of the MTC⁴. Any change to the Operating Limitations is a major change to the MTC⁵ and requires approval under DASR 21 Subpart D. Amendments to the Operating Procedures and Performance Information are not a change to the MTC, however still require approval by DASA. DASA will accept applications from the MTC holder for the approval of stand-alone amendments to these sections on DASR Form 31a, or by other agreed means.

4.3 MAOs may publish amendments to sections of the AFM not requiring approval by DASA using an internal procedure (this applies equally to other operating

⁴ DASR 21.A.41

⁵ GM to DASR 21.A.91, para 3.3(e)

OIP such as Flight Crew Operating Manuals and Pilot Handling Notes). These amendments do not need approval by DASA prior to publication in the AFM, but must be provided to DASA upon request as part of DASA's ongoing oversight of the MAO. The MAO internal procedures used for modifying sections of the AFM not requiring DASA approval must be documented, defensible, include a risk assessment and form part of the QMS.

4.4 MAO's may use internal procedures to publish enhanced operating procedures or apply more conservative operating or performance limits on their crews to minimise risk. This should be done by either supplementing other AFM content (i.e. the sections not requiring approval by DASA), or through other operational OIP. The DASA-approved sections of an AFM must remain representative of the safe limits and performance of the design established during the aircraft type certification process and should not be amended for this purpose. This additional supplementation developed by MAOs does not require approval by DASA prior to publication, but must not contradict the DASA-approved sections of an AFM.

5 AFM Supplements

- 5.1 An AFM supplement is a group of pages that amend AFM content associated with an aircraft modification. AFM supplements are typically developed when the modification is not intended to be installed in every aircraft in a fleet. This allows the MAO to incorporate (including electronically) the supplement in individual copies of the AFM for each affected aircraft. An AFM supplement may be developed by design organisations (including OEMs) accompanying modifications requested by a MAO, or simply in response to safety deficiencies discovered in the product's type design. Supplements to DASA-approved sections of the AFM will be approved by DASA concurrently with the approval of the design change. Approved AFM supplements must be included in an AFM prior to first operation of the affected aircraft.
- 5.2 AFM supplements linked to MSTC applications should be developed in consultation with affected MAOs and submitted to DASA by the applicant for the MSTC. Following issue of an MSTC, MSTC holders have the same responsibilities for AFM amendments as MTC holders do for the AFM.
- 5.3 Design changes requiring amendment to DASA-approved sections of the AFM should not be classified as minor, given the effect the design change has on aircraft operating characteristics⁶. Therefore, AFM supplements affecting DASA-approved sections of the AFM should not be approved by design organisations using MDOA privilege (other than AFM amendments meeting

⁶ GM to DASR 21.A.91

the definition of a minor revision⁷). AFM supplements affecting sections of the AFM not requiring approval by DASA may be approved by design organisations as part the approval of the minor change to type design.

6 Approval of AFM Amendments Using Recognition

- 6.1 All amendments (including AFM supplements) to the Operating Limitations, Operating Procedures and Performance Information sections of an AFM require approval by DASA (regardless of their origin), prior to the amendment being published in the AFM. Recognition certificates may be leveraged to facilitate DASA's approval of amendments to these sections of an AFM, either as part of a major change to a type design, or a stand-alone amendment requiring approval by DASA.
- 6.2 Amendments to sections of an AFM that do not require approval by DASA may be incorporated by a MAO into the AFM by applying their system for managing operational OIP using an appropriate level of rigour. MAOs may leverage the scope of recognition certificates to simplify this process, and each case should be assessed individually when determining the level of rigour to be applied. AFM amendments in this category do not require further verification or approval under DASR 21.
- 6.3 As DASR Flight Operations regulations differ in content, structure and operation from equivalent regulations in foreign NAA/MAAs, an applicant seeking DASA approval of a NAA/MAA approved amendment (including AFM supplements) must provide consideration of the Defence configuration, role and operating environment, per the caveats on the recognition certificate. For additional detail see DASA Advisory Circular 04/2018 *Airworthiness Recognition in the DASP*.

Original Signed	Original Signed
GPCAPT D Smith Director – ACPA DASA	Mr M Wade Director Initial Airworthiness DASA
15 Dec 2020	15 Dec 2020
Annex:	

A. Certification Requirements for Aircraft Flight Manuals

GM to DASR 21.A.263(c)(4)

Annex A

Certification Requirements for Aircraft Flight Manuals

Airworthiness Requirements

The requirements, specific format and content of an AFM are contained in airworthiness codes (including their associated ACs and AMC), not in DASR 21. This annex is intended as broad guidance to the general certification requirements of AFMs, noting the details differ between airworthiness codes. Common airworthiness codes used by Defence that establish requirements for the content and format of AFMs include:

- FAR 23.2620 (Amdt 23-64), FAR 23.1581–1589 (Amdt 23-63 and earlier)
- FAR 25.1581–1587
- FAR 27.1581–1589
- FAR 29.1581–1589
- CS 23.2620 (Amdt 5), CS 23.1581–1589 (Amdt 4 and earlier)
- CS 25.1581–1587
- CS 27.1581–1589
- CS 29.1581–1589

Military derived TCBs, such as those derived from MIL-HDBK-516, have equivalent requirements and often cite compliance with one of the listed civil airworthiness codes as a means of compliance.

Common to all the civil airworthiness codes is the requirement for AFMs to contain (at least) an *Operating Limitations* section, an *Operating Procedures* section and a *Performance Information* section. Each of these sections must be explicitly approved by the certifying Authority, segregated, identified and clearly distinguished from other parts of the manual. In civil airworthiness codes (and their associated ACs/AMC), these sections are termed *approved sections (or parts)* of the AFM. All other sections of the AFM are termed *unapproved sections (or parts)*, simply meaning they don't require explicit approval from the certifying Authority. Being termed an *unapproved section (or part)* does not imply they were developed in an uncontrolled manner or contain information or instructions that have not been verified and approved for publication by the OEM.

Some civil airworthiness codes also require a separate *Loading Information* section, which if included also requires explicit approval by the certifying Authority and forms part of the approved sections of the AFM.

Detailed requirements

Operating Limitations Section. The operating limitations are established during the aircraft certification process through compliance with other elements of the applicable airworthiness code (e.g. FAR 25.1501–1535) and tailored for Defence's unique configuration, role and operating environment. All operating limitations must be made available to the crew through either specified markings or placards (e.g. FAR 25.1541–1563), or publication in the Operating Limitations section of the AFM (e.g. FAR 25.1583). Note: The example clauses quoted above are for FAR 25 requirements. FAR 23, 27 and 29 (and their EASA CS equivalents) may have different clause numbering.

The Operating Limitations Section of the AFM forms part of the MTC. Consequently, any change to the operating limitations constitutes a change to the MTC through either an amendment to the MTC, or an MSTC. Guidance material pertaining to change classification states that any changes to the operating limitations should be classified as a major change.

Operating Procedures Section. The Operating procedures section of the AFM should contain (as a minimum) the essential information, peculiar to the type design, which is required for safe operation in both normal and emergency conditions. Procedures should normally be related to the safe operation of the aircraft. The procedures may be presented in either narrative or checklist format, depending on the intended use of the AFM and whether or not the AFM is supplemented by other publications/documents such as Flight Crew Operating Manuals, Pilot Operating Handbooks, Quick Reference Notes etc.

The operating procedures may be divided to several categories, including:

- Normal procedures that are unique to the type to be used in circumstances where equipment and systems are functioning in their expected manner, or for failures that involve the use of special systems or the alternative use of regular systems.
- *Emergency procedures* for foreseeable but unusual situations in which immediate and precise action by the flight crew is required to substantially reduce the risk of a catastrophic outcome.

Performance Information Section. The aircraft performance information is established during the aircraft certification process though compliance with other elements of the applicable airworthiness code (e.g. FAR 25.101–149) and tailored for Defence's unique configuration, role and operating environment. The performance information should include the operating range or weights, altitudes, temperatures, configurations, thrust ratings, and any other operational variables stated as operational performance limitations of the aircraft.

Loading Information Section. Some civil airworthiness codes require a separate Loading Information Section, whereas others incorporate this requirement in the Operating Limitations Section of the AFM. If included in the Operating Limitations Section but presented in a separate document (e.g. aircraft weight and balance limits), the document should be referenced in the relevant approved section of the AFM. If applicable, the loading instructions should refer to flight procedures that consider the change to the aircraft's centre of gravity as fuel is consumed.

The Loading Information Section of the AFM should contain at least the maximum taxi, take-off, landing and zero fuel weight limits, minimum in-flight weight, centre of gravity limits and information required to operate the aircraft within these limits. The Loading Information Section should also include detailed instructions relative to the loading procedure or the use of a loading schedule.