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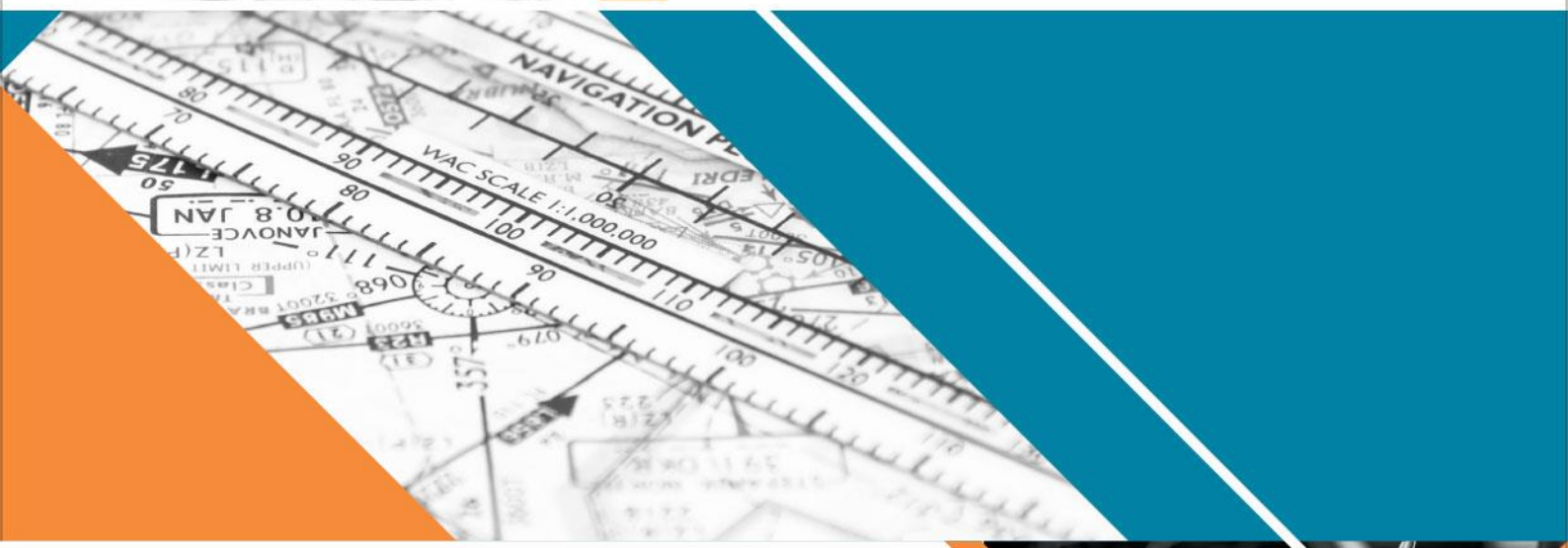

Minimum equipment lists (MEL)

Date December 2022

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This Civil Aviation Advisory Publication (CAAP) provides guidance, interpretation and explanation on complying with the Civil Aviation Regulations 1988 (CAR) or a Civil Aviation Order (CAO).

This CAAP provides advisory information to the aviation industry in support of a particular CAR or CAO. Ordinarily, the CAAP will provide additional 'how to' information not found in the source CAR, or elsewhere.

Civil Aviation Advisory Publications should always be read in conjunction with the relevant regulations/orders.

Audience

This Civil Aviation Advisory Publication (CAAP) applies to:

- Certificate of Registration holders (CoR)
- registered operators
- Air Operator's Certificate (AOC) holders
- maintenance controllers
- pilots.

Purpose

The purpose of this CAAP is to provide information and guidance on the requirements for developing and seeking approval of minimum equipment lists (MEL) under regulation 37 of CAR.

For further information

For further information on this CAAP, contact CASA's Airworthiness and Engineering Branch (telephone 131 757).

Status

This version of the CAAP is approved by the Branch Manager, Airworthiness and Engineering.

Note: Changes made in the current version are not annotated. The document should be read in full.

Version	Date	Details
v5.1	December 2022	Administrative review only.
(5)	April 2016	This is the fifth amendment of this CAAP and replaces CAAP 37-1(4) dated November 2011. It has been amended to improve harmonisation with international standards.
(4)	November 2011	This is the fourth amendment of this CAAP and replaces CAAP 37-1(3) dated May 2006. It has been amended by introducing references to new regulations (Part 21M and Part 42 of CASR 1998). Changes to Regulation 37 of CAR 1988 have removed reference to damage and that regulation now only deals with the unserviceability of equipment.
(3)	May 2006	This is the fourth issue of this CAAP and replaces CAAP 37-1(2) dated June 2003. It has been amended by introducing a new Section 7 that clarifies the applicability/use of the MEL on discovering unserviceablilities during flight.
(2)	June 2003	This is the third issue of this CAAP and replaces CAAP 37-1(1) dated July 2002.
(1)	July 2002	This is the second issue of this CAAP and replaces CAAP 37-1(0) dated December 2001. It has been amended to further clarify the development process of MELs as a result of comments received from the industry.
(0)	December 2001	Initial CAAP.

Contents

1 Reference material

1.1 Acronyms

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

Acronym	Description
AD	Airworthiness Directive
AFM	Aircraft Flight Manual
AOC	Air Operator's Certificate
ATA	Air Transport Association
CAAP	Civil Aviation Advisory Publication
CAO	Civil Aviation Order
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
CDL	Configuration Deviation List
CoR	Certificate of Registration
DDL	Deferred Defect List
EASA	European Aviation Safety Agency
ICA	Instructions for Continuing Airworthiness
LAME	Licensed Aircraft Maintenance Engineer
LEP	List of Effective Pages
(M)	Maintenance Procedures
MCM	Maintenance Control Manual
MEL	Minimum Equipment Lists
MMEL	Master Minimum Equipment List
NAA	National Aviation Authority
(O)	Operations Procedures
PIC	Pilot-in-Command
STC	Supplemental Type Certificate
TAC	Type Acceptance Certificate
VMC	Visual Meteorological Conditions

1.2 Definitions

Terms that have specific meaning within this CAAP are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this CAAP and the civil aviation legislation, the definition in the legislation prevails.

Term	Definition
Acceptable Master Minimum Equipment List (AFM)	an MMEL either approved by CASA or the National Airworthiness Authority (NAA) of the state of design as part of the issue of the type certificate or type acceptance certificate (TAC) for the aircraft.
Aircraft Flight Manual (AFM)	the source document for operational limitations and performance for an aircraft. The term AFM can apply to either an aeroplane flight manual or a rotorcraft flight manual. CASA requires an AFM for type certification or type acceptance certification.
Instructions for Continuing Airworthiness (ICA)	the written instructions that specify requirements, procedures and standards for continuing airworthiness. Maintenance data is a subset of ICA.
Air Transport Association (ATA) Numbering System	the standard ATA numbering system refers to systems on different aircraft in a standardised manner. MMELs use the ATA numbering system.
Calendar Days	includes all days, with no exclusion for weekends and holidays.
Deactivation	to make a piece of equipment or an instrument unusable by the pilot/crew by preventing its operation.
Deferred Maintenance	the postponement of the repair or replacement of an item of equipment or an instrument.
Equipment List	an inventory of equipment installed by the manufacturer or operator on a particular aircraft.
Inoperative	a system and/or component that has malfunctioned to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limits or tolerances.
Operations (O) and Maintenance (M) Procedures (in the MMEL)	refer to the specific maintenance procedures the operator uses to disable or render items of equipment inoperative and to specific operating conditions and limitations, as appropriate: • An (O) symbol in column 4 of the MMEL/MEL indicates that a specific operations procedure must be completed before or during operation with the listed item of equipment inoperative. • An (M) symbol in column 4 of the MMEL/MEL indicates that a specific maintenance procedure must be completed before beginning operation with the listed item of equipment inoperative. Normally, maintenance personnel accomplish these procedures. However, other personnel, such as the flight crew, may be qualified and authorised to perform certain functions. Qualified maintenance personnel must perform procedures requiring specialised knowledge, skills, or the use of tools or the use of test equipment. • (O) and (M) procedures may also be detailed in other documents such as Dispatch Deviation Procedures Guide (DDPG).
Placard	a decal or label with letters at least 3.5 mm high. The operator or maintenance personnel must place the placard on or near inoperative equipment or instruments so that it is visible to the flight crew and alerts them

Term	Definition
	to the inoperative equipment.
Procedures Document	as referred to in this CAAP pertains to a separate document containing the (O) and (M) procedures developed by the operator and any other operating information applicable to operation and management of a MEL. This document should be available on board the aircraft.
Supplemental Type Certificate (STC)	a major change in type design that is not sufficiently different enough to require a new application for a type certificate under regulation 21.019 of CASR. An example would be installation of a power plant different from that which was included in the original type certificate.
Type Certificate Data Sheets (TCDS) (include specifications)	are documents issued by the NAA that describe the aircraft's airworthiness requirements relating to a specific type, make and model of aircraft.

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Document	Title
Subpart 21.M of the *Civil Aviation Safety Regulations 1998 (CASR)*	Designs of modifications of, and repairs to, aircraft, aircraft engines, propellers and appliances
Regulation 37 of CASR	Permissible unserviceabilities
Regulation 42L of CAR	System of maintenance
Regulation 42U of CAR	Modifications and repairs
Regulations 48, 49 and 50 of CAR	Endorsement on maintenance release
Regulation 42.125 of CASR	Approval of design for modifications or repairs to aircraft
Civil Aviation Order (CAO) 20.18	Aircraft Equipment - Basic Operational requirements
	Civil Aviation (Fees) Regulations 1995

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Document	Title
AC 21-28	Permissible unserviceabilities - unrepaired defects (r 21.007)

Other documents

Document	Title
CS-GEN-MMEL	European Aviation Safety Agency (EASA) Certification Specifications and Guidance for Master Minimum Equipment List (CS-MMEL)

2 Introduction

2.1.1 Operational and airworthiness requirements (including aircraft type design approval requirements) require that every item of equipment installed in the aircraft must be operational at the beginning of a flight. However, because of the various levels of redundancy designed into aircraft, under certain conditions an acceptable level of safety can be maintained with specific items of equipment inoperative for a limited period of time until repairs can be made. Many aircraft also have equipment installed that is not required for safe operation under certain operating conditions (e.g. instrument lighting in day visual meteorological conditions [VMC]). Other equipment, such as entertainment systems or galley equipment, may be installed for operators' operational considerations.

2.1.2 Regulation 37 of *Civil Aviation Regulations 1988 (CAR)* provides the Civil Aviation Safety Authority (CASA), or an appropriate delegate, with the authority to approve defects in an Australian aircraft as a permissible unserviceability. CASA also approves a schedule of permissible unserviceabilities for an aircraft in the form of a minimum equipment list (MEL). An approved MEL is a document that allows for the operation of a specific aircraft under specific conditions with a particular item(s) of equipment inoperative at the time of dispatch for the intended flight. Despite the inoperative equipment, the aircraft still complies with its type design standards.

2.1.3 Civil Aviation Order (CAO) 20.18 requires that, in the case of a charter or regular public transport aircraft, all instruments and equipment fitted to the aircraft must be serviceable before take-off, unless unserviceability is a permissible unserviceability set out in an MEL, or CASA has approved the flight with the unserviceability.

2.1.4 This requirement enables the pilot-in-command (PIC) to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or system become inoperative.

2.1.5 A configuration deviation list (CDL), or its equivalent (i.e. permissible unserviceabilities and deferred defect list [DDL]) is not part of the MMEL/MEL and is outside the scope of this CAAP. CDLs are used to identify external components of an aircraft type, which may be missing for flight and, where necessary, they will provide any associated information on performance corrections for such cases (e.g. missing landing gear doors, flap actuator fairings). Where release for flight with such missing items is approved, the CDL is published as part of the aircraft's flight manual (AFM).

3 MMEL vs MEL

3.1.1 An MMEL is a document created specifically to regulate the continued operation of an aircraft type (e.g. BEECH-200, Beechcraft model 200) with inoperative equipment. It is a list of items of equipment that may be temporarily inoperative under certain conditions and limitations, while still maintaining the level of safety intended in the design standards. The MMEL does not take into account the operating circumstances of individual operators of that type. The MMEL cannot, in itself, be regarded as providing operational permission. It is, however, the basis for the development of an individual operators MEL. Normally the MMEL is developed by the aircraft manufacturer in conjunction with operators and is approved/accepted by the appropriate NAA. CASA only accepts MMELs approved by the National Aviation Authority (NAA) of the state of design as part of the type certificate or Type Acceptance Certificate (TAC).

3.1.2 An approved MEL consists of an approved list of the specific inoperative equipment for a particular make and model of aircraft by serial and registration mark (e.g. BEECH-200, VH-XXX). Its use is authorised by accepting the associated application procedures contained in an operator's maintenance control manual (MCM) and/or operations manual, or other appropriately documented procedures. The operator prepares an MEL, taking into account the certificated seating capacity, aircraft configuration and operating environment.

3.1.3 This MEL is then submitted to CASA for consideration of approval. An approved MEL for an aircraft is a non-transferable document, i.e. if the Certificate of Registration (CoR) holder of the aircraft changes, then new approval for the MEL is required even if the aircraft retains the same registration mark. MEL approvals should be notated to this effect.

3.1.4 If an aircraft moves from one Air Operator's Certificate (AOC) holder to another, the new AOC holder cannot automatically use the approved MEL for the aircraft. The new AOC holder will be authorised by CASA only if they have acceptable associated application procedures contained in their MCM and/or operations manual.

3.1.5 The MMEL/MEL is an alleviating document. Its purpose is not to encourage the operation of aircraft with inoperative equipment. It is never desirable that aircraft continue operations with inoperative equipment. Such operations are permitted only as a result of careful analysis of each item to ensure that the required level of safety is maintained. A fundamental consideration in permitting the operation of aircraft with inoperative equipment is that the continued operation of an aircraft in this condition should be minimised.

3.1.6 The PIC or Licensed Aircraft Maintenance Engineer (LAME) invokes the MEL. It is the decision of the PIC to accept the aircraft for flight with inoperative systems or equipment listed in the MEL. The overriding principle is that, notwithstanding the provision of an approved MEL, a LAME should not release an aircraft for flight, and the PIC should not accept an aircraft for flight, if it is considered unsafe for a particular flight.

4 Developing an MEL

4.1 Format of an MEL

4.1.1 The *Civil Aviation Act 1988 (the Act)* and CAR do not stipulate any specific format and/or contents of an MEL. However, the format provided in Appendix B is the internationally accepted format and, if used, could avoid delay in assessing the MEL.

4.2 The MMEL/Legislative requirements

4.2.1 The MEL should be developed from the latest issue of the applicable MMEL on an item-by-item basis and keeping in view the relevant regulatory requirements.

4.2.2 The applicable MMEL is generally determined by reference to the Australian Type Certificate or TAC, which will detail the type certificate under which CASA accepted the aircraft.

4.2.3 An MMEL approved by another recognised NAA may be presented as evidence to support deviations from the applicable MMEL, provided the original certification basis is not affected and Australian regulatory standards continue to be met.

4.2.4 If an applicable MMEL covers more than one model of the aircraft type, it is acceptable to have different models of the aircraft type covered in an operators approved MEL. It is also acceptable to have only one MEL for a fleet having mixed certification basis (e.g. BAe 146 aircraft certificated to Federal Aviation Regulations of the United States of America and European Aviation Safety Agency [EASA] Certification Standards by different NAAs). However, differences (if any) must be identified in the operator's approved MEL by registration marks or aircraft manufacturer's serial numbers.

4.2.5 If an operator chooses to add items that are not found in the MMEL (due to its particular type of operation, regulatory requirements) an assessment of those items must be carried out in accordance with paragraph 4.2.8 of this CAAP. This assessment is required to ensure that these items do not affect the design standards or safe operation of the aircraft and are not in conflict with the flight manual and any regulatory requirements.

4.2.6 In general, an MEL should not be less restrictive than the applicable MMEL for the type of aircraft. If a certain item(s) of the applicant's MEL is less restrictive than the applicable MMEL, except where regulatory requirements permit to do so, then CASA may require an extensive qualitative and/or quantitative analysis to substantiate the proposed departure from the MMEL. Further information on justification of MEL items can be found in industry standards such as the EASA Certification Specifications and Guidance Material for Master Minimum Equipment List (CS-MMEL).

4.2.7 In general, non-safety related equipment such as galley equipment, passenger convenience items or optional items, should not be listed in the MEL. Operators should establish an effective decision making process for failures that are not listed to determine if they are related to airworthiness and required for safe operation.

4.2.8 If the applicant's MEL contains passenger convenience or optional items such as galley equipment, audio/video equipment, overhead reading lamps, which are not addressed in the MMEL, then an assessment of the MEL should be carried out as follows:

- where passenger convenience items serve a second function, such as movie equipment being used for cabin safety briefings, operators must develop and include operational contingency procedures in case of an equipment malfunction
- where passenger convenience items are part of another aircraft system (e.g. the electrical system, or interact with other systems), procedures must be developed and included in the MEL for deactivating and/or securing, in case of a malfunction.

Note: For items covered by the MEL, the aircraft should not be operated with the items removed unless the MEL explicitly allows for the removal of equipment detailed in the MEL, or the removal is approved as a modification under Subpart 21.M of the *Civil Aviation Safety Regulations 1998 (CASR).*

4.2.9 Inoperative avionics equipment may have an impact on either airworthiness or operational requirements, which should be considered when deviating beyond the requirements in the MMEL as this:

- may affect navigation or route authorisations, such as:
  - performance based navigation (PBN)
  - reduced vertical separation minimum (RVSM)
  - extended twin operations (ETOPS)
  - automatic dependent surveillance-broadcast (ADS-B) etc.
  - electrical bus failure may affect avionics components critical for flight and/or operational requirements
- may cause undue pilot workload or other human factors issues
- such as global navigation satellite system (GNSS) may affect operations of other aircraft systems
- such as high frequency (HF) communications may limit operations satellite communications (SATCOM) is not equivalent for Air Traffic Services (ATS) purposes.

4.3 Operations and maintenance procedures

4.3.1 The objective of operations (O) and maintenance (M) procedures is to provide all people using the document with clear and concise directions on how they are to proceed in case of permissible unserviceabilities. The (O) and (M) procedures form part of the approved MEL.

4.3.2 Operators must develop detailed instructions for use by pilots (O) and maintenance personnel (M) that are appropriate to the operator’s systems and type of operation. These procedures should be based on the operator’s experience and sound industry practices. (M) procedures for removal of inoperative equipment must be based on approved maintenance data.

4.3.3 The operator, when comparing the MEL against the MMEL, must ensure that where the (O) or (M) symbols appear, an operating or maintenance procedure has been developed that provides clear direction to the crew members and maintenance personnel of the action to be taken. This procedure must be included in the MEL, except when the procedure is contained in another document that is available to the flight crew on the flight deck, such as the:

- AFM, aircraft operating manual, or the company operations manual
- flight attendant manual.

4.3.4 Aircraft with an MEL item invoked that requires an (M) procedure will be configured as per the MEL and released for flight in accordance with the requirements of the MCM or exposition (as applicable).

4.3.5 Some aircraft manufacturers also produce (O) and (M) procedures for the use by operators (i.e. dispatch deviation guides). The operator, if appropriate for a particular operation, may submit these procedures as part of the MEL. It is acceptable to publish these procedures in a separate document and they will be considered part of the MEL. However, clear referencing of the document must be made in the system of maintenance and the appropriate operating documents.

4.3.6 **(O) procedures:** Where the (O) symbol appears in the MMEL, an operations procedure must be developed that provides clear direction to the flight crew. These procedures must be included in the MEL. The only exception is when the procedure is contained in another document that is always available on the flight deck (i.e. an operations manual or in an approved electronic form). In these cases, the MEL shall refer to a section of the appropriate document(s).

4.3.7 **(M) procedures:** The MMEL may identify items that require a maintenance procedure. If this is the case, the operator must ensure that relevant (M) procedures have been developed for the MEL. These procedures must provide clear direction to the maintenance personnel.

4.3.8 **Warning signs and placarding:** All inoperative items must be placarded as inoperative to inform flight crew members and maintenance personnel of equipment condition, where possible and practical.

4.3.9 While the MMEL may require specific wording for some items, in the majority of cases, unless otherwise mentioned in the applicable MMEL, the operator may choose the placard wording and location at their discretion. However, it must be clearly spelled out in the (O) and (M) procedures.

4.4 Procedures for the use and guidance of flight crews and maintenance personnel

4.4.1 The operator must establish procedures for the use and guidance of flight crews and maintenance personnel, in relation to the MEL. These procedures must agree with those in the operator's MCM, system of maintenance, operations manual, and other operating documents. These procedures should include, but are not limited to, procedures for:

- deferring rectification action or invoking MEL item(s) for inoperative equipment
- placarding requirements as per the MEL
- ensuring that a dispatched aircraft with an invoked MEL item(s) complies with the limits and conditions of the MEL
- controlling categorised repair intervals
- the training of company personnel who are responsible for compliance with MEL procedures.

4.4.2 Procedures for invoking MEL items are normally contained in the operator's MCM, operations manual or an alternative document. Prior to issuing an MEL approval, CASA will ensure that the MEL references these procedures in the MCM, operations manual or similar document, if not already included in the MEL. If no procedures for the invoking of MEL items exist within the operator's organisation, then CASA will, in addition to vetting the MEL, require amendment to the MCM and/or operations manual.

4.4.3 The inoperative item must be placarded to inform the flight crew members of its inoperative condition(s). While the MEL for some items may require specific wording, in the majority of cases the placard wording and location is to be determined by the operator, unless otherwise specifically mentioned in the applicable MMEL. However, to the extent practicable, placards must be located as indicated in the MEL, or adjacent to the affected item.

4.4.4 A placarding procedure should be established and set out in the MCM and operations manual or, at least, within the approved MEL document.

4.4.5 The method of control of placarding must ensure:

- that all inoperative items are placarded
- placards are removed and accounted for when the defect is cleared.

4.4.6 Placards should be self-adhesive. The placards may vary in size and shape. Use of embossed 'Dymo'-type tape as a placard is not considered acceptable because of its unreliable adhesive characteristics on various surfaces and in various operating conditions. The placard may be in two parts:

- Part 1 – would list a description of the defect and defect control number and should be attached to the logbook for crew reference.
- Part 2 – should list the system affected and the defect control number and be fixed in the appropriate location. An MEL control sheet attached to the logbook could serve the same purpose as Part 1.

4.4.7 When invoking an MEL item, the person responsible must:

- identify, in the aircraft technical log or appropriate company document, that this action has occurred
- identify the item with its MEL number
- ensure that an inoperative label is placed in an appropriate location.

4.4.8 A company procedure documenting the above requirement in the appropriate operator's documentation is acceptable for compliance purposes.

4.4.9 If more than one placard is required for an MEL item, provision must be made to ensure that all placards are removed when the defect is cleared.

4.4.10 If a defect occurs at a base where maintenance personnel are not available and the MEL does not require maintenance action other than permitted pilot maintenance, the flight crew may install a placard as required by the MEL.

4.4.11 On arrival at the next maintenance base, maintenance personnel must ensure that the placarding has been completed in accordance with the either the MEL requirements, the MCM and/or operations manual procedures.

4.4.12 It is the responsibility of the operator to provide the capability and instructions to the flight crew to ensure that the placard is in place prior to commencing the intended flight.

4.5 Repair intervals

4.5.1 Each item of an MEL must be repaired within the specified repair interval. These intervals are set to limit the maximum time an aircraft may fly with an inoperative item(s) of equipment, and are designated Category 'A, B, C or D'.

Notes:

1. Repair intervals for class B aircraft being operated as private aircraft are not necessary, as long as the aircraft serviceability meets the regulatory operational and airworthiness requirements.
2. Repair intervals for equipment fitted above the minimum regulatory requirements that are specified 'nil required for dispatch' may be selected by operators at their discretion.

4.5.2 **Category A:** Items in this category shall be repaired within the time interval specified in the remarks column of the MEL, adjacent to the item. Whenever the specified interval is stated in cycles or flight time, the time interval begins with the next flight. Category A items cannot be extended.

4.5.3 **Category B:** Items in this category are to be repaired within three (3) consecutive calendar days (72 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

4.5.4 **Category C:** Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

4.5.5 **Category D:** Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2,880 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

4.5.6 The operator must establish procedures whereby the maintenance support periodically reviews the deferred items. This is done to ensure that any accumulation of deferred items neither conflict with each other nor presents an unacceptable increase in crew workload. Notwithstanding the categorisation of item repair intervals, it should be the aim of each MEL document holder to ensure that inoperative items are repaired as quickly as possible.

4.6 Repair interval extension

4.6.1 Extensions of repair intervals are permitted for genuine spares procurement problems or other circumstances beyond the operator's control.

4.6.2 Some holders of delegations for regulation 37 of CAR may be authorised to extend repair intervals if rectification was not possible due to circumstances beyond the operator's control (e.g. unavailability of spare parts). Such authorisations are generally limited to one time extensions of category B, C and D repair intervals, provided that:

- the extension of the repair interval is within the scope of the MMEL for the aircraft type
- the extension of the repair interval is, as a maximum, of the same duration as the repair interval specified in the MEL

- the extension of the repair interval is technically justifiable in a manner described in paragraph 4.2.6
- the repair interval extension is not used as a normal means of conducting MEL item rectification and is used only when events beyond the control of the operator have precluded rectification
- a description of specific duties and responsibilities for controlling extensions is established by the operator
- a plan to accomplish the rectification at the earliest opportunity is established by the operator.

4.6.3 In these cases, the delegate must be provided documented evidence that shows why rectification was not possible (e.g. that the spares were not available from the manufacturer).

Note: Where the delegate extends a repair interval, they must provide the controlling CASA Regional Office with notification within 24 hours of exercising the extension authority.

4.6.4 It is recognised that some operators, mainly those located in remote areas of Australia, experience genuine difficulties in complying with the requirements of MEL repair intervals. If an operator is unable to comply with a repair interval, or a one-time interval extension, as described above, then the operator may apply to CASA for an extension. For example, CASA may extend the repair interval for a category B item for a maximum period of up to six days (i.e. three days one-time extension plus an additional three days), where CASA is satisfied that the extension would not have an adverse effect on the safety of air navigation.

4.6.5 The operator/applicant must provide CASA all the necessary information for an assessment of the extension in accordance with paragraph 4.2.6. In these cases technical advice in relation to the certification requirements of the aircraft may be required from CASA Airworthiness and Engineering Branch.

4.6.6 In some cases, regulation 21.007 of CASR may also be used to approve an unrepaired defect as a one-off permissible unserviceability. See AC 21-28 for more information on approval of unrepaired defects under regulation 21.007.

4.7 MEL training program

4.7.1 The operator must develop an MEL training program for maintenance personnel and flight crew, which must be in place prior to an operator commencing operations with an MEL. The operator, when required, should conduct recurrent training, or put in place a controlled method to alert staff to any changes in MEL procedures. This will ensure company personnel remain current with those procedures.

Training program — maintenance personnel

4.7.2 Operators must develop an MEL training program for maintenance personnel and flight crew (where they are authorised to carry out maintenance functions), which must be put in place prior to an operator commencing operations with an MEL.

4.7.3 The training for maintenance personnel should include those sections of the MCM procedures dealing with:

- the use of, and compliance with, the MEL

- placarding of inoperative equipment
- return to service of an aircraft
- dispatching an aircraft
- any other MEL related procedures.

Training program — flight crew

4.7.4 Operators must also provide flight crew personnel with MEL training, which should be included as part of their route/line training. The details of such a training program must be stated in the operator's operations manual.

4.7.5 The flight crew training should include, but not be limited to, the following:

- the purpose and use of an MEL
- instruction on operator's procedures for the use and guidance of flight crew
- the PIC's responsibility with respect to the above procedures.

5 MEL approval process

5.1 Application for approval of an MEL

5.1.1 An operator submitting an MEL for approval must provide CASA or CASA delegate with:

- a letter or application requesting approval of the MEL (signed by the operator)
- at least two copies of the proposed MEL.

5.1.2 An MEL may cover more than one aircraft of the same type. However, all differences in the equipment/systems installed, if any, should be clearly identified by the aircraft registration mark.

5.2 Application for amendment to the MEL

5.2.1 Amendments to MELs are either mandatory or voluntary, depending upon the particular circumstances. Mandatory amendment of an MEL is required either:

- when the applicable MMEL is amended so as to become more restrictive; or
- when required by CASA in light of in-service experience.

5.2.2 Voluntary amendment of an MEL may be carried out when either:

- the MMEL is amended so as to become less restrictive; or
- as required by the operator, provided the proposed change is no less restrictive than the MMEL; or
- regulatory changes occur.

5.2.3 An application for amendment(s) to an approved MEL, together with appropriate substantiation, should be forwarded to an appropriate CASA delegate for approval.

5.3 Approval fee

5.3.1 CASA charges a fee for the approval of an MEL or an MEL amendment. On receipt of an application for approval of an MEL (or amendment to an approved MEL) CASA will notify the applicant of an estimate of the fee for assessment of the application.

5.3.2 The total chargeable fee is based on the actual work hours involved in assessing the MEL at the hourly rate published in the *Civil Aviation (Fees) Regulations 1995*. CASA will not initiate an MEL assessment process unless the applicant pays the estimated fee.

5.4 MEL approval time

5.4.1 If the operator submits an MEL that complies with this CAAP, CASA will endeavour to approve the document within 60 days.

6 Removal of inoperative equipment

6.1 Interim approvals

6.1.1 CASA will not grant an operator interim approval while the MEL is undergoing the review process to use an MMEL as an MEL.

6.1.2 Removal of equipment from an aircraft that is not specifically detailed in the MEL will require approval in accordance with Part 21 of CASR and actioned in accordance with regulation 42.U of CAR or regulation 42.125 of CASR (as applicable).

6.1.3 The restriction of removal of equipment in these regulations is intended to ensure safe operation of the aircraft, as improper removal of equipment may have an adverse effect on the aircraft weight and balance or operations of other critical aircraft systems.

6.1.4 An approved MEL or approvals issued under regulation 37 of CAR do not automatically allow operations of the aircraft with inoperative equipment removed for repair, unless explicitly allowed to do so.

6.1.5 Once the design of the removal has been approved, an operator can include the procedures for removing the equipment in the (M) procedures for the aircraft's MEL.

7 Equipment failure after dispatch

7.1.1 The MEL is used during the preparation for flight to assist in decisions where the aircraft has an unserviceability. Use of the MEL is not applicable to an unserviceability or a malfunction that occurs during the take-off roll or if the aircraft is airborne. Once an aircraft has commenced the take-off roll, the flight crew must handle any equipment failure in accordance with the AFM or other approved operational documents. Unserviceability of equipment occasionally occurs during taxi. In these circumstances the crew should consult the MEL to determine whether any operational limitations or maintenance procedures indicate that a return for maintenance action or re-planning may be prudent. In any case, the unserviceability must be addressed prior to the next dispatch.

7.1.2 Operators should include a procedure for handling equipment or instrument failures that occur between the aircraft being released for flight and the start of the take-off roll. The procedure should allow the PIC to communicate with the maintenance organisations, to review the situation and determine whether the flight should:

- return for repairs (the failed equipment is a ‘no-go’ item)
- return to accomplish an (M) procedure specified in the MEL before continuing the flight; or
- continue using the alternate procedure (abnormal procedure) for operating with the inoperative item.

7.1.3 The operator’s procedure may also provide for the flight to continue when the PIC determines that the flight can be operated safely using an alternate procedure, without communicating with the maintenance organisations.

Appendix A

Applicability of an MMEL

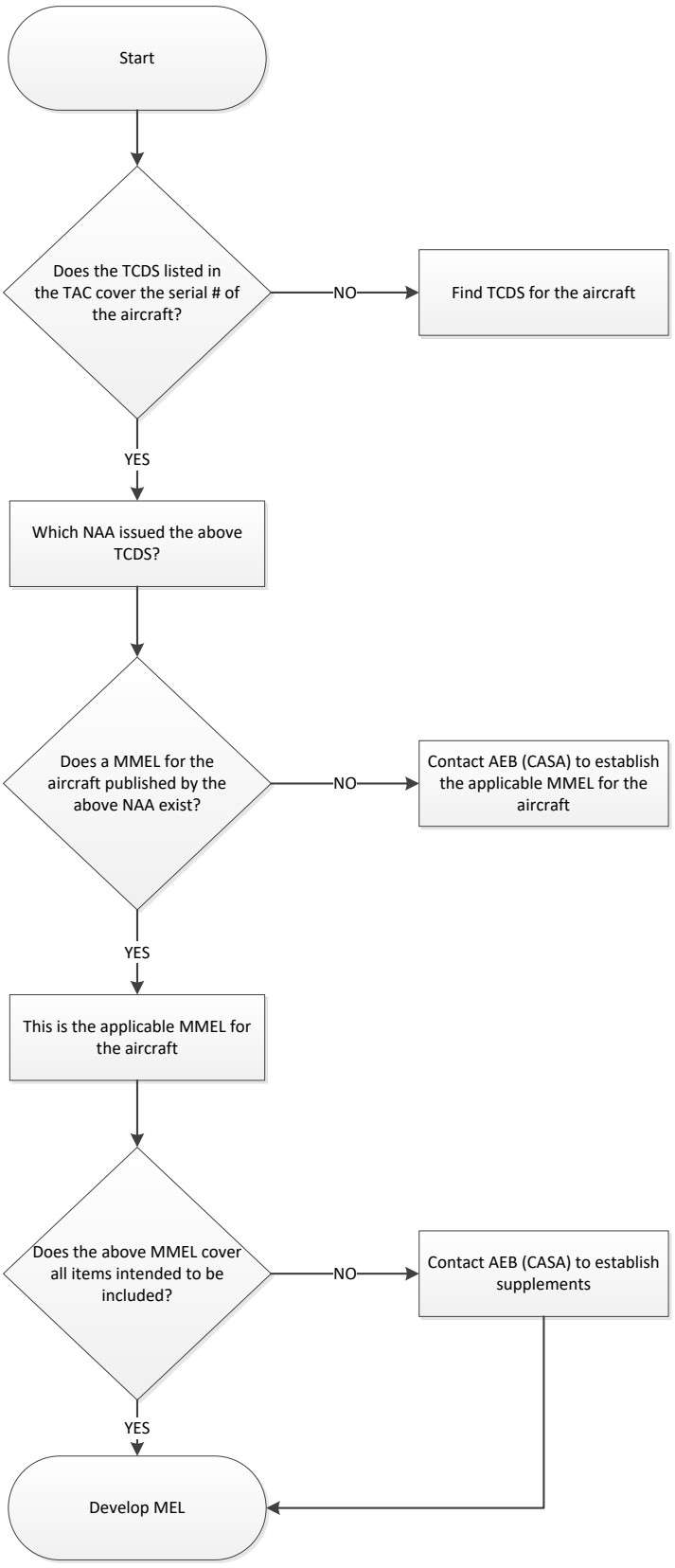

Figure 1: Determining the applicability of an MMEL

Appendix B

Format of an MEL and sample page

B.1 MEL Format

B.1.1 The MEL must include[1]:

- a list of effective pages (LEP)
- a table of contents
- the CASA MEL preamble (see sample MEL Preamble at Appendix C)
- the CASA notes and definitions
- a section for each aircraft ATA Chapter and the items covered within those chapters
- the appropriate (O) and (M) procedures
- the appropriate repair intervals (usually stated in the MEL preamble).

B.2 List of effective pages

B.2.1 The LEP is used to ensure that each MEL is up to date. It must list the date of the last revision for each page.

B.2.2 The date and revision status of each page of the MEL must correspond to that shown on the LEP.

B.3 Table of contents

B.3.1 The table of contents page lists the section for each aircraft system utilising the ATA numbering system, as found in the MMEL.

B.4 Chapter and page numbering

B.4.1 The ATA numbering system and sequence numbers are to be used as found in the MMEL.

B.4.2 Pages will be numbered with the ATA numbering system followed by the page number for that system (e.g. Flight Controls, 27-1, 27-2-7).

B.4.3 The MEL page format should be similar to the MMEL or as shown on the following page.

[1] In accordance with

Appendix C

Minimum equipment list

Sample Page of a MEL

Aircraft Type: DEHAVILLAND DHC-8	Revision No. 13	Page
Aircraft Registration Mark: VH-ABC	Date: 1 August 1999	27-1-1

1. ATA System and Item Sequence Numbers		2. NUMBER INSTALLED	3. NUMBER REQUIRED FOR DISPATCH	4. REMARKS OR EXCEPTIONS
27 FLIGHT CONTROLS	CAT			
-1. Stall Warning System Pressure Indicator	A			(O) (M) One may be inoperative provided the system is deactivated.
-1. Pressure Indicator		2	1	
				NOTE: Deactivating a stall warning system will deactivate the related FAST/SLOW indication on the ADI.

Placard

None required as a lit STALL WARNING caution light on the affected side indicates malfunction. A placard may be required regarding non-availability of FAST/SLOW indication on the ADI.

Operating Procedures

Prior to flight, test integrity of the STALL WARNING system by selecting the STALL WARNING TEST

Maintenance Procedures

1. Pull the "STALL WRN & HTR" and "STALL XDCR HTR" circuit breakers for the affected side.

   Left Side: "STALL WARN & HTR 1" on left DC circuit breaker panel (L7).
   "STALL XDCR HTR 1" on variable frequency AC circuit breaker panel (left bus).

   Right Side: "STALL WARN & HTR 2" on right DC circuit breaker panel (R7)
   "STALL XDCR HTR 2" on variable frequency AC circuit breaker panel (right bus).

2. Make appropriate entry in the aircraft maintenance records.

Figure 2: Example of an MEL page

C.1 PREAMBLE

C.2 MEL applicability

C.2.1 Aircraft type, model and serial number(s*): [Insert aircraft type/model and serial number(s)]*

C.2.2 Aircraft Registration Mark(s): *[Insert aircraft registration mark(s)]*

C.2.3 Name of the CoR holder of the aircraft: *[Insert name of the CoR holder of the aircraft]*

C.2.4 Under the provision of subregulation 37(2) of CAR, CASA hereby directs that:

When using an aircraft in relation to which this MEL is in force, *[insert the operator's name]* must comply with this preamble and the conditions and limitations specified in the MEL.

C.3 Introduction

C.3.1 All equipment installed in an aircraft in compliance with the airworthiness standards and the operating rules must be operative. However, under regulation 37 of CAR, CASA may approve defects in an aircraft as permissible unserviceabilities where compliance with certain equipment requirements is not necessary in the interests of safety under all operating conditions. The approval may take the form of an MEL.

C.3.2 Experience has shown that with the various levels of redundancy designed into aircraft, the operation of every system or installed component may not be necessary when the remaining operative equipment can provide the required level of safety. CASA's approval of certain permissible unserviceabilities in the form of an MEL provides the operator with the authority to operate an aircraft with certain items or components inoperative, provided CASA considers that an acceptable level of safety can be maintained by appropriate operational limitations, transfer of functions to other operating components/conditions or reference to other instruments or components that can provide the required information.

C.3.3 By approval of the MEL, permission to dispatch the aircraft for revenue, ferry or training flight with certain items of equipment inoperative is granted provided that an acceptable level of safety is maintained by use of appropriate operational or maintenance procedures, by transfer of the function to another operating component, or by reference to other instruments providing the required information.

Note: It does not imply that the aircraft may be operated with the item removed unless the approved MEL explicitly allows the removal, approved as a design modification by an authorised person for the purpose of Subpart 21.M of CASR.

C.4 Contents of MEL

C.4.1 The MEL does not include items that are always required, such as wings, engines and landing gear, nor is reference made to equipment such as passenger convenience items which, when inoperative, do not obviously affect the airworthiness of an aircraft.

Note: Any item that is related to the airworthiness of the aircraft or is required by the civil aviation legislation that is not included in the operator's MEL must always be operative before a flight is dispatched. The MEL

must not deviate from the aircraft flight manual limitations, emergency procedures, airworthiness directive (AD) or extended diversion time operations requirements.

C.4.2 This MEL was derived from the MMEL for *[insert the aircraft manufacturer's]* aircraft model *[insert model number]*, issued by *[insert name of the NAA]* Revision: *[insert number]*, Dated: *[insert date]*

C.4.3 Mandatory amendment of the MEL will be required:

- when the applicable MMEL is amended so as to become more restrictive
- when required by CASA as a result of in-service experience; or
- when new airworthiness or operational equipment or system standard is introduced.

C.5 Criteria for dispatch

C.5.1 Prior to departure under the provisions of an MEL item the exact nature of the defect shall be determined and compliance ensured with all other requirements specified in the CASRs, CARs, CAOs and the Aeronautical Information Publication etc.

C.5.2 All necessary operational control must be exercised to ensure that aircraft is not dispatched or flown with multiple MEL items inoperative without first determining that any interface or inter-relationship between inoperative systems or components will not result in degradation in the level of safety and/or an undue increase in crew workload

C.5.3 Irrespective of the provisions of the MEL, the PIC may require a defect to be rectified after considering operational implications, multiple unserviceabilities, and additional failures during continued operation with inoperative systems or components.

C.5.4 Where a PIC accepts an aircraft with an MEL item of equipment as inoperative, the PIC shall ensure compliance with the intent of the preamble, the definitions, conditions and limitations specified in the MEL as applicable to the inoperative item.

C.6 Maintenance action

C.6.1 When it is determined that an item of equipment is inoperative, it must be reported by making an entry in the aircraft maintenance record/logbook or continuing airworthiness record prior to further operation. The item must then either be repaired or rectification may be deferred as per the MEL or other approved means acceptable to CASA (i.e. permissible unserviceabilities and DDLs).

C.6.2 When these actions are taken, an aircraft maintenance certification in the aircraft maintenance record/logbook, or other approved documentation, shall be carried out. Such action is required prior to operation with any inoperative item of equipment and must contain a detailed description of the inoperative item(s), special advice to the flight crew, if necessary, and information provided about corrective action taken.

C.6.3 If an inadvertent operation could produce a hazard, such equipment must be rendered inoperative (physically) as required in the appropriate maintenance procedures.

C.6.4 The relevant operational and maintenance procedures setting out the controls, without deviation, to achieve the principles as set out in this preamble must ensure compliance with the conditions attached to the MEL that are contained in [identify here the particular maintenance control manual or an alternative document and operations manual].

C.7 Repair intervals

C.7.1 In order to maintain an acceptable level of safety and reliability, the MEL establishes limitations on the duration of and conditions for operation with inoperative equipment. This MEL is intended to permit operation with inoperative items for a period of time until repairs can be carried out. Repairs of inoperative items, deferred in accordance with the MEL, must be affected at or prior to the repair times established by the following letter designator given in the 'CAT' column of the MEL:

- **Category A:** Items in this category shall be repaired within the time interval specified in the remarks column of the MEL, adjacent to the item. Whenever the specified interval is stated in cycles or flight time, the time interval begins with the next flight.
- **Category B:** Items in this category shall be repaired within three (3) consecutive calendar days (72 hours); excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document. For example, if it were recorded at 10 am on January 26th, the three day interval would begin at midnight January 26th and end at midnight January 29th.
- **Category C:** Items in this category shall be repaired within ten (10) consecutive calendar days (240 hours) excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document. For example, if it were recorded at 10 am on January 26th the ten day interval would begin at midnight on January 26th and end at midnight on February 5th.
- **Category D:** Items in this category shall be repaired within one hundred and twenty (120) consecutive calendar days (2880 hours); excluding the day the malfunction was recorded in the aircraft maintenance release or other approved document.

C.7.2 The letter designators are inserted adjacent to column 2.

Appendix D

MEL - standard notes and definitions

D.1 Standard notes and definitions

D.1.1 The '-' symbol in column 2 and/or 3 indicates a variable number (quantity) of the item installed.

Note: The MEL must reflect the actual number installed or an alternate means of configuration control approved by CASA.

D.1.2 **Administrative control item** means an item listed by the operator in the MEL for tracking and informational purposes. It may be added to an operator's MEL provided no relief is granted or provided conditions and limitations are contained in an approved document (i.e. Structural Repair Manual, Airworthiness Directive etc.). If relief other than that granted by an approved document is sought for an item of this type, a request must be submitted to CASA. If the review results in approval the item will become an MEL item rather than an administrative control item.

D.1.3 **AFM** means the Aircraft Flight Manual for an aeroplane/rotorcraft as applicable.

D.1.4 **Alphabetical symbol** in Column 4 indicates a proviso (condition or limitation) that must be complied with for operation with the listed item inoperative.

D.1.5 **A vertical bar** (change bar) in the margin indicates a change, addition or deletion in the adjacent text for the current revision of that page only. The change bar is dropped at the next revision of that page.

D.1.6 **Deactivated and secured** means that the specified component must be put into an acceptable condition for safe flight. An acceptable method of securing or deactivating will be established by the operator and included in the MEL procedures.

D.1.7 **Engine Indicating Crew Alerting System (EICAS), Electronic Centralised Aircraft Monitoring System (ECAM)** or similar systems that provide electronic messages refer to a system capable of providing different priority levels of systems information messages (e.g. Warning, Caution, Advisory, Status and Maintenance). Any discrepancy message that affects dispatching of an aeroplane will normally be at status message level (e.g. Advisory Status) or higher.

D.1.8 **ER** refers to extended range operations of a two-engine aeroplane which has a type design approval for ER operations and complies with the requirements of the applicable CAOs.

D.1.9 **Excess items** mean those items that have been installed that are redundant to the requirements.

D.1.10 **Flight day** means a 24-hour period (from 00.01 hrs to 23.59 hrs) either Coordinated Universal Time (UTC) or local time, as established by the operator, during which at least one flight is initiated for the affected aircraft.

D.1.11 **Icing conditions** means an atmospheric environment that may cause ice to form on the aircraft, engine intakes or in the engine(s).

D.1.12 **(If installed)** in the item column indicates that the listed item is not applicable to all models or configurations.

D.1.13 **Inoperative** means a system and/or component malfunction to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally

within its designed operating limits or tolerances. It does not imply that the aircraft may be operated with the item removed.

D.1.14 **Inoperative components of an inoperative system:** Inoperative items that are components of a system which is inoperative are usually considered components directly associated with and having no other function than to support that system.

Note: Warning/Caution systems associated with the inoperative system must be operative unless relief is specifically authorised per the MEL.

D.1.15 **Item** (Column 1) means the aircraft component, system, instrument or equipment listed in the 'Item' column.

D.1.16 **'(M)'** symbol indicates a requirement for a specific maintenance procedure, which must be accomplished prior to operation with the listed item inoperative. Appropriate procedures are required to be published as part of the operator's operations manual and MCM.

D.1.17 **Notes:** provide additional information for crew members or maintenance consideration. Notes are used to identify applicable material which is intended to assist with compliance, but do not relieve the operator of the responsibility for compliance with all applicable requirements. Notes are not a part of the provisos.

D.1.18 **Number installed** (Column 2) is the number (quantity) of items normally installed in the aircraft. This number represents the aircraft configuration considered in developing this MEL. Should the number be a variable (e.g. passenger cabin items) the MEL must reflect the actual number installed or an alternate means of configuration control approved by CASA.

D.1.19 **Number required for dispatch** (Column 3) is the minimum number (quantity) of items required for operation provided the conditions and limitations specified in Column 4 are met.

Note: The MEL must reflect the actual number required for dispatch or an alternate means of configuration control approved by CASA.

D.1.20 **'(O)'** symbol indicates a requirement for a specific operations procedure, which must be accomplished in planning for and/or operating with the listed item inoperative. Appropriate procedures are required to be published as a part of the operator's operations manual and MCM.

Note: The (O) and (M) symbols are required in the operators MEL unless otherwise authorised by CASA.

D.1.21 **Passenger convenience items** means those items related to passenger convenience, comfort or entertainment such as, but not limited to, galley equipment, movie equipment, ash trays, stereo equipment, overhead reading lamps, etc.

D.1.22 **References** given such as 'see 21-31-15' and 'see AFM limitations' are to bring attention to certain interrelationships between the subject item and other MEL items or AFM material. These references are intended to assist with compliance but do not relieve the operator of the responsibility for determining such interrelationships.

D.1.23 **Remarks or exceptions** (Column 4) this column includes a statement either prohibiting or permitting operation with a specific number of items inoperative, provisos (conditions and limitations) for such operation, and appropriate notes.

D.1.24 **System numbers** are based on the ATA specification number 100 and items are numbered sequentially.

D.1.25 **VFR** means the Visual Flight Rules prescribed in Part 12 of CAR.

D.1.26 **Visible moisture** means atmospheric environment containing water in any form that can be seen in natural or artificial light (e.g. clouds, fog, rain, sleet, hail or snow).

D.1.27 **Visual meteorological conditions (VMC**) means the atmospheric environment is such that would allow a flight to precede under the visual flight rules applicable to the flight. This does not preclude operating under instrument flight rules (IFR).