





Control and delivery of training by a Part 145 AMO

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Advisory circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- holders of a maintenance organisation approval issued under Part 145 of the Civil Aviation Safety Regulations 1998 (CASR)
- licenced aircraft maintenance engineers (LAMEs).

Purpose

This AC provides guidance and information to Part 145—approved maintenance organisations (AMOs) on the training they may provide within their organisation.

For further information

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

Status

This version of the AC 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
v2.3	December 2022	Administrative review only.
v2.2	March 2016	 The following changes have been made to this AC: Appendix A in previous versions has been deleted as it duplicates Table 2 to Appendix IX of the Part 66 Manual of Standards. Appendix B has now become Appendix A. previous Annexes A and B have been spilt out and are now standalone documents with the inclusion of a new Annex C. inclusion of a sample Permitted Training Manual as Annex C, which was previously published as a sample training manual in Civil Aviation Advisory Publication (CAAP) 104-1.

Unless specified otherwise, all subregulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Version	Date	Details
v2.1	May 2014	 The following changes have been made to this AC: replacement of reference to AC 66-2 in paragraph 8.2 with reference to Appendix IX of the Part 66 MOS as a result of the aircraft type ratings information being migrated out of the AC into an Appendix of the Part 66 MOS amendment to the tables in Appendix A to update the list of aircraft for which CASA approves a Part 145 AMO to select or control aircraft type training.
(1)	May 2013	AC 66-1(0) and dealt with aircraft type training but the scope of this AC has now been expanded to deal with other forms of training that may be provided or controlled by the AMO. In light of that change the AC has been numbered in the CASR Part 145 series.
(0)	March 2012	Initial issue of this AC.

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1 Reference material

1.1 Acronyms

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

Acronym	Description
AMC	Acceptable Means of Compliance
AME	Aircraft Maintenance Engineer
AMO	Approved Maintenance Organisation
CAMO	Certified Airworthiness Management Organisation.
CAR	Civil Aviation Regulations 1988
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
COA	Certificate of Approval
GM	Guidance Material
LAME	Licensed Aircraft Maintenance Engineer
MOS	Manual of Standards
MTO	Maintenance Training Organisation
NDI	Non-Destructive Inspection
RTO	Registered Training Organisation
SMT	Special maintenance task

1.2 Definitions

Terms that have specific meaning within this AC 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 AC and the civil aviation legislation, the definition in the legislation prevails.

Term	Definition
COA holder	A person who holds a certificate of approval under regulation 30 of CAR for maintenance of aircraft, aircraft components or aircraft materials.
Employee	Any individual who is performing or certifying for maintenance on behalf of and under the control of the COA holder.
Excluded system	An excluded system mentioned in Appendix VII of the Part 66 MOS.
In a COA	In an organisation approved to perform maintenance under regulation 30 of the Civil Aviation Regulations 1988 (CAR).
LAME	The holder of an aircraft maintenance engineer licence issued under Part 66

Term	Definition
	of CASR.

1.3 References

Legislation

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

Document	Title
Part 66	Continuing airworthiness – aircraft engineer licences and ratings
Part 145	Continuing airworthiness – Part 145 approved maintenance organisations
Part 145 MOS	Part 145 Manual of Standards
Part 147	Continuing airworthiness - maintenance training organisations
CASA Instrument <u>CASA</u> 129/13	Authorisation – Category A maintenance authority holder in a CAR 30 organisation – Exemption – from regulation 66.130 of CASR 1998
Part 66 MOS	Part 66 Manual of Standards
Regulation 30 of the Civil Aviation Regulations 1988 (CAR)	Certificates of approval
Civil Aviation Order (CAO) 104.0	Certificates of approval – application, grant and conditions

Advisory material

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

Document	Title
AC 66-07	Practical training options for aircraft type training – POC & OTJ, and the recording of evidence of recent work experience

1.4 Forms

CASA's forms are available at http://www.casa.gov.au/forms

Form number	Title
Form 465	Part 147 Maintenance Training Organisation and Part 145 Approved Maintenance Organisation Notification of Training Outcomes

2 Background

An approved maintenance organisation (AMO) has various training obligations as set out in Table 1:

Note: Not all training obligations result from aviation regulations.

Table 1: Training obligations of an AMO

Type of training and applicable MOS reference	Exposition & examples	Exposition changes
General Training	OH&S	Non-significant change
Training for employees who provide maintenance services. Paragraph145.A.35 (b) of the Part 145 MOS¹ - an employee issued with an authorisation to provide maintenance services on aircraft or aeronautical products so that they have up-to-date knowledge.	Paragraphs 145.A.35 (d) and (e) of the Part 145 MOS require provision of up-to-date knowledge of: • technology relevant to the person's functions in the AMO • AMO's procedures • human factors principles This information must be received by CASA prior to providing certifications for maintenance. The AMO must provide continuation training covering the same topics every 24 months.	Non-significant change
Aeronautical Product Employee Training. Subparagraph 145.A.35 (b) 2 of the Part 145 MOS	Arrangements for training associated with the competency of employees to maintain aeronautical products under the approval certificate (aligned with capability list).	Non-significant change
Special maintenance task (SMT) Employee Training. Subparagraph 145.A.35 (b) 3 of the Part 145 MOS.	Trained such that the employee has an adequate understanding of: • the aircraft or aeronautical product to be maintained • airworthiness implications and requirements relevant to any maintenance for which they will certify the AMO's procedures • regulations under which they will be providing maintenance services. Notes: a. Arrangements for training of SMT employees to standards where defined e.g. NDI ² standards; and/or b. internal processes for training SMT employees (e.g. boroscope processes	Non-significant change

¹ Manual of Standards.

² Non-Destructive Inspection.

Type of training and applicable MOS reference	Exposition & examples	Exposition changes
Category A licence holder training for line maintenance. Paragraph 145.A.37 (e) of the Part 145 MOS.	Details of training syllabus and training and assessment procedures need to be set out in AMO exposition.	Non-significant change
Pilot and/or Flight Engineer. Paragraph 145.A.37 (f) of the Part 145 MOS.	AMO to include provision in the exposition to provide training when requested by CAMO ³ that describes the assessment process; and syllabus of training. Regulation 42.630 – AMO trains and assesses. Subregulation 42.630 (1) – the CAMO authorises.	Non-significant change
Permitted Training in an AMO. Paragraphs 145.A.37 (b) and (c) of Part 145 MOS (includes exclusion removal training and manufacturers' training).	As provided for by paragraphs 145.A.37 (b) and (c) of the Part 145 MOS for: • removal of exclusions from licence • grant of type rating post AMO controlled or delivered training; and • must meet the standard set out in the exposition or AMC ⁴ for permitted training as assessed by CASA operations.	Significant change

Certified airworthiness management organisation.
 Acceptable means of compliance.

3 Category A

3.1 Training and authorisation

- 3.1.1 Before a category A licence holder can carry out and certify for any of the category A licence tasks listed within Appendix II of the Part 145 MOS, they must be type and task trained and authorised by the Part 145 AMO. Type and task training may be carried out by the Part 145 AMO or a Part 147 maintenance training organisation (MTO). In either case, the way in which the category A is to be type and task trained and subsequently authorised needs to be described within the Part 145 AMO's exposition.
- 3.1.2 A holder of a Certificate of Approval (COA) issued under regulation 30 of the *Civil Aviation Regulations 1988 (CAR)* may also utilise the services of category A licence holders to carry out and certify for any of the category A licence tasks listed within Appendix II of the Part 145 MOS. The COA holder needs to seek CASA delegations and authorisations to authorise category A personnel post type and task training.⁵

3.2 Acceptable means of compliance

- 3.2.1 An AMC, when describing delivery of category A type and task training, is to provide:
 - a description of the authorisation processes, including:
 - o a situation in which the quality and assurance responsible manager only authorises the holder of a category A licence if the Licensed Aircraft Maintenance Engineer (LAME) has completed type and task training (theoretical knowledge and practical training) appropriate to any task mentioned in Appendix II of the Part 145 MOS, for which the LAME is to be authorised
 - o controlled use of authorisations within the company, including any constraints or limits that apply to use of the authorisation and reporting paths and responsibilities
 - o where access to the technical and administrative material required for the exercise of the authorisation (and updates to such material) can be obtained
 - a description of the way in which instructor selection and management is carried out, that includes:
 - the instructor qualification requirements are: Holder of a B1 or B2 category licence; an appropriate aircraft type rating; and hold a certificate in train the trainer or certificate in training and assessment or equivalent qualification or experience)
 - o a list or cross reference to a list of instructional and examination staff
 - o a record of trainer skills/qualifications and responsibility for maintenance of the record
 - a description of the training processes, including:
 - training conduct (type and task specific) and per address of each facility (where the course will be conducted)

⁵ In accordance with CASA Exemption Instrument 129/13.

- o course plans for each aircraft type and task:
 - (1) objectives/learning outcomes
 - (2) topics to be covered
 - (3) the method selected by the organisation for assessing that the course objectives have been met by a student
 - (4) student to instructor ratios
 - (5) conditions under which the course will be conducted
- o training assessment
- o delivery of training at the different locations (facility locations)
- o training records
- o responsibilities for the preparation of course material
- a description of course content including:
 - o topics to be covered (including a brief overview of the airframe, required systems and/or powerplants relevant to the scope of the tasks to be authorised) cross referencing information from the systems description section of the aircraft maintenance manual may be utilised
 - o course objectives for example, on completion of the training, the student will be able to:
 - state safety precautions related to the airframe, its systems and powerplant
 - (2) identify maintenance practices important to the airframe, its systems and powerplant
 - (3) describe the general layout of the aircraft's major systems
 - (4) describe the general layout and characteristics of the powerplant
 - (5) identify and use tooling and test equipment required for the aircraft type and tasks being taught
 - (6) source and reference documents that will be utilised for the training and assessments.
- an explanation to the student of the scope and limitations of the authorisation(s) to be made after training and assessment is complete.

Note: Scope and limitations will be determined by the Part 66 MOS and the extent of training provided by the AMO.

3.3 Practical element — assessment standard

- 3.3.1 Practical assessment will determine a person's capability to perform a task. The assessment may be oral, written or practical assessment based, or a combination of all of these. Conduct of the assessment method must be described and carried in accordance with the AMO's exposition. The Part 66 MOS requires that a written report must be made by the assessor to explain why the candidate has passed or failed. The assessment must ensure that the following objectives are met:
 - accurately and confidently discuss the aircraft and its systems
 - ensure safe performance of maintenance, inspections and routine work according
 to the maintenance manual and other relevant instructions and tasks as appropriate
 for the type of aircraft, and the particular task(s) for which the course is provided
 - correctly use all technical literature and documentation for the aircraft

 correctly use specialist and special tooling and test equipment, perform removal and replacement of components and modules unique to type.

3.4 Preparation of training rooms and equipment

3.4.1 If theory training is required for the specific task training, a room will be set aside with sufficient seating and any necessary projection equipment, whiteboards manuals, training aids. The responsibility for ensuring that the room utilised is suitable for the purpose resides with the Quality Manager.

3.5 Preparation of workshops/maintenance facilities and equipment

3.5.1 The trainer is responsible for the preparation of the maintenance area and availability of tooling and equipment to perform the tasks.

3.6 Conduct of category A type and task practical training

- 3.6.1 The trainer will review or develop the training material, prior to course commencement. The Quality Manager should confirm the suitability of the material prior to its use.
- 3.6.2 When all training and assessment is complete, the trainer forwards the results to Training Manager (if any) for action by Quality Manager and would normally result in issue of the relevant authorisation.

3.7 Records of training carried out

3.7.1 The Technical Training Manager is responsible for creating and controlling all training documents relating to the program. Records should be retained as per the relevant corporate policy.

4 Permitted training

4.1 Overview

- 4.1.1 When a new aircraft type comes into service, CASA will assess the aircraft and decide whether it is of sufficient complexity to warrant type training. If so, CASA will add it to the list of type rated aircraft in Table 1 of Appendix IX of the Part 66 MOS.
- 4.1.2 Due to the time and costs involved in obtaining CASA approval of a type course, MTOs may not have sufficient resources to develop a course for a type rated aircraft prior to it entering service, or may determine that demand is insufficient to justify the costs involved. In some cases, training courses for older type rated aircraft may be deleted by registered training organisations (RTOs) on similar economic grounds.
- 4.1.3 To accommodate the gap between the supply and demand of aircraft type training, innovative maintenance training products have been established by CASA. Flexible training options, supported by experienced in-house AMO personnel, have been made available under Part 145 and Part 66, and extended to the CAR 30 COA, as described in chapters 5 and 6.

5 Control or delivery of aircraft type training by a Part 145 AMO

5.1 Systems-based, manufacturer's or exclusion removal training – permitted training

- 5.1.1 CASA has provided for AMO controlled or delivered training for those aircraft listed within Table 2 of <u>Appendix IX of the Part 66 MOS</u>. In accordance with subparagraphs 66.A.45 (h) 2 and 3 of the Part 66 MOS, a Part 145 AMO may be approved to control or provide maintenance training for the listed aircraft for each category to the limit set out in that table.
- 5.1.2 If a Part 145 AMO is contemplating delivering/controlling aircraft type training that either results in a type rating, removes type rating exclusions, or utilises manufacturer training, then the AMO exposition will need to incorporate control procedures for that activity. Annex C to this advisory circular (AC) provides a document that is an acceptable means of compliance with these requirements.
- 5.1.3 In accordance with subparagraph 66.A.45 (h) 1 of the Part 66 MOS, an AMO may deliver excluded system training and assessment. Details of excluded systems (exclusions on any aircraft type ratings) suitable for provision of training, assessment and authorisation by the AMO and controlled by procedures outlined in their exposition, can be found in Appendix VII of the Part 66 MOS.
- 5.1.4 A list of theory/practical training elements that can be selected to be provided to candidates by the Part 145 AMO is provided in Annex B to this AC. The list is a guide to assist in preparation of a training course, and only the relevant elements should be selected after assessing the needs of an individual and the specific training requirements for a particular aircraft or system.
- 5.1.5 In preparing a training course, the AMO should focus the training effort on those aspects of an aircraft or system that are sufficiently unique in their design, complexity or maintenance requirements, that a LAME would require special training in order to safely maintain the aircraft or system. It is not necessary to train the LAME in aspects of the aircraft that they would encounter in their normal course of duties on other aircraft such as replacing navigation light bulbs, tyre inspection or brake pad replacement.

6 Control or delivery of aircraft type training by a CAR 30 COA holder

6.1 Systems-based, manufacturer's or exclusion removal training – permitted training

- 6.1.1 Civil Aviation Order (CAO) 104.0 allows permitted training to be carried out by a CAR 30 COA holder if they seek and gain approval from CASA to do so.
- 6.1.2 Under Part 4A of the CAR, there are no provisions in regulation 30 of CAR for a COA holder to issue certification authorisations. In order to issue a certification authorisation as required by the permitted training provisions, a COA holder must hold a CASA delegation issued under subregulation 42ZC (6) of CAR.
- 6.1.3 Before issuing the certification authorisation, the COA holder must be satisfied that the employee has successfully completed the training and assessment (provided by the COA holder or the aircraft or aircraft engine manufacturer) for the systems based, manufacturer's or exclusion removal training, to perform maintenance on the aircraft or aircraft engine.
- 6.1.4 If a CAR 30 COA is contemplating delivering/controlling aircraft type training and assessment that removes type rating exclusions; utilises manufacturer training; or trials the use of systems based type rating training, then the training and assessment must be in accordance with the COA holders quality control manual as approved in writing by CASA for training and assessment under subsection 7 of CAO 104.0.
- 6.1.5 The sample permitted training manual provided at Annex C to this AC, if prepared and used in accordance with the instructions provided, meets the requirements of subsection 7 of CAO 104.0.
- 6.1.6 CAO 104 prescribes that the COA holder must give a notice of completion of training and assessment (in the approved form) to the employee and to CASA as soon as the employee has successfully completed the training and assessment and has provided maintenance services including certification of maintenance or issued certificates of release to service for a period of 6 months after commencement of the authorisation.
- 6.1.7 Once notice of completion of training and assessment is provided, CASA will be able to consider removal of the relevant exclusion or rating from the individual's licence, or issue of the relevant rating.

Appendix A

Systems-based training in a Part 145 AMO

A.1 Overview

A.1.1 Systems-based training, delivered by a Part 145 AMO, incorporates theory exchange delivered by a manufacturer or an experienced LAME to the candidate and on the job training gained in the workplace on aircraft.

A.1.2 Theory

- A.1.2.1 The theoretical aspect of any system, category or exclusion being trained for may be satisfied by the use of manufacturer's training or by having an LAME holding the relevant rating provide their knowledge of the relevant system. The manner of theory delivery that has been selected needs to be described within the exposition and signed off within the student syllabus/record of theory/practical.⁶
- A.1.2.2 The mechanics of the theory delivery is not prescribed but an AMC may include methodology that includes:
 - direct supervision of student maintenance of the relevant system
 - a joint review of the continuing airworthiness instructions
 - providing opportunity for an exchange of views and questions related to the maintenance of the relevant system.

A.1.3 Practical on the job training

- A.1.3.1 The objective of on the job training is to gain the required competence and experience in performing safe maintenance and may use a structured learning process. This is usually peer to peer training and needs to take place on an aircraft, or component, or at the workplace involving actual work task performance. On the job training includes both line and base maintenance tasks.
- A.1.3.2 The systems-based/exclusion training and supporting on the job training covers a cross section of tasks representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type. At the completion of the systems-based/exclusion training and supporting on the job training the candidate will be expected to be able to:
 - ensure safe performance of maintenance, inspections and routine work according
 to the maintenance manual and other relevant instructions and tasks as appropriate
 for the type of aircraft, for example troubleshooting, repairs, adjustments,
 replacements and functional checks
 - correctly use all technical literature and documentation for the aircraft
 - correctly use specialist and special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any onwing maintenance activity.
- A.1.3.3 The systems-based/exclusion training and supporting on the job training needs to cover any relevant tasks for the aircraft type concerned.

⁶ For further information refer to Part 145 MOS.

A.1.3.4 On completion of the systems-based/exclusion training and supporting on the job training course, the student shall be able to demonstrate detailed theoretical knowledge of the aircraft's applicable systems, structure, operations, maintenance, repair, and troubleshooting according to approved maintenance data. The student shall be able to demonstrate the use of manuals and approved procedures, including the knowledge of relevant inspections and limitations.

A.2 AMC

A.2.1 An AMC – for describing the way in which permitted training will be delivered or controlled by a Part 145 AMO, is to provide detail of the following in the AMO exposition:

A.2.2 Permitting training

- A.2.2.1 Permitted training is described by section 145.A.37 of the Part 145 MOS. This permitted training is subject to compliance with Part 145, the Part 145 MOS and the exposition.
- A.2.2.2 The permitted training program comes under the control of the manager responsible for training described in the exposition.

A.2.3 Experience analysis

A.2.3.1 Before permitted training is delivered or controlled, the training and authorisation manager should conduct an experience analysis. This process aims to give the individual LAME appropriate credit for their experience. It should identify if any other practical experience is required, in addition to the minimum level provided by the permitted training course and service familiarisation. The analysis is carried out on all persons prior to their permitted training course attendance and ensures the course entry criteria are satisfied by the proposed trainee.

A.2.4 Individual course design

- A.2.4.1 Using Annex B to this AC (and any course syllabus from a manufacturer's course) the AMO can select the permitted training course elements of training. If the manufacturer's training does not cover all the required training then the AMO will need to add supplemental elements of training that will be delivered by the AMO itself.
- A.2.4.2 Annex C to this AC is a sample manual that meets the requirements of paragraph 145.A.37 (a) of the Part 145 MOS and may be used by an AMO or a COA holder.

A.2.5 Training facilities

A.2.5.1 CASA recognises that much of the training will be conducted in the workplace. For theory delivery and any assessments that are not on the aircraft, the location is to be conducive for student concentration (free of distractions to the extent possible).

A.2.6 Permitted trainer

A.2.6.1 The permitted training course will be led and supervised by a LAME who:

- is licensed in the category for more than 5 years and has held the type rating for more than 18 months
- has recent maintenance experience in that rating
- has completed a recognised 'Train the Trainer' course (or held a teaching post, or holds a similar qualification military or civil, or has been assessed by the Quality Manager as being capable of successfully delivering the theory and supervising the on the job training)
- understands the way in which the permitted training and authorisation system works within the AMO.

Note: The introduction of B1 and B2 licences means that being previously licenced under regulation 31 of CAR will satisfy the licenced in category more than 5 years requirement.

A.3 Assessment of the systems-based/exclusion training and supporting on the job training

- A.3.1 The final assessment that systems-based/exclusion training and supporting on the job training has been satisfactorily completed needs to be certified by the Part 145 AMO Quality Manager.⁷
- A.3.2 The assessment may be performed task by task or conducted as a final assessment at the end of the systems-based/exclusion training and supporting on the job training.
- A.3.3 For assessment of practical elements of type training, the assessment may be oral, written or practical assessment based, or a combination of all of these.
- A.3.4 The assessment is conducted using Annex A to this AC. For each element of training, the student must demonstrate where they can find the relevant maintenance data for the system and can describe the operation of the system. Select a range of tasks (based on a sample of subjects drawn from the on the job training task list found in Appendix B of AC 66-07) for practical assessment, with an aim to determine the candidate's competence to perform a task.
- A.3.5 A written report should be made by the assessor to explain why the candidate has passed or failed.
- A.3.6 The assessment should ensure that the following objectives are met:
 - accurately and confidently discusses the aircraft and its systems
 - ensure safe performance of maintenance, inspections and routine work according
 to the maintenance manual and other relevant instructions and tasks as appropriate
 for the type of aircraft, for example, troubleshooting, repairs, adjustments,
 replacements, rigging and functional checks such as engine run etc. (if required)
 - correctly use all technical literature and documentation for the aircraft
 - correctly use specialist and special tooling and test equipment, and perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

⁷ For further information refer to Part 145 MOS.

A.4 AMO authorisation

- A.4.1 Once trained and assessed, the AMO may authorise the LAME to make certifications for the system or aircraft that has been taught using the permitted training regime.
- A.4.2 Six months from the successful completion of the systems-based/exclusion training and supporting on the job training, the AMO needs to complete and submit Form 465 to CASA.