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## GENERAL

## AMC 147.1

A competent authority may be a ministry, a national aviation authority, or any aviation body designated by the Member State and located within that Member State. A Member State may designate more than one competent authority to cover different areas of responsibility, as long as the designation decision contains a list of the competencies of each authority and there is only one competent authority responsible for each given area

**SECTION A - TECHNICAL REQUIREMENTS**

# SUBPART A — GENERAL

## GM to 147.A.10 - General

Such an organisation may conduct business from more than one address and may hold more than one Part approval.

## AMC 147.A.15 - Application

The application form should contain the information required in the ASSA-AC Form 12.

# SUBPART B — ORGANISATIONAL REQUIREMENTS

## AMC 147.A.100 (i) - Facility requirements

1. For approved basic maintenance training courses this means holding and ensuring reasonable access to copies of all Parts and national aviation legislation, examples of typical aircraft maintenance manuals and service bulletins, Airworthiness Directives, aircraft and component records, release documentation, procedures manuals and aircraft maintenance programmes.
2. Except for the Parts and national aviation regulations, the remainder of the documentation should represent typical examples for both large and small aircraft and cover both aeroplanes and helicopters as appropriate. Avionic documentation should cover a representative range of available equipment. All documentation should be reviewed and updated on a regular basis.

## GM to 147.A.100 (i) - Facility requirements

Where the organisation has an existing library of regulations, manuals and documentation required by another Part, it is not necessary to duplicate such a facility subject to student access being under controlled supervision.

## AMC 147.A.105 - Personnel requirements

1. The larger maintenance training organisation (an organisation with the capacity to provide training for 50 students or more) should appoint a training manager with the responsibility of managing the training organisation on a day-to-day basis. Such person could also be the accountable manager. In addition, the organisation should appoint a quality manager with the responsibility of managing the quality system as specified in paragraph 147.A.130(b) and an examination manager with the responsibility of managing the relevant Part-147 Subpart C or Subpart D examination system. Such person(s) may also be an instructor and/or examiner.
2. The smaller maintenance training organisation (an organisation with the capacity to provide training for less than 50 students) may combine any or all of the sub-paragraph (1) positions subject to the competent authority verifying and being satisfied that all functions can be properly carried out in combination.
3. When the organisation is also approved against other Parts which contain some similar functions then such functions may be combined.

## AMC 147.A.105 (b) - Personnel requirements

With the exception of the accountable manager, an ASSA-AC Form 4 should be completed for each person nominated to hold a position required by 147.A.105(b). An example of an ASSA-AC Form 4 is included in Appendix II to AMC.

## GM to 147.A.105 (c) - Personnel requirements

The maintenance training organisation should have a nucleus of permanently employed staff to undertake the minimum amount of maintenance training proposed but may contract, on a part-time basis, instructors for subjects which are only taught on an occasional basis.

## AMC 147.A.105 (f) - Personnel requirements

Any person currently accepted by the competent authority in accordance with the national aviation regulations in force prior to Part 147 coming into force may continue to be accepted in accordance with 147.A.105(f).

Paragraph 3 of Appendix III to AMC to Part-66 provides criteria to establish the qualification of assessors.

## GM to 147.A.105 (f) - Personnel requirements

It is recommended that potential instructors be trained in instructional techniques.

**GM to 147.A.105 (g) - Personnel requirements**

Examiners should demonstrate a clear understanding of the examination standard required by Part-66 and have a responsible attitude to the conduct of examinations such that the highest integrity is ensured.

## AMC 147.A.105 (h) - Personnel requirements

Updating training should normally be of 35 hours duration but may be adjusted to the scope of training of the organisation and particular instructor/examiner.

**GM to 147.A.105 (h) - Personnel requirements**

1. Records should show for each instructor/examiner when the updating training was scheduled and when it took place.
2. The updating training may be subdivided during the 24 months into more than one element and may include such activities as attendance at relevant lectures and symposiums.

## AMC 147.A.110 - Records of instructors, examiners and assessors

1. The following minimum information relevant to the scope of activity should be kept on record in respect of each instructor, knowledge examiner and practical assessor:
	1. Name
	2. Date of Birth
	3. Personnel Number
	4. Experience
	5. Qualifications
	6. Training history (before entry)
	7. Subsequent Training
	8. Scope of activity
	9. Starting date of employment/contract
	10. If appropriate – ending date of employment/contract.
2. The record may be kept in any format but should be under the control of the organisations quality system.
3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.
4. The competent authority is an authorised person when investigating the records system for initial and continued approval or when the competent authority has cause to doubt the competence of a particular person.

## GM to 147.A.110 - Records of instructors, examiners and assessors

Instructors, knowledge examiners and practical assessors should be provided with a copy of their terms of reference.

## GM to 147.A.115 (a) - Instructional equipment

1. Synthetic training devices are working models of a particular system or component and include computer simulations.
2. A synthetic training device is considered beneficial for complex systems and fault diagnostic purposes.

## AMC 147.A.115 (c) - Instructional equipment

1. An appropriate selection of aircraft parts means appropriate in relation to the particular subject module or sub-module of Part-66 being instructed. For example the turbine engine module should require the provision of sufficient parts from different types of turbine engine to show what such parts look like, what the critical areas are from a maintenance viewpoint and to enable disassembly/assembly exercises to be completed.
2. Appropriate aircraft, engines, aircraft parts and avionic equipment means appropriate in relation to the particular subject module or sub-module of Part-66 being instructed. For example category B2 avionic training should require amongst other equipment, access to at least one type of installed autopilot and flight director system such that maintenance and system functioning can be observed and therefore more fully understood by the student in the working environment.
3. ‘Access’ may be interpreted to mean, in conjunction with the facilities requirement of 147.A.100(d), that there may be an agreement with a maintenance organisation approved under Part-145 to access such parts, etc.

## AMC 147.A.130 (a) - Training procedures and quality system

This guidance material provides some clarifications for the incorporation of new training methods and training technologies in the procedures for aircraft maintenance training.

The classic training method is a teacher lecturing the pupils in a classroom. Commonly the training tools are a blackboard and training manuals. New technologies make it possible to develop new training methods and use other training tools, e.g. multimedia-based training and virtual reality. A combination of several training methods/tools is recommended in order to increase the overall effectiveness of the training.

Simulation cannot be eligible as a sole training or assessment tool for basic hand skills such as wiring, welding, drilling, filing, wire locking, riveting, bonding or any other skill where competence may only be achievable by performing a hands-on activity.

Three tables are provided to illustrate the possibilities for the use of different training methods and tools:

Table 1: Training tools

Table 2: Training methods

Table 3: Combination of training methods and tools and their use

| Training tools | Description |
| --- | --- |
| 1 | Slideshow presentation  | A structured presentation of slides.  |
| 2 | Manuals  | Comprehensive and controlled publication of a particular topic.  |
| 3 | Computer (desktop PC, laptop, etc.)  | An electronic processing device that can hold and display information in various media.  |
| 4 | Mobile devices (such as, but not limited to, tablets, smart phones, etc.)  | A mobile electronic processing device that can hold and display information in various media.  |
| 5 | Videos  | Electronic media for broadcasting moving visual images.  |
| 6 | MSTD — Maintenance simulation training device  | A training device that is intended to be used in maintenance training, examination, and/or assessment for a component, system or entire aircraft. The MSTD may consist of hardware and software elements.  |
| 7 | Mock-up  | A scaled or full-size replica of a component, system or entire aircraft that preserves (i.e. is an exact replica of) the geometrical, operational or functional characteristics of the real component, system or entire aircraft for which maintenance training is delivered with the use of such a replica.  |
| 8 | Virtual reality  | A computer-generated three-dimensional (3D) environment which can be explored and possibly interacted with.  |
| 9 | MTD — Maintenance training device  | Maintenance training device is any training device other than an MSTD used for maintenance training and/or examination and/or assessment. It may include mock-ups.  |
| 10 | Real aircraft  | A suitable aircraft whose condition allows teaching a selection of maintenance tasks that are representative of the particular aircraft or of the aircraft category. ‘Suitable’ means an aircraft of the type or licence (sub)category (if the licence (sub)category aircraft is outfitted with the same equipment subject to the particular lesson module(s) and is sufficiently similar so that the lesson objective(s) can be satisfactorily accomplished) for type training, or an aircraft representative of the licence (sub)category for basic training, and excludes ‘virtual aircraft’. ‘Condition’ means that the aircraft is equipped with its main components and that the systems can be activated/operated when this is required by the learning objectives.  |
| 11 | Aircraft component  | A suitable aircraft component used to teach specific maintenance tasks off-the-wing. This may include but is not limited to tasks such as borescope inspections, minor repairs, testing, or the assembly/disassembly of sub-components. ‘Suitable’ means that the condition of the component should fit the learning objectives of the tasks and, when appropriate, may feature existing defects or damages.  |
| 12 | Augmented reality  | An enhancement (modification, enrichment, alteration or manipulation) of one’s current perception of reality elements of a physical, real-world environment following user’s inputs picked up by sensors transferred to rapid streaming computer images. By contrast, virtual reality replaces the real world with a simulated one. An enhancement (modification, enrichment, alteration or manipulation) of one’s current perception of reality elements of a physical, real-world environment following user’s inputs picked up by sensors transferred to rapid streaming computer images. By contrast, virtual reality replaces the real world with a simulated one.  |
| 13 | Embedded training  | A maintenance training function that is originally integrated into the aircraft component’s design (i.e. a centralised fault display system).  |
| 14 | Classroom  | A physical, appropriate location where learning takes place.  |
| 15 | Virtual classroom  | A simulated, not physical, location where synchronous learning takes place.  |
| 16 | Virtual aircraft  | A simulated, not physical, aircraft that may be used in theoretical training, practical training, examination or assessment. A simulated, not physical, aircraft that may be used in theoretical training, practical training, examination or assessment. A simulated, not physical, aircraft that may be used in theoretical training, practical training, examination or assessment.  |
| Note: Synthetic training devices (STDs) is a generic term used for systems using hardware and/or software, simulating the behaviour of one or more aircraft systems or a complete aircraft, such as maintenance simulation training devices (MSTDs), maintenance training devices (MTDs) and flight simulation training devices (FSTDs).  |

Table 2 lists existing training methods that may be selected for basic training.

## Table 2: Training methods

| Training method  | Description | Instructor-centred(1)  | Student-centred(2)  | Blended training(3)  |
| --- | --- | --- | --- | --- |
| Assisted learning (mentoring)  | Assisted learning or mentorship represents an ongoing, close relationship of dialogue and learning between an experienced /knowledgeable instructor and a less experienced/knowledgeable student in order to develop experience/knowledge of students.  | X | X | X |
| Computer-based training (CBT)  | CBT is any interactive means of structured training using a computer to deliver a content. (Note: Not to be confused with competency-based training that also uses the acronym ‘CBT’)  | X | X | X |
| Demonstration | A method of teaching by example rather than explanation.  | X |  | X |
| Distance learning asynchronous  | Distance learning reflects training situations in which instructors and students are physically separated. It is asynchronous if the teacher and the students do not interact at the same time. |  | X | X |
| Distance learning synchronous  | Distance learning reflects training situations in which instructors and students are physically separated. It is synchronous if the teacher and the students interact at the same time (real time). | X |  | X |
| e-learning  | Training via a network or electronic means, with or without the support of instructors (e-tutors).  | X | X | X |
| Lecturing (instructor-led/face to face)  | Practice of face-to-face delivery of training and learning material between an instructor and students, either individuals or groups.  | X |  | X |
| Mobile learning (M-learning)  | Any sort of learning that happens when the student is not at a fixed, predetermined location, using mobile technologies  | X | X | X |
| Multimedia-based training(4)  | Any combined use of different training media  | X | X | X |
| Simulation  | Any type of training that uses a simulator imitating a real-world process or system.  | X | X | X |
| Web-based training (WBT) | Generic term for training or instruction delivered over the internet or an intranet using a web browser.  | X | X | X |
| Note: The purpose of this table is to provide a short definition for each associated training method and to relate each method to the focus of the learning. It is not meant to comprehensively explore and identify the capabilities of each training method herein included. (1) ‘Instructor-centred’ means that the instructor is responsible for teaching the student. (2) ‘Student-centred’ means that the student is responsible for the learning progress. (3) ‘Blended training’ includes different instructional methods and tools, different delivery methods, different scheduling (synchronous/asynchronous) or different levels of guidance. Blended training allows the integration of a range of learning opportunities. (4) ‘Multimedia-based training’ by definition uses various media to achieve its objective, thus, none of the single media listed is per se a complete solution for training.  |

Table 3 presents the combination of training methods and tools that may be taken into account for theoretical and practical training.

## The table is intended to support potential delivery methods. Additional training methods and further use of those methods could be acceptable to the competent authority when demonstrated as supporting learning objectives.

Table 3 Combination of training methods and tools and their use

| Training method  | Training tool | Theoritical elements | Practical elements | OJT | Learning objective |
| --- | --- | --- | --- | --- | --- |
| See table 2 | See table 1 | Level 1 | Level 2 | Level 3 |  |  | Knowledge | Skills | Attitude |
| Lecturing (instructor-led /face to face)  | 1, 2, 3, 5, 6, 7, 8, 9, 10 , 11, 12, 13, 14, 16  | X | X | X | X | XOnly type | X | X | XOnly type |
| Assisted learning (mentoring  | 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16  | X | X | X | X | XOnly type | X | X | XOnly type |
| e-learning  | 1,2,3,4,5,8,12,14,15,16  | X | X | X(1) | X(1) |  | X | X(1) | X(1) |
| Computer-based training  | 1,2,3,4,5,8,12,14,15,16  | X | X | X | X(1) |  | XOnly type | X(1) |  |
| Multimedia-based training  | 1,2,3,4,5,8,12,13,14,15,16  | X | X | X | X(1) |  | XOnly type | X(1) | X(1) |
| Web-based training (WBT)  | 1,2,3,4,5,8,12,14,15,16  | X | X | X(1) | X(1) |  | XOnly type | X(1)Only type | X(1) |
| M-learning  | 1,2,3,4,5,12,15, 16  | X | X | X(1) | X(1) |  | X(1) Type unlimited | X(1) |  |
| Distance learning synchronous  | 1,2,3,4,5,8,15,16  | X | X | X(1) | X(1) |  | X(1) Type unlimited | X(1) | X(1)Only type |
| Distance learning asynchronous  | 1,2,3,4,5,8,16  | X | X | X(1) |  |  | X(1) Type unlimited | X(1) | X(1)Only type |
| Demonstration  | 1,2,3,5,6,7,8,9,10,11,12,13,14,15, 16  | X | X | X(1) | X | X(1)Only type | X | X | X(1)Only type |
| Simulation  | 1,3,4,6,7,8,9,10, 12,14, 15(1), 16  | X | X | X(1) | X |  | X | X | XOnly type |
| This table relates a given training method to a list of acceptable training tools (code), oriented to deliver the theoretical elements, practical elements or on-the-job training associated with their specific learning objectives.  |
| (1) Limited suitability. It means that the respective training method may be used but with limited results, thus requiring the support of a complementary training method to fulfil the learning objectives. NOTE: Instructor (human) involvement should be considered in Basic Knowledge Modules 9A/9B.  |

## AMC 147.A.130 (b) - Training procedures and quality system

1. The independent audit procedure should ensure that all aspects of Part-147 compliance should be checked at least once in every 12 months and may be carried out as one complete single exercise or subdivided over a 12-month period in accordance with a scheduled plan.
2. In a small maintenance training organisation the independent audit function may be contracted to another maintenance training organisation approved under Part-147 or a competent person acceptable to the competent authority. Where the small training organisation chooses to contract the audit function it is conditional on the audit being carried out twice in every 12 month period with one such audit being unannounced.
3. Where the maintenance training organisation is also approved to another Part requiring a quality system, then such quality systems may be combined.
4. When training or examination is carried out under the sub-contract control system:
	1. a pre audit procedure should be established whereby the Part 147 approved maintenance training organisation’ should audit a prospective sub-contractor to determine whether the services of the sub-contractor meet the intent of Part 147.
	2. a renewal audit of the subcontractor should be performed at least once every 12 months to ensure continuous compliance with the Part-147 standard.
	3. the sub-contract control procedure should record audits of the sub-contractor and to have a corrective action follow-up plan.
5. The independence of the audit system should be established by always ensuring that audits are carried out by personnel not responsible for the function or procedure being checked.

## GM to 147.A.130 (b) - Training procedures and quality system

1. The primary objective of the quality system is to enable the training organisation to satisfy itself that it can deliver properly trained students and that the organisation remains in compliance with Part-147.
2. The independent audit is a process of routine sample checks of all aspects of the training organisation’s ability to carry out all training and examinations to the required standards. It represents an overview of the complete training system and does not replace the need for instructors to ensure that they carry out training to the required standard.
3. A report should be raised each time an audit is carried out describing what was checked and any resulting findings. The report should be sent to the affected department(s) for rectification action giving target rectification dates. Possible rectification dates may be discussed with the affected department(s) before the quality department confirms such dates on the report. The affected department(s) should rectify any findings and inform the quality department of such rectification.
4. A large training organisation (an organisation with the capacity to provide training for 50 students or more) should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to ensure that findings are being rectified. For the small training organisation (an organisation with the capacity to provide training for less than 50 students) it is acceptable to use competent personnel from one section/department not responsible for the function or procedure to check the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager.
5. The management control and follow up system should not be contracted to outside persons. The principal function is to ensure that all findings resulting from the independent audit are corrected in a timely manner and to enable the accountable manager to remain properly informed of the state of compliance. Apart from rectification of findings the accountable manager should hold routine meetings to check progress on rectification except that in the large training organisation such meetings may be delegated on a day to day basis to the quality manager as long as the accountable manager meets at least once per year with the senior staff involved to review the overall performance.

## AMC 147.A.135 - Examinations

1. Examinations may be computer- or hard-copy-based or a combination of both.
2. The actual questions to be used in a particular examination should be determined by the examiners.

## GM to 147.A.135 - Examinations

The competent authority will determine when or if the disqualified examiner may be reinstated.

## AMC 147.A.140 - Maintenance training organisation exposition

1. A recommended format of the exposition is included in Appendix 1.
2. When the maintenance training organisation is approved in accordance with any other Part which also requires an exposition, the exposition required by the other Part may form the basis of the maintenance training organisation exposition in a combined document, as long as the other exposition contains the information required by 147.A.140 and a cross reference index is included based upon Appendix I.
3. When training or examination is carried out under the sub-contract control system the maintenance training organisation exposition should contain a specific procedure on the control of sub-contractors as per Appendix 1 item 2.18 plus a list of sub-contractors as required by 147.A.140(a)12 and detailed in Appendix I item 1.7.
4. The competent authority may approve a delegated exposition approval system for all changes other than those affecting the approval.

## AMC 147.A.145 (d) - Privileges of the maintenance training organisation

1. When training or examination is carried out under the sub-contract control system it means that for the duration of such training or examination, the Part-147 approval has been temporarily extended to include the sub-contractor. It therefore follows that those parts of the sub-contractor’s facilities, personnel and procedures involved with the Part-147 approved maintenance training organisation’s students should meet requirements of Part-147 for the duration of that training or examination and it remains the Part-147 organisation’s responsibility to ensure such requirements are satisfied.
2. The maintenance training organisation approved under Part-147 is not required to have complete facilities and personnel for training that it needs to sub-contract but it should have its own expertise to determine that the sub-contractor meets the Part-147 standards. Particular attention should be given to ensuring that the training that is delivered also meets the requirements of Part-66 and the aircraft technologies are appropriate.
3. The contract between the maintenance training organisation approved under Part-147 and the subcontractor should contain:
* a provision for the Agency and the competent authority to have right of access to the subcontractor;
* a provision for the sub-contractor to inform the Part-147 approved maintenance training organisation of any change that may affect its Part-147 approval, before any such change takes place.

## GM 147.A.145 (d) - Privileges of the maintenance training organisation

1. The pre audit procedure should focus on establishing compliance with the training and examination standards set out in Part-147 and Part-66.
2. The fundamental reason for allowing a maintenance training organisation approved under Part-147 to sub-contract certain basic theoretical training courses is to permit the approval of maintenance training organisations, which may not have the capacity to conduct training courses on all Part-66 modules.
3. The reason for allowing the subcontracting of training modules 1 to 6 and 8 to 10 only is, most of the related subjects can generally also be taught by training organisations not specialised in aircraft maintenance and the practical training element as specified in 147.A.200 does not apply to them. On the contrary, training modules 7 and 11 to 17 are specific to aircraft maintenance and include the practical training element as specified in 147.A.200. The intent of the ‘limited subcontracting’ option

as specified in 147.A.145 is to grant Part-147 approvals only to those organisations having themselves at least the capacity to teach on aircraft maintenance specific matters.

## GM 147.A.145 (d) (3) -Privileges of the maintenance training organisation

In the case of type training and examination, the reason for allowing only subcontracting to powerplant and avionic systems is that the related subjects can generally also be imparted by certain organisations specialised in these domains such as the Type Certificate Holder of the powerplant or the OEMs of these avionics systems. In such a case, the type training course should make clear how the interfaces with the airframe are addressed and by whom (the subcontracted organisation or the Part-147 organisation itself).

## AMC 147.A.145 (f) - Privileges of the maintenance training organisation

When an organisation approved to provide basic knowledge training or type training is also approved to provide type examination in the cases where type training is not required, appropriate procedures in the MTOE should be developed and approved, including:

* The development and the conduct of the type examination;
* The qualification of the examiners and their currency.

In particular, emphasis should be put when such an examination is not regularly conducted or when the examiners are not normally involved in aircraft or activities with technology corresponding to the aircraft type subject to examination. An example would be the case of an organisation providing basic knowledge training only for the B1.1 license. This organisation should justify how they run type examinations for single piston-engine helicopters in the case of a B1.4 licence.

# SUBPART C — APPROVED BASIC TRAINING COURSE

## AMC 147.A.200 (b) - The approved basic training course

Each licence category or subcategory basic training course may be subdivided into modules or sub-modules of knowledge and may be intermixed with the practical training elements subject to the required time elements of 147.A.200(f) and (g) being satisfied.

## AMC 147.A.200 (d) - The approved basic training course

1. Where the maintenance training organisation approved under Part-147 contracts the practical training element either totally or in part to another organisation in accordance with 147.A.100(d), the organisation in question should ensure that the practical training elements are properly carried out.
2. At least 30% of the practical training element should be carried out in an actual maintenance working environment.

## AMC 147.A.200 (f) - The approved basic training course

1. In order to follow pedagogical and human factors principles, the maximum number of training hours per day for the theoretical training should not be more than 6 hours. A training hour means 60 minutes of tuition excluding any breaks, examination, revision, preparation and aircraft visit. In exceptional cases, the competent authority may allow deviation from this standard when it is properly justified that the proposed number of hours follows pedagogical and human factors principles. These principles are especially important in those cases where:
* Theoretical and practical training are performed at the same time;
* Training and normal maintenance duty/apprenticeship are performed at the same time.
1. The minimum participation time for the trainee to meet the objectives of the course should not be less than 90 % of the tuition hours. Additional training may be provided by the training organisation in order to meet the minimum participation time. If the minimum participation defined for the course is not met, a certificate of recognition should not be issued.

## AMC 147.A.200 (g) - The approved basic training course

Typical conversion durations are given below:

1. The approved basic training course to qualify for conversion from holding a Part-66 aircraft maintenance licence in subcategory A1 to subcategory B1.1 or B2 should not be less than 1600 hours and for conversion from holding a Part-66 aircraft maintenance licence in subcategory A1 to subcategory B1.1 combined with B2 should not be less than 2200 hours. The course should include between 60% and 70% knowledge training.
2. The approved basic training course to qualify for conversion from holding a Part-66 aircraft maintenance licence in subcategory B1.1 to B2 or category B2 to B1.1 should not be less than 600 hours, and should include between 80% and 85% knowledge training.
3. The approved basic training course to qualify for conversion from holding a Part-66 aircraft maintenance licence in subcategory B1.2 to subcategory B1.1 should not be less than 400 hours, and should include between 50% and 60% knowledge training.
4. The approved basic training course to qualify for conversion from holding a Part-66 aircraft maintenance licence in one subcategory A to another subcategory A should not be less than 70 hours, and should include between 30% and 40% knowledge training.
5. The approved basic training course to qualify for conversion from holding a Part-66 aircraft maintenance licence in any subcategory A to category B2L (with any system rating) should not be less than 800 hours and should include between 60 and 70 % of knowledge training.

## AMC 147.A.205 - Basic knowledge examinations

The competent authority may accept that the maintenance training organisation approved under Part-147 can conduct examination of students who did not attend an approved basic course at the organisation in question.

## AMC 147.A.210 (a) - Basic practical assessment

Where the maintenance training organisation approved under Part-147 contracts the practical training element either totally or in part to another organisation in accordance with 147.A.100(d) and chooses to nominate practical assessors from the other organisation, the organisation in question should ensure that the basic practical assessments are carried out.

### AMC 147.A.210 (b) - Basic practical assessment

An assessed pass for each student should be granted when the practical assessor is satisfied that the student meets the criteria of 147.A.200(e). This means that the student has demonstrated the capability to use relevant tools/equipment/test equipment as specified by the tool/equipment/test equipment manufacturer and the use of maintenance manuals in that the student can carry out the required inspection/testing without missing any defects, can readily identify the location of components and is capable of correct removal/fitment/adjustment of such components. The student is only required to carry out enough inspection/testing and component removal/fitment/adjustments to prove capability. The student should also show an appreciation of the need to ensure clean working conditions and the observance of safety precautions for the student and the product. In addition, the student should demonstrate a responsible attitude in respect to flight safety and airworthiness of the aircraft.

Appendix III to AMC to Part-66 provides criteria for the competence assessment performed by the designated assessors (and their qualifications).

**SUBPART D — AIRCRAFT TYPE/TASK TRAINING**

### AMC 147.A.300 Aircraft type/task training

Aircraft type training may be sub-divided in airframe and/or powerplant and/or avionics/electrical systems type training courses. A maintenance training organisation approved under Part-147 may be approved to conduct airframe type training only, powerplant type training only, avionics/electrical systems type training only or any combination thereof.

1. Airframe type training course means a type training course including all relevant aircraft structure and electrical and mechanical systems excluding the powerplant.
2. Powerplant type training course means a type training course on the bare engine, including the build-up to a quick engine change unit.
3. The interface of the engine/airframe systems should be addressed by either airframe or powerplant type training. In some cases, such as for general aviation, it may be more appropriate to cover the interface during the airframe course due to the large variety of aircraft that can have the same engine type installed.
4. Avionics/electrical systems type training course means type training on avionics and electrical systems covered by but not necessarily limited to ATA (Air Transport Association) chapters 22, 23, 24, 25, 27, 31, 33, 34, 42, 44, 45, 46, 73 and 77 or equivalent.

**SECTION B - PROCEDURE FOR COMPETENT AUTHORITIES**

**SUBPART A — GENERAL**

### AMC 147.B.10 (a) - Competent authority

1. In deciding upon the required organisational structure, the competent authority should review the number of certificates to be issued, the number and size of potential Part-147 approved maintenance training organisations within that Member State, as well as the level of civil aviation activity, number and complexity of aircraft and the size of the Member State’s aviation industry.
2. The competent authority should retain effective control of important surveillance functions and not delegate them in such a way that Part-147 organisations, in effect, regulate themselves in airworthiness matters.
3. The set-up of the organisational structure should ensure that the various tasks and obligations of the competent authority are not relying on individuals. That means that a continuing and undisturbed fulfilment of these tasks and obligations of the competent authority should also be guaranteed in case of illness, accident or leave of individual employees.

### AMC 147.B.10 (b) - Competent authority

1. competent authority surveyors should have:
	1. practical experience and expertise in the application of aviation safety standards and safe operating practices;
	2. comprehensive knowledge of:
		1. relevant parts of implementing rules, certification specifications and guidance material;
		2. the competent authority’s procedures;
		3. the rights and obligations of a surveyor;
		4. quality systems;
		5. continuing airworthiness management.
	3. training on auditing techniques.
2. five years relevant work experience to be allowed to work as a surveyor independently. This may include experience gained during training to obtain the 1.5 qualification.
3. a relevant engineering degree or an aircraft maintenance or training qualification with additional education. ‘relevant engineering degree’ means an engineering degree from aeronautical, mechanical, electrical, electronic, avionic or other studies relevant to the maintenance and continuing airworthiness of aircraft/aircraft components.
	1. knowledge of a relevant sample of aircraft types
	2. knowledge of maintenance training standards.
4. In addition to technical competency, surveyors should have a high degree of integrity, be impartial in carrying out their tasks, be tactful, and have a good understanding of human nature.
5. A programme for continuation training should be developed that ensures that the surveyors remain competent to perform their allocated tasks.

### AMC 147.B.10 (c) - Competent authority

The documented procedures should contain the following information:

1. The Member State’s designation of the competent authority(ies).
2. The title(s) and name(s) of the manager(s) of the competent authority and their duties and responsibilities.
3. Organisation chart(s) showing associated chains of responsibility of the senior persons.
4. A procedure defining the qualifications for staff together with a list of staff authorised to sign certificates.
5. A general description of the facilities.
6. Procedures specifying how the competent authority(ies) ensure(s) compliance with Part-147.

### AMC 147.B.20 - Record-keeping

1. The record-keeping system should ensure that all records are accessible whenever needed within a reasonable time. These records should be organized in a consistent way throughout the competent authority (chronological, alphabetical order, etc.).
2. All records containing sensitive data regarding applicants or organisations should be stored in a secure manner with controlled access to ensure confidentiality of this kind of data.
3. All computer hardware used to ensure data backup should be stored in a different location from that containing the working data in an environment that ensures they remain in good condition. When hardware- or software-changes take place special care should be taken that all necessary data continues to be accessible at least through the full period specified in 147.B.20.

**SUBPART B — ISSUE OF AN APPROVAL**

### GM to 147.B.110 - Procedure for approval and changes to the approval

1. A meeting should be arranged between the applicant and the Member State who issue Part-147 approvals to determine if the applicant's training activities justify the investigation for issue of Part-147 approval and to ensure that the applicant understands what needs to be done for Part-147 approval. This meeting is not intended to establish compliance but rather to see if the activity is a Part-147 activity.
2. Assuming that the applicant's activities come within the scope of Part-147 approval, instructions should be sent to the competent authority staff requesting that an audit of the applicant be carried out and when satisfied that compliance has been established, a recommendation for the issue of approval should be submitted to the competent authority staff who grant approval unless these are the same staff. The competent authority should determine how and by whom the audit shall be conducted. For example, if the applicant is a large training organisation, it will be necessary to determine whether one large team audit or a short series of small team audits or a long series of single person audits is most appropriate for the particular situation. A further consideration in the case of a combined Part-145/147 organisation is the possibility to combine the audits.
3. Where it is intended that the maintenance training organisation may conduct training and examinations away from the maintenance training organisation address(es) in accordance with 147.A.145(c), then a sample audit should be carried out by the competent authority from time to time of the process to ensure that procedures are followed. For practical reasons such sample audits will need to be carried out when training is being conducted away from the maintenance training organisation address(es).
4. The auditing surveyor should ensure that they are always accompanied throughout the audit by a senior member of the organisation making application for Part-147 approval. Normally this should be the proposed quality manager. The reason for being accompanied is to ensure that the organisation is fully aware of any findings during the audit. In any case, the proposed quality manager/senior member of the organisation should be debriefed at the end of the audit visit on the findings made during the audit.
5. There will be occasions when the auditing surveyor may find situations in the applicant's organisation on which he/she is unsure about compliance. In this case, the organisation should be informed about possible non-compliance at the time of audit and the fact that the situation will be reviewed before a decision is made. The organisation should be informed of the decision within 2 weeks of the audit visit in writing if the decision is a confirmation of non-compliance. If the decision is a finding of being in compliance, a verbal confirmation to the organisation will suffice.
6. A change of name of the maintenance training organisation requires the organisation to submit a new application as a matter of urgency stating that only the name of the organisation has changed including a copy of the organisation exposition with the new name. Upon receipt of the application and the organisation exposition, the competent authority should reissue the approval certificate valid only up to the current expiry date.
7. A name change alone does not require the competent authority to audit the organisation, unless there is evidence that other aspects of the maintenance training organisation have changed.
8. A change of accountable manager requires the maintenance training organisation to submit such fact to the competent authority as a matter of urgency together with the amendment to the accountable manager exposition statement.
9. A change of any of the senior personnel specified in 147.A.105(b) requires the maintenance training organisation to submit a Form 4 in respect of the particular person. If satisfied that the qualifications and experience meet the standard required by Part-147, the competent authority should indicate acceptance in writing to the maintenance training organisation.
10. A change in the maintenance training organisation’s exposition requires the competent authority to establish that the procedures specified in the exposition are in compliance with Part-147 and then to establish if these are the same procedures intended for use within the training facility.
11. Any change of location of the maintenance training organisation requires the organisation to make a new application to the competent authority together with the submission of an amended exposition. The competent authority should follow the procedure specified in 147.B.110(a) and (b) in so far as the change affects such procedure before issuing a new Part-147 approval certificate.
12. The complete or partial reorganisation of a training organisation should require the re-audit of those elements that have changed.
13. Any additional basic or aircraft type training courses requires the maintenance training organisation to make a new application to the competent authority together with the submission of an amended exposition. For basic training extensions, an additional sample of new examination questions relevant to the modules associated with the extension being sought will be required to be submitted. The competent authority should follow the procedure of paragraph 11 in so far as the change affects such procedures unless the competent authority is satisfied that the maintenance training organisation has a well-controlled procedure to qualify such change when it is not necessary to conduct the audit elements of the paragraph 11 procedure.

### AMC 147.B.110 (a) - Procedure for approval and changes to the approval

1. The audit should be conducted on the basis of checking the facility for compliance, interviewing personnel and sampling any relevant training course for its conduct and standard.
2. The audit report should be made on an ASSA-AC Form 22 (see appendix III).

**AMC 147.B.110 (b) - Procedure for approval and changes to the approval**

The date each finding was rectified should be recorded together with the reference document.

### AMC 147.B.120 (a) - Continued validity procedure

1. Audits should be conducted to ensure the continuity of the approval; it is not necessary to sample all basic and type training courses, but the competent authority should sample, as appropriate, one basic and one type training course to establish that training is conducted in an appropriate manner. Nevertheless, the duration of the sampling for each course should not be less than 3 hours. Where no training course is being conducted during the audit, arrangements should be made to return at a later date to sample the conduct of a training course.
2. It is not necessary to sample all examinations associated with a training course but the competent authority should sample, as appropriate, one basic and one type training course examination.

### AMC 147.B.130 (b) - Findings

1. In the case of a level 2 finding, the competent authority may give up to six-month notice of the need for rectification. Dependent upon the seriousness of the level 2 finding(s) the competent authority may choose a notice period less than six months.
2. When the competent authority chooses to allow six months, the initial notification should be of three-month duration to the quality manager followed by the final three-month notice to the accountable manager.

**AMC TO APPENDICES TO PART-147**

### AMC to Appendix II to Part-147 - ‘Maintenance Training Organisation Approval referred to in Annex IV (Part-147)’

The following fields on page 2 ‘Maintenance Training and Examination Approval Schedule’ of the maintenance training and examination organization approval certificate should be completed as follows:

* Date of original issue: It refers to the date of the original issue of the maintenance training organisation exposition.
* Date of last revision approved: It refers to the date of the last revision of the maintenance training organisation exposition affecting the content of the certificate. Changes to the maintenance training organisation exposition which do not affect the content of the certificate do not require the reissuance of the certificate.
* Revision No: It refers to the revision No of the last revision of the maintenance training organisation exposition affecting the content of the certificate. Changes to the maintenance training organisation exposition which do not affect the content of the certificate do not require the reissuance of the certificate.

### AMC to Appendix III to Part-147 - ‘Certificates of Recognition referred to in Annex IV (Part-147) – ASSA-AC Forms 148 and 149’

As stated in Appendix III to Part-147, the ASSA-AC Form 148 ‘Certificate of Recognition for Basic Training/Examination’ may be issued after completion of either basic training, basic examination or both basic training and basic examination.

Some examples of cases where an ASSA-AC Form 148 could be issued are the following:

* After successful completion of a full basic course in one licence (sub) category including successful completion of the examinations of all the corresponding modules.
* After successful completion of a full basic course in one licence (sub) category without performing examinations. The examinations may be performed at a different Part-147 organisation (this organisation will issue the corresponding Certificate of Recognition for those examinations) or at the competent authority.
* After successful completion of all module examinations corresponding to a licence (sub) category.
* After successful completion of certain modules/sub-modules/subjects. It must be noted that ‘successful completion of a course’ (without the module examinations) means successful completion of the theoretical and practical training including the corresponding practical assessment.

**APPENDICES TO AMC TO PART-147**

### APPENDIX I - Maintenance training organisation exposition (MTOE)

1. The following subject headings form the basis of the MTOE required by 147.A.140.
2. Whilst this format is recommended, it is not mandatory to assemble the MTOE in this manner as long as a cross-reference index is included in the MTOE as an Appendix and the Part 1 items remain in Part 1.
3. Part 2, 3 and 4 material may be produced as separate detailed manuals subject to the main exposition containing the Part 2, 3 and 4 fundamental principles and policy on each item. It is then permitted to delegate the approval of these separate manuals to the senior person but this fact and the procedure should be specified in paragraph 1.10.
4. Where an organisation is approved in accordance with any other Part(s) which require an exposition, it is acceptable to combine the exposition requirements by merging the Part 1 items and adding the Parts 2, 3 and 4. When this method is used, it is essential to include the cross reference index of Part 4 item 4.3.

### PART 1 – MANAGEMENT

* 1. Corporate commitment by accountable manager
	2. Management personnel
	3. Duties and responsibilities of management personnel, instructors, knowledge examiners and practical assessor
	4. Management personnel organisation chart
	5. List of instructional and examination staff

Note: A separate document may be referenced

* 1. List of approved addresses
	2. List of sub-contractors as per 147.A.145 (d)
	3. General description of facilities at paragraph 1.6 addresses
	4. Specific list of courses and type examinations approved by the competent authority
	5. Notification procedures regarding changes to organisation
	6. Exposition and associated manuals amendment procedure

### PART 2 – TRAINING AND EXAMINATION PROCEDURES

* 1. Organisation of courses
	2. Preparation of course material
	3. Preparation of classrooms and equipment
	4. Preparation of workshops/maintenance facilities and equipment
	5. Conduct of theoretical training & practical training (during basic knowledge training and type/task training)
	6. Records of training carried out
	7. Storage of training records
	8. Training at locations not listed in paragraph 1.6
	9. Organisation of examinations
	10. Security and preparation of examination material
	11. Preparation of examination rooms
	12. Conduct of examinations (basic knowledge examinations, type/task training examinations and type examinations)
	13. Conduct of practical assessments (during basic knowledge training and type/task training)
	14. Marking and record of examinations
	15. Storage of examination records
	16. Examinations at locations not listed in paragraph 1.6
	17. Preparation, control & issue of basic training course certificates
	18. Control of sub-contractors

### PART 3 – TRAINING SYSTEM QUALITY PROCEDURES

* 1. Audit of training
	2. Audit of examinations
	3. Analysis of examination results
	4. Audit and analysis remedial action
	5. Accountable manager annual review
	6. Qualifying the instructors
	7. Qualifying the examiners and the assessors
	8. Records of qualified instructors & examiners

### PART 4 – APPENDICES

* 1. Example of documents and forms used
	2. Syllabus of each training course
	3. Cross-reference index - if applicable

### APPENDIX II – ASSA-AC Form 4

|  |
| --- |
| **[COMPETENT AUTHORITY]**Details of Management Personnel required to be accepted as specified in Part-………………1. Name:
2. Position:
3. Qualifications relevant to the item (2) position:
4. Work experience relevant to the item (2) position:

Signature: ..........................................................Date: ...................................... On completion, please send this form under confidential cover to the competent authority.  |
| Competent authority use only Name and signature of authorised competent authority staff member accepting this person: Signature: ...............................................Date: .............................................. Name: .................................................... Office: .............................................  |

ASSA-AC Form 4

### APPENDIX III – ASSA-AC Form 22

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| **PART-147 APPROVAL RECOMMENDATION REPORT ASSA-AC FORM 22**  |
| **Part 1: General** Name of organisation: Approval reference: Requested approval rating/ Form 11 dated\*: Other approvals held (if app.) Address of facility audited: Audit period: from………………………………to…………………………………: Date(s) of audit(s): Audit reference(s): Persons interviewed: Competent authority surveyor: …………………… Signature(s): Competent authority office: …………………… Date of ASSA-AC Form 22 part 1 completion: \*delete where applicable   |

| **PART-147 APPROVAL RECOMMENDATION REPORT - ASSA-AC FORM 22** |
| --- |
| **Part 2: Part-147 Compliance Audit Review** |
| The five columns may be labelled and used as necessary to record the approved training/examinations, facility, including subcontractor’s, reviewed. Against each column used of the following Part-147 sub-paragraphs please either tick () the box if satisfied with compliance or cross (X ) the box if not satisfied with compliance and specify the reference of the Part 4 finding next to the box or enter N/A where an item is not applicable, or N/R when applicable but not reviewed. |
|  |
| Para | Subject |  |  |  |  |  |
|  |
| 147.A.100 | Facility requirements |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.105 | Personnel requirements |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.110 | Records of instructors, examiners and assessors |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.115 | Instructional equipment |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.120 | Maintenance training material |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.125 | Records |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.130 | Training procedures and quality system |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.135 | Examinations |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.145 | Privileges of the maintenance training organisation |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.150 | Changes to the maintenance training organisation |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.160 | Findings |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.200 | Approved basic training course |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.205 | Basic knowledge examinations |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.210 | Basic practical assessment |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.300 | Aircraft type/task training |  |  |  |  |  |  |  |  |  |  |
|  |
| 147.A.305 | Aircraft type examinations and task assessments |  |  |  |  |  |  |  |  |  |  |
| Competent authority surveyor (s): Signature(s):Competent authority office: Date of Form 22 part 2 completion: |

| **PART-147 APPROVAL RECOMMENDATION REPORT ASSA-AC FORM 22** |
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| **PART 3: Compliance with Part-147 maintenance training organisation exposition (MTOE)**Please either tick () the box if satisfied with compliance; or cross (X) if not satisfied with compliance and specify the reference of the Part 4 finding, or enter N/A where an item is not applicable, or N/R when applicable but not reviewed. |
| **Part 1** **Management**1.1 Corporate commitment by the accountable manager.1.2 Management personnel1.3 Duties and responsibilities of management personnel, instructors, knowledge examiners and practical assessor1.4 Management personnel organisation chart1.5 List of instructional and examination staff1.6 List of approved addresses1.7 List of sub-contractors as per 147.A.145(d)1.8 General description of facilities of paragraph 1.6 addresses1.9 Specific list of courses and type examinations approved by the competent authority1.10 Notification procedures regarding changes to organisation 1.11 Exposition and associated manuals amendment procedures**Part 2 Training and examination procedures**2.1 Organisation of courses2.2 Preparation of course material2.3 Preparation of classrooms and equipment2.4 Preparation of workshops/maintenance facilities and equipment2.5 Conduct of theoretical training & practical training (during basic knowledge training and type/task training)2.6 Records of training carried out2.7 Storage of training records2.8 Training at locations not listed in paragraph 1.62.9 Organisation of examinations2.10 Security and preparation of examination material2.11 Preparation of examination rooms2.12 Conduct of examinations (basic knowledge examinations, type/task training examinations and type examinations)2.13 Conduct of practical assessments (during basic knowledge training and type/task training).2.14 Marking and record of examinations2.15 Storage of examination records2.16 Examinations at locations not listed in paragraph 1.62.17 Preparation, control & issue of basic training course certificates2.18 Control of sub-contractors**Part 3** **Training system quality procedures**3.1 Audit of training3.2 Audit of examinations.3.3 Analysis of examination results.3.4 Audit and analysis remedial action3.5 Accountable manager annual review3.6 Qualifying the instructors3.7 Qualifying the examiners and the assessors3.8 Records of qualified instructors & examiners**Part 4 Appendices**4.1 Example of documents and forms used4.2 Syllabus of each training course4.3 Cross-reference Index - if applicable |
| MOE Reference: MTOE Amendment:Competent authority audit staff: Signature(s):Competent authority office: Date of ASSA-AC Form 22 part 3 completion: |

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| **PART-147 APPROVAL RECOMMENDATION REPORT ASSA-AC FORM 22** |
| **Part 4: Findings regarding Part-147 compliance status**Each level 1 and 2 finding should be recorded whether it has been rectified or not and should be identified by a simple cross reference to the Part 2 requirement. All non-rectified findings should be copied in writing to the organisation for the necessary corrective action. |
| Part 2 or 3 ref. | Audit reference(s) : Findings | Level | Corrective action |
| Date due | Date closed | Reference |
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| **PART-147 APPROVAL RECOMMENDATION REPORT ASSA-AC FORM 22** |
| **Part 5: Part-147 approval or continued approval or change recommendation** |
| Name of organisation: Approval reference: Audit reference(s): Applicable Part-147 amendment status: The following Part-147 scope of approval is recommended for this organisation: Or, it is recommended that the Part-147 scope of approval specified in ASSA-AC Form 11 referenced ...................................................... be continued. Name of recommending competent authority surveyor: Signature of recommending competent authority surveyor: Competent authority office: Date of recommendation: ASSA-AC Form 22 review (quality check) : Date:  |

### APPENDIX IV – ASSA-AC Form 12

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| **ASSA-AC FORM 12** **Page 1** | **APPLICATION FOR PART-147** **INITIAL / CHANGE OF APPROVAL** |
| Registered Name & Address of Applicant: Trading Name (if different): Addresses Requiring Approval: Tel No:....................................Fax No..................................E Mail.........................................  |
| Scope of Part-147 Approval Relevant to This Initial \*/ Change of \* Application (See other side for training course designators to be used): Basic Training: Type Training: Provide reference to other approvals under the Basic Regulation:\* Cross out whichever is not applicable  |
| Name & Position of Accountable Manager: Signature of Accountable Manager: Date of Application: Please send this form with any required fee to be paid under National Legislation to your National Aviation Authority  | Space for official use  |