



CAR PART II

CHAPTER 7 - CAR 66 AIRCRAFT MAINTENANCE ENGINEER LICENSING

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FORWORD

For the purpose of this regulation, the competent authority shall be the General Civil Aviation Authority designated by the United Arab Emirates Federal Government, and known in this regulation as the “GCAA”.

The development of this regulation was through a GCAA led consultative committee the OTTG (Operators Technical Training Group) that included representatives from all segments of the aviation industry covered by, and impacted by this regulation.

Conformity with the Acceptable Means of Compliance (AMC) section of this regulation is mandatory unless other Alternative Means of Compliance have been submitted that result in an equivalent level of safety (or compliance) and approved to the GCAA.



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RECORD OF ISSUE

Issue	Date	Date of applicability
Issue 00	July 2011	01 July 2011
Issue 01	July 2013	01 July 2013
Issue 02	September 2014	September 2014
Issue 03	March 2015	March 2015
Issue 04	September 2019	January 2020



HIGHLIGHT OF CHANGE

Issue 04

Section	Details
Document	Minor grammatical changes.
Forward	Change to reflect new revision.
Table of contents	Add GM 66.25(b) Basic Knowledge requirements.
Table of contents	Add Appendix VI Basic Knowledge and Training Requirements for category L aircraft maintenance engineer's licence. Add Appendix VII Basic examination standard for category L aircraft maintenance engineer's licence. Add Section 3 B. Specific Tasks for Hot Air Balloons. Add Appendix 1 to GM 66.50(c) limitations.
Section 1 CAR 66.3 Licence Categories	Add Category L to the licence category list. Para (d) added to identify the category L licence is applicable to Hot Air Balloons.
Section 1 CAR 66.5 Aircraft Groups	Add paragraph 4 to identify group 4 for Hot Air Balloons.
Section 1 CAR 66.20 Privileges	Add paragraph 4 to identify that the GCAA will only accept legible photocopies of course certificates and foreign licenses if duly attested/certified as a true copy by the applicant's organization. Persons attesting documents should hold a responsible position within the organization, preferably at management level. This requirement was previously detailed in IB 3/2011 which has now been withdrawn.
Section 1 AMC 66.10 Application	Add paragraph 5 to identify privileges for category L licence.
Section 1 CAR 66.25 Basic Knowledge Requirements	Add paragraph (b) to identify that an applicant for an aircraft maintenance licence in the category L shall demonstrate by examination a level of knowledge of appropriate subject modules in accordance with Appendix VI. The examination shall comply with the standard described in Appendix VII and shall be conducted by a training organization appropriately approved under CAR 147 or as agreed by the GCAA.
Section 1 CAR 66.25 Basic Knowledge Requirements	Add paragraph (f) to indicate that the GCAA may conduct an oral examination, assessment or interview with any applicant following an application for a basic licence.
Section 1 AMC 66.25 Basic Knowledge Requirements	Add HND to the qualification criteria in paragraph 1.
Section 1 GM 66.25 (b) Basic Knowledge Requirements	GM added to clearly identify As agreed by the GCAA means that the examination is conducted by an organisation under a formal agreement with and the oversight of the GCAA.
Section 1 CAR 66.30 Basic Experience Requirements	Add paragraph 3 to identify experience requirements for category L licence.
Section 1 CAR 66.30 Basic Experience Requirements	Add paragraph 6 (g) and (h) to further clarify that the practical experience shall be conducted at and under the control of a maintenance organisation appropriately approved for the maintenance and shall be assessed by a designated assessor appropriately qualified and In order to facilitate the verification by the GCAA, demonstration of practical experience shall consist of detailed worksheet/log book and compliance report completed by designated assessor demonstrating how the practical experience met the requirement of CAR 66.
Section 1 AMC 66.30(a) Basic Experience Requirements	Additional sub-paragraph added to include the category L experience requirements and additional text added to further clarify the experience requirements.
Section 1 GM 66.40(a) Continued Validity	The previous requirement for a licence that has remained expired has been reduced to 90 days.



Section 1 CAR 66.45 Endorsement with aircraft ratings.	Add paragraph (h) for the category L endorsement requirements.
Section 1 AMC 66.45(a) Endorsement with aircraft ratings.	Paragraph removed to facilitate the de-linking of CAR 66 & CAR 145 Approvals with Registration and Type Acceptance.
Section 1 GM 66.45 Endorsement with aircraft ratings	Add group 4 for the addition of Hot Air Balloons.
Section 1 CAR 66.50 Limitations	Paragraph (c) now included a reference to Appendix 1 to CAR 66.50 (c).
Section 1 GM 66.70(d) conversion provisions.	This paragraph refers to the conversion of a non UAE licence, this provision was previously described in Appendix 1 to CAR 66.70 which has now been removed, and none of the content has been changed.
Section 1 GM 66.70(e) conversion provisions.	This paragraph refers to the conversion of a non UAE licence, this provision was previously described in Appendix 1 to CAR 66.70 which has now been removed, minor text change to indicate that following a course for modules 9 and 10 the complete examination must be taken MCQ and Essay.
Section 1 GM 66.70(f) conversion provisions.	This paragraph refers to the validation of a non UAE licence, this provision was previously described in Appendix 1 to CAR 66.70 which has now been removed, and none of the content has been changed.
Appendix 1 to CAR 66 Basic Knowledge Requirements	Category L has been added to the knowledge level.
Appendix 1 to CAR 66 Basic Knowledge Requirements	Safety Management Systems (SMS) has been added as para 9.9 into module 9A Human Factors.
Appendix 1 to CAR 66 Basic Knowledge Requirements.	Safety Management Systems (SMS) has been added as para 9.9 into module 9B Human Factors
Appendix II to CAR 66 Basic Examination Standard.	Paragraph 1.1 the following text has been added; The use of calculators or other electronic devices will not be allowed during the examination. Paragraph 1.2 the paragraph has been amended to read as follows; If any of the modular examinations consists of 120 questions or more, the examinations may be split into two examinations or if conducted as part of the full training course may be carried out in phases provided a procedure is established in the MTOE and approved by the GCAA.Paragraph 1.9 the following text has been added; Both the essay paper and MCQ for the same module must be completed if either have been failed following three consecutive attempts (see 1.13) and both must be completed at the same examination location. Paragraph 1.14 has been added to the appendix as follows; If the candidate is attending a full B1,B2 or B3 CAR 147 approved training course, and has failed the examinations after three consecutive attempts, the candidate will be allowed one further attempt following training on the failed module in full. If applicable both the essay paper and MCQ for the same module must be completed if either have been failed. If this further attempt is failed, further sets of three attempts will only be allowed following a 1 year waiting period. Organisations adopting this policy must have this process approved in the MTOE.
Appendix VI Basic Knowledge and Training Requirements for category L Aircraft Maintenance Engineers Licence	Appendix has been added to CAR 66 to define the Basic Knowledge and Training Requirements for the category L licence.
Appendix VII Basic Examination Standard for category L Aircraft Maintenance Engineers Licence	Appendix has been added to CAR 66 to define the Basic Examination Standard for category L Aircraft Maintenance Engineers Licence.
Appendix 1 to AMC to CAR 66 Aircraft Type Ratings.	In Group 3, a fourth column has been added titled 'MTOM' which intends to assist the GCAA Licensing Department in identifying the aeroplane types where the Maximum Take-off Mass (MTOM) is: Above 2T and is subject to a B1.2 licence, or 2T and below and is subject to a B1.2 or B3 licence.



Appendix 1 to AMC to CAR 66 Aircraft Type Ratings.	The following note has been added to clarify endorsements covering several models/variants; The endorsement of a type rating (TR) on the aircraft maintenance engineer licence (AMEL), covering several models/variants, does not automatically imply that the AMEL holder has acquired the appropriate knowledge on each model/variant. The TR course received or the experienced the AMEL holder has gained, may have been limited to one or several model(s) variant(s) but not to all models/variants. To demonstrate adequate competence on the relevant model(s)/variant(s), the AMEL holder and/or the maintenance organisation where the AMEL holder is contracted/employed, are responsible to verify whether the model/variant has been adequately covered by the TR course or gained experience. Further explanation can be found in AMC 66.20(b)3 and AMC 145.35(a).
Appendix 1 to AMC to CAR 66 Aircraft Type Ratings.	The following types have been added to the group 1 type rating endorsement list; <i>Airbus A319/A320/A321 (IAW PW1100G)</i> <i>Airbus A319/A320/A321 (CFM LEAP-1A)</i> <i>Airbus A330 (RR Trent 7000)</i> <i>Boeing 737-7/8/9 (CFM LEAP-1B)</i> <i>Boeing 787-8/9/10 (GE GENx)</i> <i>Boeing 787-8/9/10 (RR RB 211 Trent 1000)</i> <i>Bombardier CL-600-2B19/2C10/-2D15/2D24/ 2E25 (GE CF34)</i> <i>CIRRUS SF50 (Williams)</i> <i>Falcon 7X (PWC PW307)</i> <i>Embraer EMB-545/550 (Honeywell AS907)</i> <i>MRJ-200(PP-PW1217G)</i>
Appendix 1 to AMC to CAR 66 Aircraft Type Ratings.	The following types have been added to the group 1 Helicopter type rating endorsement list; <i>Airbus Helicopters EC135 P3H (PWC PW206)</i> <i>Airbus Helicopters EC135 T3H (Turbomeca Arrius 2B)</i>
Appendix II to AMC to CAR 66 Specific Tasks for Hot Air Balloons.	Appendix added to cover the OJE requirements for the Category L licence.
Appendix 1 to GM 66.50(c) Limitations.	Appendix added to further define the reason and applicability for each limitation and the implications. The appendix also identifies the requirement for the removal of each limitation. The original limitation codes were identified in appendix 1 to CAR 66.70 Conversion report, this has now been removed and the content included in CAR 66.50 and CAR 66.70.



1. GENERAL

Certifying staff holding licences issued in accordance with CAR 66 in a given category/subcategory are deemed to have the privileges described in point 66.20(a) of this CAR corresponding to such a category/subcategory. The basic knowledge requirements corresponding to the new privileges shall be deemed as met for the purpose of extending such licence to a new category/sub-category.

Certifying staff holding a licence including aircraft which do not require an individual type rating may continue to exercise his/her privileges until the first renewal or change, where the licence shall be converted to the ratings defined in point 66.45 of this CAR.

For the purpose of time limits contained in points 66.25, 66.30 and Appendix III of CAR 66 related to basic knowledge examinations, basic experience, theoretical type training and examinations, practical training and assessment, type examinations and on the job experience completed before this Regulation applies, the origin of time shall be the date by which this Regulation applies.

The E-Services system which has now been fully adopted by the GCAA for the issue, renewal and type endorsement of an aircraft maintenance engineers licences as defined in point 66.10 must be used for all applications. All licence applications for conversion as described in point 66.70 and section 4 appendix I, must also be made using the E-Licensing system. For the removal of limitations as described in points 66.45 and 66.50 the E-Licensing system must also be used. Manual applications may be used for cases where no E-Services are available, however this can only be done with prior approval from the GCAA.



2. TECHNICAL REQUIREMENTS

SECTION 1 - AIRCRAFT MAINTENANCE ENGINEERS LICENCE

CAR 66.1 - Scope

This section defines the Aircraft Maintenance Engineers Licence and establishes the requirements for application, issue and continuation of its validity.

CAR 66.2 - Enforcement

The GCAA may impose restrictions, suspend, limit or revoke any Aircraft Maintenance Engineers licence issued if the holder cannot demonstrate their capability to maintain the appropriate safety standards. Personnel granted with an Aircraft Maintenance Engineers licence shall not engage in, support or conceal unsafe acts.

CAR 66.3 - Licence categories

(a) Aircraft maintenance engineers licences include the following categories:

- Category A
- Category B1
- Category B2
- Category B3
- Category C
- Category L

(b) Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston engines. The subcategories are:

- A1 and B1.1 Aeroplanes Turbine
- A2 and B1.2 Aeroplanes Piston
- A3 and B1.3 Helicopters Turbine
- A4 and B1.4 Helicopters Piston

(c) Category B3 is applicable to piston-engine non-pressurised aeroplanes of 2000kg MTOM and below.

(d) Category L is applicable to Hot Air Balloons.

GM 66.3 - Licence categories

Individual Aircraft Maintenance Engineers Licence holders need not be restricted to a single category. Provided that each qualification requirement is satisfied, any combination of categories may be granted.

CAR 66.5 - Aircraft Groups

For the purpose of ratings on aircraft maintenance engineers licences aircraft shall be classified in the following groups.

1. Group 1: Complex motor powered aircraft as well as multiple engine helicopters, aeroplanes with maximum certified operating altitude exceeding FL290, aircraft equipped with fly-by-wire systems and other aircraft requiring an aircraft type rating when defined so by the GCAA.

2. Group 2: Aircraft other than those in group 1 belonging to the following subgroups:

- sub-group 2a: single turbo-propeller engine aeroplanes



- sub-group 2b: single turbine engine helicopters
 - sub-group 2c: single piston engine helicopters
3. Group 3: Piston engine aeroplanes other than those in group 1.
4. Group 4: Hot Air Balloons.

CAR 66.10 - Application

- (a) An application for an Aircraft Maintenance Engineers Licence or amendment to such licence shall be made using the AMEL E-Licensing services application and/or any other assigned form and in a manner established by the General Civil Aviation Authority (GCAA) and submitted thereto.
- (b) Each application shall be supported by documentation to demonstrate compliance with the applicable theoretical knowledge, practical training and experience requirements at the time of application.
- (c) The organisation requesting the grant or amendment to a licence is responsible for the review of the application before making a recommendation to the GCAA.

AMC 66.10 - Application

- 1. Maintenance experience should be written up in a manner that the reader has a reasonable understanding of where, when and what maintenance constitutes the experience. A task-by- task account is not necessary but at the same time a bland statement "X year's maintenance experience completed" is not acceptable. A logbook of maintenance experience is desirable and the GCAA require such a logbook to be kept. It is acceptable to cross-refer in the E-Licensing system to other documents containing information on maintenance.
- 2. Applicants claiming the maximum reduction in 66.30(a) total experience based upon successful completion of CAR 147 approved basic training should include the CAR 147 certificate of recognition for approved basic training.
- 3. Applicants claiming reduction in 66.30(a) total experience based upon successful completion of technical training in an organisation or institute recognised by the GCAA as a competent organisation or institute should include the relevant certificate of successful completion of training.
- 4. The GCAA will only accept legible photocopies of course certificates and foreign licenses if duly certified as a true copy by the applicant's organization. Persons attesting documents should hold a responsible position within the organization, preferably at management level.

CAR 66.15 - Eligibility

An applicant for an Aircraft Maintenance Engineers Licence shall be at least 18 years of age.

AMC 66.15 – Eligibility

An applicant for an Aircraft Maintenance Engineers licence should meet one of the following eligibility criteria to apply for, and hold a GCAA AMEL.

- (a) A UAE/GCC (Gulf Co-Operation Council) national or
- (b) A legal employee of UAE approved organisation with proper justification for a need to hold a UAE GCAA aircraft maintenance engineers licence or
- (c) A graduate of a GCAA CAR 147 approved basic aircraft maintenance training organisation.



CAR 66.20 - Privileges

(a) The following privileges shall apply:

1. A category A aircraft maintenance engineers licence permits the holder to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.35 of CAR-145. The certification privileges shall be restricted to work that the licence holder has personally performed in the maintenance organisation that issued the certification authorisation.

2. A category B1 aircraft maintenance engineers licence shall permit the holder to issue certificates of release to service and to act as B1 support staff following:

- Maintenance performed on aircraft structure, powerplant and mechanical and electrical systems,
- Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

Category B1 includes the corresponding A subcategory.

3. A category B2 aircraft maintenance engineers licence shall permit the holder:

(i) to issue certificates of release to service and to act as B2 support staff for following:

- maintenance performed on avionic and electrical systems, and
- electrical and avionics tasks within powerplant and mechanical systems, requiring only simple tests to prove their serviceability; and

(i) to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.35 of CAR-145. This certification privilege shall be restricted to work that the licence holder has personally performed in the maintenance organisation which issued the certification authorisation and limited to the ratings already endorsed in the B2 licence.

The category B2 licence does not include any A subcategory.

4. A category B3 aircraft maintenance engineers licence shall permit the holder to issue certificates of release to service and to act as B3 support staff for:

- maintenance performed on aeroplane structure, powerplant and mechanical and electrical systems,
- work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

5. A category L aircraft maintenance licence shall permit the holder to issue certificate of release to service and to act as L support staff following:

- maintenance performed on /balloon structure, powerplant and mechanical and electrical systems;
- work on radio, Emergency Locator Transmitter (ELT) and transponder systems; and
- work on avionic systems requiring simple tests to prove their serviceability.

6. A category C aircraft maintenance engineer's licence shall permit the holder to issue certificates of release to service following base maintenance on aircraft. The privileges apply to the aircraft in its entirety.

(b) The holder of an aircraft maintenance engineers licence may not exercise its privileges unless:



1. in compliance with the applicable requirements of CAR M and CAR-145; and
2. in the preceding 2-year period he/she has, either had 6 months of maintenance experience in accordance with the privileges granted by the aircraft maintenance engineers licence or, met the provision for the issue of the appropriate privileges; and
3. he/she has the adequate competence to certify maintenance on the corresponding aircraft; and
4. he/she is able to read, write and communicate to an understandable level in the language(s) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written.

AMC 66.20(b)(2) - Privileges

The 6 months maintenance experience in 2 years should be understood as consisting of two elements, duration and nature of the experience. The minimum to meet the requirements for these elements may vary depending on the size and complexity of the aircraft and type of operation and maintenance.

1. Duration:

Within an approved maintenance organisation:

- 6 months continuous employment within the same organisation; or
- 6 months split up into different blocks, employed within the same or in different organisations.

The 6 months period can be replaced by 100 days of maintenance experience in accordance with the privileges, whether they have been performed within an approved organisation or as independent certifying staff according to CAR M.801 (b) or as a combination thereof.

When the licence holder maintains and releases aircraft in accordance with CAR M.801 (b) 2, in certain circumstances this number of days may even be reduced by 50% when agreed in advance by the GCAA. These circumstances consider the cases where the holder of a CAR 66 licence happens to be the owner of an aircraft and carries out maintenance on his own aircraft, or where a licence holder maintains an aircraft operated for low utilisation, that does not allow the licence holder to accumulate the required experience. This reduction should not be combined with the 20% reduction permitted when carrying out technical support, or maintenance planning, continuing airworthiness management or engineering activities. To avoid a too long period without experience, the working days should be spread over the intended 6 months period.

2. Nature of the experience:

Depending on the category of the Aircraft Maintenance Engineers Licence, the following activities are considered relevant for maintenance experience:

- Servicing;
- Inspection;
- Operational and functional testing;
- Trouble-shooting;
- Repairing;
- Modifying;
- Changing component;
- Supervising these activities;
- Releasing aircraft to service.

For category A certifying staff, the experience should include exercising the privileges, by means of performing tasks related to the authorisation on at least one aircraft type for each licence subcategory. This means tasks as mentioned in AMC 145.30(g), including servicing, component changes and simple defect rectifications.



For category B1, B2 and B3 for every aircraft type rating included in the authorisation the experience should be on that particular aircraft or on a similar aircraft within the same licence (sub) category. Two aircraft can be considered as similar when they have similar technology, construction and comparable systems, which means equally equipped with the following (as applicable to the licence category):

- Propulsion systems (piston or turboprop or turboprop or turbo shaft or jet-engine or push propellers); and
- Flight control systems (only mechanical controls or hydro-mechanically powered controls or electro-mechanically powered controls); and
- Avionic systems (analog systems or digital systems); and
- Structure (manufactured of metal or composite or wood).

For licences endorsed with (sub) group ratings;

- In the case of a B1 licence endorsed with sub group ratings (either manufacturer sub group or sub full group) as defined in CAR 66.45 the holder should show experience on at least one aircraft type per sub group and per aircraft structure (metal, composite, wood).
- In the case of a B2 licence endorsed with sub group ratings (either manufacturer sub group or full group) as defined in CAR 66.45 the holder should show experience on at least one aircraft type per sub group.
- In the case of a B3 licence endorsed with the rating “piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below” as defined in 66.45, the holder should show experience on at least one aircraft type per aircraft structure (metal, composite or wood).

For category C, the experience should cover at least one of the aircraft types endorsed on the licence.

For a combination of categories, the experience should include some activities of the nature shown in paragraph 2 in each category.

A maximum of 20% of the experience duration required may be replaced by the following relevant activities on an aircraft type of similar technology, construction and with comparable systems:

- Aircraft maintenance related training as an instructor/assessor or as a student;
- Maintenance technical support/engineering;
- Maintenance management/planning.

The experience should be documented in an individual log book or in any other recording system (which may be an automated one) containing the following data:

- Date;
- Aircraft type;
- Aircraft identification i.e. registration;
- ATA chapter;
- Operation performed i.e. 100 FH check, MLG wheel change, engine oil check and complement, SB embodiment, trouble shooting, structural repair, STC embodiment;
- Type of maintenance i.e. base, line;
- Type of activity i.e. perform, supervise, release;
- Category used A, B1, B2, B3 or C.
- Duration in days or partial-days.

AMC 66.20(b)(3) - Privileges

The wording “*has the adequate competence to certify maintenance on the corresponding aircraft*” means that the licence holder and, if applicable, the organisation where he/she is contracted/employed, should ensure that



he/she has acquired the appropriate knowledge, skills, attitude and experience to release the aircraft being maintained. This is essential because some systems and technology present in the particular aircraft being maintained may not have been covered by the training/examination/experience required to obtain the licence and ratings.

This is typically the case, among others, in the following situations:

- Type ratings which have been endorsed on a licence in accordance with Appendix I to AMC to CAR 66 “List of Type Ratings” after attending type training/on-the-job experience which did not cover all the models/variants included in such rating. For example, a licence endorsed with the rating Airbus A318/A319/A320/A321 (CFM56) after attending type training/on-the-job experience covering only the Airbus 320 (CFM56).
- Type ratings which have been endorsed on a licence in accordance with Appendix I to AMC to CAR 66 “List of Type Ratings” after a new variant has been added to the rating in Appendix I, without performing difference training. For example, a licence endorsed with the rating Boeing 737-600/700/800/900 for a person who already had the rating Boeing 737-600/700/800, without performing any difference training for the 737-900.
- Work being carried out on a model/variant for which the technical design and maintenance techniques have significantly evolved from the original model used in the type training/on-the-job experience.
- Specific technology and options selected by each customer which may not have been covered by the type training/on-the-job experience.
- Changes in the basic knowledge requirements of Appendix I to CAR 66 not requiring re- examination of existing licence holders (grandfathered privileges).
- The endorsement of group/subgroup ratings based on experience on a representative number of tasks/aircraft or based on type training/examination on a representative number of aircraft.
- Persons meeting the requirements of 6 months of experience every 2 years only on certain similar aircraft types as allowed by AMC 66.20(b)2.
- Persons holding a CAR 66 licence with limitations, obtained through conversion of qualifications (66.70), where such limitations are going to be lifted after performing the corresponding basic knowledge examinations. In this case, the type ratings endorsed in the licence may have been obtained in the national system without covering all the aircraft systems (because of the previous limitations) and there will be a need to assess and, if applicable, to train this person on the missing systems.

GM 66.20(a) - Privileges

1. The following definitions apply:

Electrical system means the aircraft electrical power supply source, plus the distribution system to the different components contained in the aircraft and relevant connectors. Lighting systems are also included in this definition. When working on cables and connectors which are part of these electrical systems, the following typical practices are included in the privileges:

- Continuity, insulation and bonding techniques and testing;
- Crimping and testing of crimped joints;
- Connector pin removal and insertion;
- Wiring protection techniques.

Avionics system means an aircraft system that transfers, processes, displays or stores analogue or digital data using data lines, data buses, coaxial cables, wireless or other data transmission medium, and includes the



system's components and connectors. Examples of avionics systems include the following:

- Autoflight;
- Communication, Radar and Navigation;
- Instruments (see NOTE below);
- In-Flight Entertainment Systems;
- Integrated Modular Avionics (IMA);
- On-Board Maintenance Systems;
- Information Systems;
- Fly-by-Wire Systems (related to ATA27 "Flight Controls");
- Fibre Optic Control Systems.

NOTE: Instruments are formally included in the privileges of the B2 licence holders. However, maintenance on electromechanical and pitot-static components may also be released by a B1 licence holder.

Simple test means a test described in approved maintenance data and meeting all the following criteria:

- The serviceability of the system can be verified using aircraft controls, switches, Built-in Test Equipment (BITE), Central Maintenance Computer (CMC) or external test equipment not involving special training.
- The outcome of the test is a unique go-no go indication or parameter, which can be a single value or a value within an interval tolerance. No interpretation of the test result or interdependence of different values is allowed.
- The test does not involve more than 10 actions as described in the approved maintenance data (not including those required to configure the aircraft prior to the test, i.e. jacking, flaps down, etc., or to return the aircraft to its initial configuration). Pushing a control, switch or button, and reading the corresponding outcome may be considered as a single step even if the maintenance data shows them separated.

Troubleshooting means the procedures and actions necessary to identify the root cause of a defect or malfunction using approved maintenance data. It may include the use of BITE or external test equipment.

Line maintenance means any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. It may include:

- Trouble shooting;
- Defect rectification;
- Component replacement with the use of external test equipment, if required.
- Component replacement may include components such as engines and propellers;
- Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in-depth inspection. It may also include internal structure, systems and powerplant items which are visible through quick opening access panels/doors;

Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means;

- For temporary or occasional cases (Airworthiness Directives, hereinafter AD; service bulletins, hereinafter SB) the quality manager may accept base maintenance tasks to be performed by a line maintenance organisation provided all requirements are fulfilled. The GCAA will prescribe the conditions under which these tasks may be performed.

Base Maintenance means any task falling outside the criteria are given above for *Line Maintenance*.



NOTE: Aircraft maintained in accordance with “progressive” type programs need to be individually assessed in relation to this paragraph. In principle, the decision to allow some “progressive” checks to be carried out is determined by the assessment that all tasks within the particular check can be carried out safely to the required standards at the designated line maintenance station.

2. The category B3 licence does not include any A subcategory. Nevertheless, this does not prevent the B3 licence holder from releasing maintenance tasks typical of the A1.2 subcategory for piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below, within the limitations contained in the B3 licence.

The category C licence permits certification of scheduled base maintenance by the issue of a single certificate of release to service for the complete aircraft after the completion of all such maintenance. The basis for this certification is that the maintenance has been carried out by competent mechanics and category B1, B2 and B3 support staffs, as appropriate, have signed for the maintenance tasks under their respective specialisation. The principal function of the category C certifying staff is to ensure that all required maintenance has been called up and signed off by the category B1, B2 and B3 support staff, as appropriate, before issue of the certificate of release to service.

Only category C personnel who also hold category B1, B2 or B3 qualifications may perform both roles in base maintenance.



GM 66.20(b)(2) - Privileges

The sentence “*met the provision for the issue of the appropriate privileges*” included in 66.20(b)2 means that during the previous 2 years the person has met all the requirements for the endorsement of the corresponding aircraft rating (for example, in the case of aircraft in Group 1, theoretical plus practical element plus, if applicable, on-the-job training).

This supersedes the need for 6 months of experience for the first 2 years. However, the requirement of 6 months of experience in the preceding 2 years will need to be met after the second year.

GM 66.20(b)(4) - Privileges

1. Holders of a CAR 66 Aircraft Maintenance Engineers Licence may only exercise certification privileges when they have a general knowledge of the language used within the maintenance environment including knowledge of common aeronautical terms in the language. The level of knowledge should be such that the licence holder is able to:
 - read and understand the instructions and technical manuals used for the performance of maintenance;
 - make written technical entries and any maintenance documentation entries, which can be understood by those with whom they are normally required to communicate;
 - read and understand the maintenance organisation procedures;
 - communicate at such a level as to prevent any misunderstanding when exercising certification privileges.
2. In all cases, the level of understanding should be compatible with the level of certification privileges exercised.

CAR 66.25 - Basic knowledge requirements

- (a) 1. For an aircraft maintenance licence other than the category L, an applicant for an aircraft maintenance engineer's licence or the addition of a category or subcategory to such an aircraft maintenance engineers licence shall demonstrate, by examination, a level of knowledge in the appropriate subject modules in accordance with Appendix I to this CAR. The basic knowledge examinations shall be conducted by a training organisation appropriately approved under CAR 147 or by the GCAA. All examinations conducted outside the GCAA must be conducted by the same GCAA approved training organisation. Approved training may be carried out by another training provider if the provisions of AMC 66.25 (3) have been adopted by a CAR 147 approved basic training organisation.
2. An applicant for an aircraft maintenance licence in the category L shall demonstrate by examination a level of knowledge of appropriate subject modules in accordance with Appendix VI. The examination shall comply with the standard described in Appendix VII and shall be conducted by a training organization appropriately approved under CAR 147 or as agreed by the GCAA.
- (b) The training courses and examinations shall be passed within 10 years prior to the application for an aircraft maintenance engineers licence or the addition of a category or subcategory to such aircraft maintenance engineers licence. Should this not be the case, examination credits may however be obtained in accordance with point (c).
- (c) The applicant may apply to the GCAA for full or partial examination credit to the basic knowledge requirements for:
 1. basic knowledge examinations that do not meet the requirement described in point (b) above; and
 2. Any other technical qualification considered by the GCAA to be equivalent to the knowledge standard of CAR 66.



- (d) Credits expire 10 years after they were granted to the applicant by the GCAA. The applicant may apply for new credits after expiration.
- (e) The GCAA may conduct an oral examination, assessment or interview with any applicant for a basic licence.

AMC 66.25 - Basic knowledge requirements

1. For an applicant being a person qualified by holding an academic degree or HND in an aeronautical, mechanical or electronic discipline from a recognised university or other higher educational institute the need for any examination will depend upon the course taken in relation to Appendix I to CAR 66
2. Knowledge gained and examinations passed during previous experiences, for example, in military aviation and civilian apprenticeships will be credited where the GCAA is satisfied that such knowledge and examinations are equivalent to that required by Appendix I to CAR 66.
3. Approved training may be carried out at a different CAR 147 approved basic training organisation provided the training organisation has a procedure approved by the GCAA for accepting such applicants. A declaration shall be made by both the applicant and the training organisation before making application to the GCAA. (CAR 66.10 refers).

GM 66.25(a)(1) - Basic knowledge requirements

The levels of knowledge for each licence (sub) category are directly related to the complexity of certifications related to the corresponding licence (sub)category which means that category A should demonstrate a limited but adequate level of knowledge, whereas category B1, B2 and B3 should demonstrate a complete level of knowledge in the appropriate subject modules.

GM 66.25(a)(2) - Basic knowledge requirements

“As agreed by the GCAA” means that the examination is conducted by an organisation under a formal agreement with and the oversight of the GCAA.

CAR 66.30 - Basic Experience requirements

- (a) An applicant for an aircraft maintenance engineers licence shall have acquired:
 1. for category A and subcategories B1.2 and B1.4 and category B3:
 - (i) 3 years of practical maintenance experience on operating aircraft, if the applicant has no previous relevant technical training; or
 - (ii) 2 years of practical maintenance experience on operating aircraft and completion of training considered relevant by the GCAA as a skilled worker, in a technical trade; or
 - (iii) 1 year of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with CAR 147.
 2. for category B2 and subcategories B1.1 and B1.3:
 - (i) 5 years of practical maintenance experience on operating aircraft if the applicant has no previous relevant technical training; or
 - (ii) 3 years of practical maintenance experience on operating aircraft and completion of training considered relevant by the GCAA as a skilled worker, in a technical trade; or
 - (iii) 2 years of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with CAR 147
 3. For category L



Two years of practical maintenance experience on operating hot air balloons covering a representative cross section of maintenance activities in the corresponding subcategory;

4. for category C with respect to large aircraft:
 - (i) 3 years of experience exercising category B1.1, B1.3 or B2 privileges on large aircraft or as CAR 145 B1.1, B1.3 or B2 support staff, or, a combination of both; or
 - (ii) 5 years of experience exercising category B1.2 or B1.4 privileges on large aircraft or as CAR 145 B1.2 or B1.4 support staff, or a combination of both; or
 5. for category C with respect to other than large aircraft: 3 years of experience exercising category B1 or B2 privileges on other than large aircraft or as CAR 145 B1.1, B1.3 or B2 support staff, or, a combination of both; or
 6. for category C obtained through the academic route: an applicant holding an academic degree in a technical discipline, from a university or other higher educational institution recognised by the GCAA, three years of experience working in a civil aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance including six months of observation of base maintenance tasks.
- (b) An applicant for an extension to an Aircraft Maintenance Engineers Licence shall have a minimum civil aircraft maintenance experience requirement appropriate to the additional category or subcategory of licence applied for as defined in Appendix IV to this CAR.
 - (c) The experience shall be practical and involve a representative cross section of maintenance tasks on aircraft.
 - (d) At least one year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial Aircraft Maintenance Engineers Licence is sought. For subsequent category/subcategory additions to an existing Aircraft Maintenance Engineers Licence, the additional recent maintenance experience required may be less than one year, but shall be at least three months. The required experience shall be dependent upon the difference between the licence category/subcategory held and applied for. Such additional experience must shall be typical of the new licence category/subcategory sought.
 - (e) Notwithstanding paragraph (a), aircraft maintenance experience gained outside a civil aircraft maintenance environment shall be accepted when such maintenance is equivalent to that required by this CAR as established by the GCAA. Additional experience of civil aircraft maintenance shall, however, be required to ensure adequate understanding of the civil aircraft maintenance environment.
 - (f) Experience shall have been acquired within the 10 years preceding the application for an Aircraft Maintenance Engineers Licence or the addition of a category or subcategory to such a licence.
 - (g) The practical experience shall be conducted at and under the control of a maintenance organisation appropriately approved for the maintenance and shall be assessed by a designated assessor appropriately qualified.
 - (h) In order to facilitate the verification by the GCAA, demonstration of practical experience shall consist of detailed worksheet/log book and compliance report completed by designated assessor demonstrating how the practical experience meets this CAR.

AMC 66.30(a) - Basic experience requirements

1. For a category C applicant holding an academic degree the representative selection of tasks should include the observation of hangar maintenance, maintenance planning, quality assurance, record-keeping, approved spare parts control and engineering development.



2. While an applicant to a CAR 66 category C licence may be qualified by having 3 years' experience as category B1 or B2 certifying staff only in line maintenance, it is however recommended that any applicant to a category C holding a B1 or B2 licence demonstrate at least 12 months experience as a B1 or B2 support staff.
3. A skilled worker is a person who has successfully completed a course of training, acceptable to the GCAA, involving the manufacture, repair, overhaul or inspection of mechanical, electrical or electronic equipment. The training would include the use of tools and measuring devices.
4. Maintenance experience on operating aircraft:
 - Means the experience of being involved in maintenance tasks on aircraft which are being operated by airlines, air taxi organisations, aero clubs, owners, etc, as relevant to the licence category/subcategory;
 - Should cover a wide range of tasks in length, complexity and variety;
 - Aims at gaining sufficient experience in the real environment of maintenance as opposed to only the training school environment;
 - May be gained within different types of maintenance organisations (CAR 145, M.A. Subpart F, Part-145, FAR-145,) or under the supervision of independent certifying staff; however at least 50% of the required experience period must be gained at GCAA approved organization within UAE territory or as otherwise agreed by the GCAA.
 - May be combined with CAR 147 approved training (or other training approved by GCAA) so that periods of training can be intermixed with periods of experience, similar to an apprenticeship.
 - In the case of licence in the category L, may be full-time or part-time, either as professional or on a voluntary basis.
 - In the case of the L licence it is acceptable that the two year experience required covers maintenance performed only during the weekends (or equivalent periods) as long as the applicant has achieved a sufficient level of competency related to the licence category as attested by the corresponding statement(s) issued by the maintenance organisation(s) or independent certifying staff who supervised the applicant.

AMC 66.30(d) - Basic experience requirements

To be considered as recent experience; at least 50% of the required 12 month experience should be gained within the 12 month period prior to the date of application for the Aircraft Maintenance Engineers Licence. The remainder of the experience should have been gained within the 7 year period prior to application. It must be noted that the rest of the basic experience required by 66.30 must be obtained within the 10 years prior to the application as required by 66.30(f). The evidence of the experience acquired can be shown as a documented schedule of works experience log book compiled in ATA format.

AMC 66.30(e) - Basic experience requirements

1. For category A the additional experience of civil aircraft maintenance should be a minimum of 6 months. For category B1, B2 or B3 the additional experience of civil aircraft maintenance should be a minimum of 12 months.
2. Aircraft maintenance experience gained outside a civil aircraft maintenance environment can include aircraft maintenance experience gained in armed forces, coast guards, police etc. or in aircraft manufacturing.

CAR 66.40 - Continued validity of the Aircraft Maintenance Engineers Licence

- (a) The Aircraft Maintenance Engineers Licence becomes invalid eight years after its last issue, unless the holder submits his/her Aircraft Maintenance Engineers Licence to the GCAA, in order to verify that the information contained in the licence is the same as that contained in the GCAA records.



- (b) The holder of an Aircraft Maintenance Engineers Licence shall complete the relevant fields in the E-Licensing system and submit it with the holder's copy of the licence to the GCAA, unless the holder works in a maintenance organisation approved in accordance with CAR 145 that has a procedure in its exposition whereby such organisation may submit the necessary documentation on behalf of the Aircraft Maintenance Engineers Licence holder.
- (c) Any certification privileges based upon an Aircraft Maintenance Engineers Licence becomes invalid as soon as the Aircraft Maintenance Engineers Licence is invalid.
- (d) The Aircraft Maintenance Engineers Licence is only valid
 - (i) when issued and/or amended by the GCAA and
 - (ii) when the holder has signed the document.

GM 66.40 - Continued validity of the Aircraft Maintenance Engineers Licence

Validity of the Aircraft Maintenance Engineers Licence is not affected by recency of maintenance experience whereas the validity of the CAR 66.20 privileges is affected by maintenance experience as specified in CAR 66.20(b).

GM 66.40(a) - Continued Validity of the Aircraft Maintenance Engineers Licence

For a licence that has remained expired for more than 90 days, the holder will be required to undergo examination in the current GCAA Air Legislation prior to renewal.

CAR 66.45 - Endorsement with aircraft ratings

- (a) In order to be entitled to exercise certification privileges on a specific aircraft type, the holder of an Aircraft Maintenance Engineer Licence shall have his/her licence endorsed with the relevant aircraft ratings.
 - For category B1, B2 or C the relevant aircraft ratings are the following:
 - 1. For group 1 aircraft, the appropriate aircraft type rating.
 - 2. For group 2 aircraft, the appropriate aircraft type rating, manufacturer sub-group rating or full sub-group rating.
 - 3. For group 3 aircraft, the appropriate aircraft type rating or full group rating.
 - For category B3, the relevant rating is 'piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below'.
 - For category A, no rating is required, subject to compliance with the requirements of point 145.35 of CAR-145.
- (b) The endorsement of aircraft type ratings requires the satisfactory completion of the relevant category B1, B2 or C aircraft type training.
- (c) In addition to the requirement of point (b), the endorsement of the first aircraft type rating within a given category/sub-category requires satisfactory completion of the corresponding On the Job Experience, as described in Appendix III to CAR 66.
- (d) By derogation from points (b) and (c), for group 2 and 3 aircraft, aircraft type ratings may also be granted after:
 - satisfactory completion of the relevant category B1, B2 or C aircraft type examination described in Appendix III to CAR 66, and
 - in the case of B1 and B2 category, demonstration of practical experience on the aircraft type. In that case, the practical experience shall include a representative cross section of maintenance activities relevant to the licence category.



In the case of a category C rating for a person qualified by holding an academic degree as specified in point 66.30(a)(5), the first relevant aircraft type examination shall be at the category B1 or B2 level.

(e) For group 2 aircraft:

1. the endorsement of manufacturer sub-group ratings for category B1 and C licence holders requires complying with the aircraft type rating requirements of at least two aircraft types from the same manufacturer which combined are representative of the applicable manufacturer sub-group;
2. the endorsement of full sub-group ratings for category B1 and C licence holders requires complying with the aircraft type rating requirements of at least three aircraft types from different manufacturers which combined are representative of the applicable sub-group;
3. the endorsement of manufacturer sub-groups and full sub-group ratings for category B2 licence holders requires demonstration of practical experience which shall include a representative cross section of maintenance activities relevant to the licence category and to the applicable aircraft sub-group.

(f) For group 3 aircraft:

1. the endorsement of the full group 3 rating for category B1, B2 and C licence holders requires demonstration of practical experience, which shall include a representative cross section of maintenance activities relevant to the licence category and to the group 3.
2. for category B1, unless the applicant provides evidence of appropriate experience, the group 3 rating shall be subject to the following limitations, which shall be endorsed on the licence:
 - pressurised aeroplanes
 - metal structure aeroplanes
 - composite structure aeroplanes
 - wooden structure aeroplanes
 - aeroplanes with metal tubing structure covered with fabric.

(g) For the B3 licence:

1. the endorsement of the rating "piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below" requires demonstration of practical experience which shall include a representative cross-section of maintenance activities relevant to the licence category.
2. unless the applicant provides evidence of appropriate experience, the rating referred to in point 1 shall be subject to the following limitations, which shall be endorsed on the licence:
 - wooden structure aeroplanes
 - aeroplanes with metal tubing structure covered with fabric
 - metal structure aeroplanes
 - composite structure aeroplanes.

(h) For the L licence:

The endorsement of ratings requires demonstration of appropriate balloon manufacture training and practical experience which shall include a representative cross section of maintenance activities relevant to the category.

AMC 66.45(e) - Endorsement with aircraft ratings

1. For the granting of manufacturer subgroup ratings for Group 2 aircraft, for B1 and C licence holders, the sentence *"at least two aircraft types from the same manufacturer which combined are representative of the*



applicable manufacturer subgroup” means that the selected aircraft types should cover all the technologies relevant to the manufacturer subgroup in the following areas:

- Flight control systems (mechanical controls/hydro mechanically powered controls/ electromechanically powered controls); and
- Avionic systems (analogue systems/digital systems); and
- Structure (manufactured of metal/composite/wood).

In cases where there are very different aircraft types within the same manufacturer Subgroup, it may be necessary to cover more than two aircraft types to ensure adequate representation.

For this purpose it may be possible to use aircraft types from the same manufacturer Classified in Group 1 as long as the selected aircraft belong to the same licence subcategory for which the rating will be endorsed.

2. For the granting of full subgroup ratings for Group 2 aircraft, for B1 and C licence holders, the sentence “*at least three aircraft types from different manufacturers which combined are representative of the applicable subgroup*” means that the selected aircraft types should cover all the technologies relevant to the manufacturer subgroup in the following areas:

- Flight control systems (mechanical controls/hydro mechanically powered controls/ electromechanically powered controls); and
- Avionic systems (analogue systems/digital systems); and
- Structure (manufactured of metal/composite/wood).

In cases where there are very different aircraft types within the same subgroup, it may be necessary to cover more than three aircraft types to ensure adequate representation. For this purpose it may be possible to use aircraft types from different manufacturers classified in Group 1 as long as the selected aircraft belong to the same licence subcategory for which the rating will be endorsed.

3. For manufacturer subgroup ratings, the term “*manufacturer*” means the TC holder defined in the certification data sheet, which is reflected in the list of type ratings in Appendix I to AMC to CAR 66.

In the case of an aircraft rating where the type rating refers to a TC holder made of a combination of two manufacturers which produce a similar aircraft (i.e. AGUSTA/BELL HELICOPTER TEXTRON or any case of aircraft similarly built by another manufacturer), this combination should be considered as one manufacturer.

As a consequence:

- When a licence holder gets a manufacturer type or a manufacturer subgroup rating made of a combination of manufacturers, it covers the combination of such manufacturers.
- When a licence holder who intends to endorse a full subgroup rating selects three aircraft from different manufacturers, this means from different combinations of manufacturers as applicable.

AMC 66.45(d), (e)(3), (f)(1), (g)(1) and (h) - Endorsement with aircraft ratings

1. The “*practical experience*” should cover a representative cross section including at least 50 % of tasks contained in Appendix II to AMC relevant to the licence category and to the applicable aircraft type ratings or aircraft (sub)group ratings being endorsed. This experience should cover tasks from each paragraph of the Appendix II list. Other tasks than those in the Appendix II may be considered as a replacement when they are relevant. In the case of (sub)group ratings, this experience may be shown by covering one or several aircraft types of the applicable (sub)group and may include experience on aircraft classified in group 1, 2 and/or 3 as



long as the experience is relevant. The practical experience should be obtained under the supervision of authorised certifying staff.

2. In the case of endorsement of individual type ratings for Group 2 and Group 3 aircraft, for the second aircraft type of each manufacturer (sub)group the practical experience should be reduced to 30 % of the tasks contained in Appendix II to AMC relevant to the licence category and to the applicable aircraft type. For subsequent aircraft types of each manufacturer (sub)group this should be reduced to 20 %.
3. Practical experience should be demonstrated by the submission of records or a logbook showing the Appendix II tasks performed by the applicant. Typical data to be recorded are similar to those described in AMC 66.20(b)2.

GM 66.45(b) - Endorsement with aircraft ratings

An aircraft type rating includes all the aircraft models/variants listed in column 2 of Appendix 1 to AMC to CAR 66.

When a person already holds a type rating on the licence and such type rating is amended in the Appendix I to AMC to CAR 66 in order to include additional models/variants, there is no need for additional type training for the purpose of amending the type rating in the licence. The rating should be amended to include the new variants, upon request by the applicant, without additional requirements. However, it is the responsibility of the licence holder and, if applicable, the maintenance organisation where he/she is employed to comply with 66.20(b)3, 145.35(a) and M.607(a), as applicable, before he/she exercises certification privileges.

Similarly, type training courses covering certain, but not all the models/variants included in a type rating, are valid for the purpose of endorsing the full type rating.

GM 66.45 - Endorsement with aircraft ratings

The following table shows a summary of the aircraft rating requirements contained in 66.45, 66.50 and Appendix III to CAR 66.

The table contains the following:

- The different aircraft groups;
- For each licence (sub)category, which ratings are possible (at the choice of the applicant):
 - Individual type ratings;
 - Full and/or Manufacturer (sub)group ratings;
- For each rating option, which are the qualification options;
- For the B1.2 licence (Group 3 aircraft) and for the B3 licence (piston-engine non-pressurised aeroplanes of 2 000 kg MTOM and below), which are the possible limitations to be included in the licence if not sufficient experience can be demonstrated in those areas.

Note: OJE means “On-the-Job Experience” (Appendix III to CAR 66, Section 6) and is only required for the first aircraft rating in the licence (sub) category.



Aircraft rating requirements			
Aircraft	B1/B3/ licence	B2 licence	C licence
Group 1: — Complex motor powered aircraft. — Multiple engine helicopters. — Aeroplanes certified above FL290. — Aircraft equipped with fly-by-wire. — Other aircraft when defined by the GCAA	(For B1) Individual TYPE RATING Type training: — Theory + examination — Practical + assessment PLUS OJE (for first aircraft in licence subcategory)	Individual TYPE RATING Type training: — Theory + examination — Practical + assessment PLUS OJE (for first aircraft in licence category)	Individual TYPE RATING Type training: — Theory + examination
Group 2 Subgroups: <u>2a:</u> single turboprop aeroplanes (*) <u>2b:</u> single turbine engine helicopters (*) <u>2c:</u> single piston-engine helicopters (*) (*) Except those classified in Group 1.	(For B1.1, B1.3, B1.4) Individual TYPE RATING (type training + OJE) or (type examination + practical experience) Full SUBGROUP RATING (type training + OJE) or (type examination + practical experience) on at least 3 aircraft representative of that subgroup Manufacturer SUBGROUP RATING (type training + OJE) or (type examination + practical experience) on at least 2 aircraft representative of that manufacturer subgroup	Individual TYPE RATING (type training + OJE) or (type examination + practical experience) Full SUBGROUP RATING based on demonstration of practical experience Manufacturer SUBGROUP RATING based on demonstration of practical experience	Individual TYPE RATING type training or type examination Full SUBGROUP RATING type training or type examination on at least 3 aircraft representative of that subgroup Manufacturer SUBGROUP RATING type training or type examination on at least 2 aircraft representative of that manufacturer subgroup
Group 3 Piston-engine aeroplanes (except those classified in Group 1)	(For B1.2) Individual TYPE RATING (type training + OJE) or (type examination + practical experience) Full GROUP 3 RATING based on demonstration of practical experience Limitations: • Pressurised aeroplanes • Metal aeroplanes • Composite aeroplanes • Wooden aeroplanes • Metal tubing & fabric aeroplanes	Individual TYPE RATING (type training + OJE) or (type examination + practical experience) Full GROUP 3 RATING based on demonstration of practical experience	Individual TYPE RATING type training or type examination Full GROUP 3 RATING based on demonstration of practical experience



Piston-engine non-pressurised Aeroplanes of 2 000 kg MTOM and below	(For B3) FULL RATING "Piston engine non-pressurised aeroplanes of 2 000 kg MTOM and below" based on demonstration of practical experience Limitations: • Metal aeroplanes • Composite aeroplanes • Wooden aeroplanes • Metal tubing & fabric aeroplanes	Not Applicable	Not Applicable
Group 4 Hot Air Balloons	For category L all ratings are based on demonstration of practical experience	Not Applicable	Not Applicable

CAR 66.50 - Limitations

- Limitations introduced on an Aircraft Maintenance Engineers Licence are exclusions from the certification privileges and affect the aircraft in its entirety.
- For limitations referred to in point 66.45, limitations shall be removed upon:
 - demonstration of appropriate experience; or
 - after a satisfactory practical assessment performed by the GCAA.
- For limitations referred to in point 66.70 (c), limitations shall be removed upon satisfactory completion of examination on those modules/subjects defined in appendix 1 to CAR 66.50(c) and compliance with the relevant experience requirements.

AMC 66.50(b) - Limitations

- The appropriate experience required to remove the limitations referred to in 66.45(f) and (g) should consist of the performance of a variety of tasks appropriate to the limitations under the supervision of authorised certifying staff. This should include the tasks required by a scheduled annual inspection. Alternatively, this experience may also be gained, if agreed by the GCAA, by theoretical and practical training provided by the manufacturer, as long as an assessment is further carried out and recorded by this manufacturer.
- It may be acceptable to have this experience on just one aircraft type, provided that this type is representative of the (sub) group in relation to the limitation being removed.
- The application for the limitation removal should be supported by a record of experience signed by the authorised certifying staff or by an assessment signed by the manufacturer after completion of the applicable theoretical and practical training.

CAR 66.55 - Evidence of qualification

Personnel exercising certification privileges as well as support staff shall produce their licence, as evidence of qualification, within 24 hours upon request from an authorised person.

CAR 66.70 - Conversion provisions

- The holder of a certifying staff qualification valid in the UAE, prior to the date of entry into force of this CAR will be issued an Aircraft Maintenance Engineers Licence by the GCAA without further examination subject to the conditions specified in para (c).



- (b) A person undergoing a certifying staff qualification process valid, prior to the date of entry into force of this CAR may continue to be qualified. The holder of a certifying staff qualification gained following such qualification process shall be issued an Aircraft Maintenance Engineers Licence without further examination subject to the conditions specified in para (c).
- (c) Where necessary, the Aircraft Maintenance Engineers Licence shall contain limitations in accordance with point 66.50 to reflect the differences between:
- (i) the scope of the certifying staff qualification valid before the entry into force of this Regulation and
 - (ii) the basic knowledge requirements and the basic examination standards laid down in Appendix I and II to this CAR.
- (d) By derogation to paragraph (c) for aircraft not involved in commercial air transport other than large aircraft, the Aircraft Maintenance Engineers Licence shall contain limitations in accordance with point 66.50 to ensure that the certifying staff privileges valid before the entry into force of this Regulation and the privileges of the converted CAR 66 Aircraft Maintenance Engineers Licence remain the same.

GM 66.70 - Conversion provisions

1. As described in point 66.70, the conversion provisions apply to the holder of a certifying staff qualification valid prior to the date of entry into force of CAR 66. The sentence the holder of a certifying staff qualification valid, means any person who had a qualification valid allowing that person the performance of activities identical to the privileges of “certifying staff” contained in CAR 66. This means that the signature of that person was sufficient to declare that the maintenance had been properly performed and the aircraft was ready for service and fit for flight in respect to such maintenance.

This should not be mistaken for the responsibilities linked to the airworthiness review, which was performed at different periods (typically varying from 6 months to 3 years) in the national systems. This is an activity which is performed at very specific points of time and not after every maintenance activity. As an airworthiness review (or equivalent term used in the national systems) is not performed after every maintenance event before the aircraft takes flight, an airworthiness review cannot be considered as a maintenance release. This means that the conversion provisions described in 66.70 are not applicable to persons performing airworthiness review functions unless their signature was required after every maintenance event before the aircraft can take flight.

2. The conversion applies to “certifying staff qualifications” such as, for example:
- Holding a national licence (or completed the process to obtain such a national licence);
 - Having completed a qualification process defined by the GCAA to become certifying staff;
 - Having completed the qualification requirements for certifying staff within a maintenance organisation, as defined in their procedures.

This does not mean that in order to be entitled to a conversion process, the applicant has to be exercising certification privileges. A person may hold a “certifying staff qualification” while not having certification privileges (or while exercising very limited certification privileges below his/her qualification) for different reasons such as, for example, the following:

- The person is working as “support staff” in the base maintenance environment;
- The person has been authorised only for a very limited range of tasks (lower than what he/she would be entitled if his/her qualification is considered) since the person is working in a line station where the scope of tasks is very limited;
- The person holds a licence with a wider scope than the scope of the organisation where he/she is employed;



- The person is working outside the aviation industry or is temporarily on leave due to different reasons (medical, personal, etc.).

These persons are entitled to have the conversion performed in accordance with the full scope of their qualification and the full privileges that they would be entitled to hold on the basis of such qualification.

3. As described in point 66.70, certifying staff qualifications eligible for conversion are those valid prior to the date of entry into force of CAR 66, which means those qualifications valid before:
 - 01 July 2011 for aircraft above and below 5 700 kg MTOM.

Nevertheless, since the B3 licence did not exist at those dates, certifying staff qualifications eligible for conversion to a B3 licence are those valid before 01 December 2013, which is the date when the GCAA has the obligation to start issuing such licences.

4. Although only those certifying staff qualifications gained prior to the dates indicated above are eligible for conversion, this does not mean that the application for conversion has to be submitted prior to those dates. The applicant is entitled to have the conversion performed irrespective of when he/she applies for conversion.
5. A certifying staff qualification can be subject to more than one conversion process and can also be converted to more than one licence (with any applicable limitations). This could be the case, for example, for a person who already had the certifying staff qualification converted to a B1.2 licence with limitations linked to some missing elements of the CAR 66 Appendix I and II standard (following 66.70(c). This person would be entitled to apply and have his/her certifying staff qualification converted to a B1.2 or a B3 licence on the basis of 66.70(d), which would mean that there is no need to compare with the CAR 66 Appendix I and II standard, introducing only those limitations required to maintain the existing privileges.

GM 66.70(c) - Conversion provisions

For example, a limitation could be where a person holds a pre-existing certifying staff qualification which covered, to the standard of CAR 66 Appendix I and II, all the modules/subjects corresponding to the B1 licence except for electrical power systems. This person would receive a CAR 66 Aircraft Maintenance Engineers Licence in the B1 category with a limitation (exclusion) on electrical power systems.

For removal of limitations, refer to Appendix 1 to 66.50(c).

GM 66.70(d) - Conversion Provisions (non-UAE Licenses)

The following list identifies which ICAO licences are acceptable for conversion to a GCAA licence, the list is split into two categories.

Category 1. The following ICAO licences are acceptable for conversion to a GCAA licence following a module 10 Aviation Legislation examination conducted by the GCAA.

Austria, Australia, Bahrain, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Italy, Kuwait, Latvia, Liechtenstein, Lithuania, Luxemburg, Malaysia, Malta, New Zealand, Norway, Poland, Portugal, Qatar, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Turkey and the United Kingdom.

Category 2. The following ICAO licences are acceptable for conversion to a GCAA licence following a module 10 Aviation Legislation examination conducted by the GCAA, and a module 9 Human Factors examination conducted by the GCAA or a CAR 147 approved Maintenance Training Organisation.



Algeria, Bahamas, Bangladesh, Brunei, Canada, Egypt, FAA A&P with IA, Indonesia, India, Jamaica, Jordan A&P/Part 66, Lebanon, Macau, Mauritius, Morocco, Oman, Pakistan, Saudi Arabia A&P with IA, South Africa, Sri Lanka, Sudan, Tunisia and Yemen. Basic airframe/powerplant foreign licences issued by an ICAO contracting state (listed above) without a type rating and certification privileges may be eligible for a conversion to a GCAA category A licence following completion of a GCAA Aviation Legislation exam (module 10) and Human Factor exam (module 9) as applicable. Further extension of GCAA category A licence issued under the provision of this paragraph shall comply with GCAA CAR 66 knowledge and experience requirements.

Candidates applying for foreign licence conversion may be required to sit additional CAR 66 full/part modular examination that are considered necessary by the GCAA to convert the foreign licence to an non-restricted GCAA CAR 66 AMEL.

GM 66.70 (e) – Conversion provisions (non UAE Licences)

Requests for a licence conversion on the basis of a non UAE licence referred to in GM 66.70(d) with a large number of limitations or with limitations that severely restricts the corresponding CAR 66 privileges will not be accepted.

Upon successful completion of the applicable examinations referred to in GM 66.70(d) the candidate will be required to apply for issue of a CAR 66 licence through the E-Services application. Ratings held by the individual on their non UAE licence will be endorsed on the licence iaw AMC 66.45(a).

For a licence conversion from a non UAE licence, the exam retake restriction does not apply for examination conducted by the GCAA, a failed modular examination may be retaken at any time, however only one re-sit attempt will be allowed, after this the applicant must attend a module 9 and/or module 10 course at a CAR 147 approved training organisation, after which, the complete examination must be taken MCQ and essay.

Applicants must hold a valid type rated Aircraft Maintenance Engineer Licence from an ICAO contracting state listed in GM 66.70(d), if the listed ICAO contracting state does not issue a type rated Aircraft Maintenance Engineer Licence, a valid basic Aircraft Maintenance Engineer Licence comparable and equivalent to the appropriate CAR 66 AMEL B1, B2, B3 or L category

Applicant must have held privileges to issue Certificate of Release to Service (CRS) under a maintenance/certification authorisation granted by a previous organisation under the oversight of the foreign license issuing authority.

The non UAE licence must be verified by the issuing authority and addressed to the GCAA, and if applicable, the maintenance/certification authorisation shall also be verified by the regulatory authority of the company that issued the maintenance authorisation to verify/attest that the authorisation issued by the company complies with ICAO Aircraft Maintenance Personal Licensing standards.

the above mentioned maintenance/certification authorisation verification is needed from applicants who hold basic licences which are issued from the ICAO contracting state that does not issue type rated Aircraft Maintenance Engineer Licences.

The applicant must furnish training course certificates related to the certification qualification.

GM 66.70 (f) – Conversion provisions (non UAE Licences)



- (a) To permit a non UAE licence holder to exercise the privileges of their licence in the U.A.E. a non UAE licence can be validated by issuance of a letter of validation, with initial validity of ninety (90) days and may be further extended for another 90 days under extenuating circumstances.
- (b) The pre-requisites and eligibility criteria for the issue of a temporary validation are detailed in GM 66.70 (d) and GM 66.70 (e).



3. APPENDICES

SECTION 2 – APPENDICES TO CAR 66

APPENDIX I to CAR 66 - BASIC KNOWLEDGE REQUIREMENTS

1. Knowledge Levels - Category A, B1, B2, B3, L and C Aircraft Maintenance Engineers Licence

Basic knowledge for categories A, B1 B2 and B3 are indicated by knowledge levels (1, 2 or 3) against each applicable subject. Category C applicants shall meet either the category B1 or the category B2 basic knowledge levels.

The knowledge level indicators are defined on 3 levels as follows:

LEVEL 1: *A familiarisation with the principal elements of the subject.*

Objectives:

- (a) The applicant should be familiar with the basic elements of the subject.
- (b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
- (c) The applicant should be able to use typical terms.

LEVEL 2: *A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.*

Objectives:

- (a) The applicant should be able to understand the theoretical fundamentals of the subject.
- (b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
- (c) The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.
- (d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
- (e) The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

LEVEL 3: *A detailed knowledge of the theoretical and practical aspects of the subject and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.*

Objectives:

- (a) The applicant should know the theory of the subject and interrelationships with other subjects.
- (b) The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.
- (c) The applicant should understand and be able to use mathematical formulae related to the subject.
- (d) The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject.
- (e) The applicant should be able to apply his knowledge in a practical manner using manufacturer's instructions.
- (f) The applicant should be able to interpret results from various sources and measurements and apply corrective action where appropriate.



2. Modularisation

Qualification on basic subjects for each Aircraft Maintenance Engineers Licence category or subcategory should be in accordance with the following matrix where applicable subjects are indicated by an 'X':

Subject modules	A or B1 aeroplane with:		A or B1 helicopter with:		B2	B3
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics	Piston-engine non-pressurised aeroplanes 2 000 kg MTOM and below
1	X	X	X	X	X	X
2	X	X	X	X	X	X
3	X	X	X	X	X	X
4	X	X	X	X	X	X
5	X	X	X	X	X	X
6	X	X	X	X	X	X
7A	X	X	X	X	X	
7B						X
8	X	X	X	X	X	X
9A	X	X	X	X	X	
9B						X
10	X	X	X	X	X	X
11A	X					
11B		X				
11C						X
12			X	X		
13					X	
14					X	
15	X		X			
16		X		X		X
17A	X	X				
17B						X



MODULE 1. MATHEMATICS	Level			
	A	B1	B2	B3
1.1 Arithmetic Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.	1	2	2	2
1.2 Algebra (a) Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions; (b) Linear equations and their solution: Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second degree equations with one unknown; logarithms;	1 -	2 1	2 1	2 1
1.3 Geometry (a) Simple geometrical constructions; (b) Graphical representation; nature and uses of graphs, graphs of equations/functions; (c) Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.	- 2 -	1 2 2	1 2 2	1 2 2

MODULE 2. PHYSICS	Level			
	A	B1	B2	B3
2.1 Matter Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.	1	1	1	1
2.2 Mechanics 2.2.1 Statics Forces, moments and couples, representation as vectors; Centre of gravity. Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid, fluid and gas; Pressure and buoyancy in liquids (barometers).	1	2	1	1



2.2.2 Kinetics Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.	1	2	1	1
2.2.3 Dynamics (a) Mass: Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency; (b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).	1 1	2 2	1 2	1 1
2.2.4 Fluid dynamics (a) Specific gravity and density; (b) Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	2 1	2 2	2 1	2 1
2.3 Thermodynamics (a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition. (b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	2 -	2 2	2 2	2 1
2.4 Optics (Light) Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	-	2	2	-



2.5 Wave Motion and Sound Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	-	2	2	-
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MODULE 3. ELECTRICAL FUNDAMENTALS	Level			
	A	B1	B2	B3
3.1 Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.	1	1	1	1
3.2 Static Electricity and Conduction Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.	1	2	2	1
3.3 Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	1	2	2	1
3.4 Generation of Electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	1	1	1	1
3.5 DC Sources of Electricity Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.	1	2	2	2
3.6 DC Circuits Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.	-	2	2	1
3.7 Resistance/Resistor (a) Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats;	-	2	2	1



Operation of Wheatstone Bridge.				
(b) Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge;	-	1	1	-
3.8 Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.	-	2	2	1
3.9 Capacitance/Capacitor Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.	-	2	2	1
3.10 Magnetism (a) Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor.	-	2	2	1
(b) Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.	-	2	2	1
3.11 Inductance/Inductor Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns;	-	2	2	1



Mutual induction; The effect the rate of change of primary mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self-induction; Saturation point; Principle uses of inductors;				
3.12 DC Motor/Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.	-	2	2	1
3.13 AC Theory Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power Triangular/Square waves; Single/3 phase principles.	1	2	2	1
3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.	-	2	2	1
3.15 Transformers Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.	-	2	2	1
3.16 Filters Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	-	1	1	-



3.17 AC Generators Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.	-	2	2	1
3.18 AC Motors Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotation field, capacitor, inductor, shaded or split pole.	-	2	2	1

MODULE 4. ELECTRICAL FUNDAMENTALS	Level			
	A	B1	B2	B3
4.1 Semiconductors 4.1.1 Diodes (a) Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes. (b) Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions; Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation; Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, and Zener diode.	-	2	2	1
	-	-	2	-



4.1.2 Transistors (a) Transistor symbols; Component description and orientation; Transistor characteristics and properties. (b) Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors. Basic appreciation of other transistor types and their uses. Application of transistors: classes of amplifier (A, B, C); Simple circuits including: bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits.	-	1	2	1
4.1.3 Integrated Circuits (a) Description and operation of logic circuits and linear circuits /operational amplifiers. (b) Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.	-	1	-	1
4.2 Printed Circuit Boards Description and use of printed circuit boards.	-	1	2	-
4.3 Servomechanisms (a) Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters. (b) Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, deadband; Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; Servomechanism defects, reversal of synchro leads, hunting.	-	1	-	-

MODULE 5. DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS	Level				
	A	B1.1 B1.3	B1.2 B1.4	B2	B3
5.1 Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.	1	2	2	3	1



5.2 Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa	-	1	-	2	-
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	-	1	-	2	-
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.	-	2	-	2	-
5.5 Logic Circuits (a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.	-	2	-	2	1
(b) Interpretation of logic diagrams.	-	-	-	2	-
5.6 Basic Computer Structure (a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems).	1	2	-	-	-
(b) Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multiaddress instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	-	-	-	2	-
5.7 Microprocessors Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit	-	-	-	2	-
5.8 Integrated Circuits Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.	-	-	-	2	-
5.9 Multiplexing Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	-	-	-	2	-



5.10 Fibre Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.	-	1	1	2	-
5.11 Electronic Displays Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	-	2	1	2	1
5.12 Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	1	2	2	2	1
5.13 Software Management Control Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	-	2	1	2	1
5.14 Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: MC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection.	-	2	2	2	1
5.15 Typical Electronic/Digital Aircraft Systems General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) testing such as: (a) For B1 and B2 only: ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System IRS-Inertial Reference System (b) For B1, B2 and B3: ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System GPS-Global Positioning System TCAS-Traffic Alert Collision Avoidance System Integrated Modular Avionics Cabin Systems Information Systems	-	2	2	2	1



MODULE 6. MATERIALS AND HARDWARE	Level			
	A	B1	B2	B3
6 Aircraft Materials — Ferrous				
(a) Characteristics, properties and identification of alloy steels used in aircraft; common Heat treatment and application of alloy steels;	1	2	1	2
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.2 Aircraft Materials — Non-Ferrous				
(a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials;	1	2	1	2
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.3 Aircraft Materials — Composite and Non-Metallic				
6.3.1 Composite and non-metallic other than wood and fabric				
(a) Characteristics, properties and identification of common composite and nonmetallic materials, other than wood, used in aircraft; Sealant and bonding agents.	1	2	2	2
(b) The detection of defects/deterioration in composite and non-metallic material. Repair of composite and non-metallic material.	1	2	-	2
6.3.2 Wooden structures Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.	1	2	-	2
6.3.3 Fabric covering Characteristics, properties and types of fabrics used in aeroplanes; Inspections methods for fabric; Types of defects in fabric; Repair of fabric covering.	1	2	-	2
6.4 Corrosion				
(a) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress;	1	1	1	1
(b) Types of corrosion and their identification; Causes of corrosion;	2	3	2	2



Material types, susceptibility to corrosion.				
6.5 Fasteners				
6.5.1 Screw threads Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads;	2	2	2	2
6.5.2 Bolts, studs and screws Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels.	2	2	2	2
6.5.3 Locking devices Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.	2	2	2	2
6.5.4 Aircraft rivets Types of solid and blind rivets: specifications and identification, heat treatment.	1	2	1	2
6.6 Pipes and Unions (a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; (b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2 2	2 2	2 1	2 2
6.7 Springs Types of springs, materials, characteristics and applications.	-	2	1	1
6.8 Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2	1
6.9 Transmissions Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	1	2	2	1
6.10 Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1	2



6.11 Electrical Cables and Connectors Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	1	2	2	2
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MODULE 7A. MAINTENANCE PRACTICES Note: This module does not apply to category B3. Relevant subject matter for category B3 are defined in module 7B	Level		
	A	B1	B2
7.1 Safety Precautions-Aircraft and Workshop Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.	3	3	3
7.2 Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	3	3	3
7.3 Tools Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment;	3	3	3
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-	2	3
7.5 Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.	1	2	2
7.6 Fits and Clearances Drill sizes for bolt holes, classes of fits; Common system of fits and clearances;	1	2	1



Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.			
7.7 Electrical Wiring Interconnection System (EWIS) Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding. EWIS installations, inspections, repair and cleanliness standards.	1	3	3
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	2	-
7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	1	2	-
7.10 Springs Inspection and testing of springs.	1	2	-
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	1	2	-
7.12 Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.	1	2	-
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	1	2	-
7.14 Material handling			
7.14.1 Sheet Metal Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	-	2	-
7.14.2 Composite and non-metallic Bonding practices; Environmental conditions Inspection methods	-	2	-
7.15 Welding, Brazing, Soldering and Bonding			
(a) Soldering methods; inspection of soldered joints.	-	2	2
(b) Welding and brazing methods;	-	2	-



Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.			
7.16 Aircraft Weight and Balance			
(a) Centre of Gravity/Balance limits calculation: use of relevant documents;	-	2	2
(b) Preparation of aircraft for weighing; Aircraft weighing.	-	2	-
7.17 Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.	2	2	2
7.18 Disassembly, Inspection, Repair and Assembly Techniques			
(a) Types of defects and visual inspection techniques; Corrosion removal, assessment re-protection;	2	3	3
(b) General repair methods, Structural Repair Manual Ageing, fatigue and corrosion control programmes;	-	2	-
(c) Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods;	-	2	1
(d) Disassembly and re-assembly techniques;	2	2	2
(e) Trouble shooting techniques;	-	2	2
7.19 Abnormal Events			
(a) Inspections following lightning strikes and HIRF penetration;	2	2	2
(b) Inspections following abnormal events such as heavy landing and flight through turbulence.	2	2	-
7.20 Maintenance Procedures Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operations; Maintenance Inspection/Quality Control/Quality Assurance; Additional maintenance procedures; Control of life limit components.	1	2	2



MODULE 7B. MAINTENANCE PRACTICES <i>Note: The scope of this module shall reflect the technology of aeroplanes relevant to the B3 category.</i>	Level
	B3
7.1 Safety Precautions-Aircraft and Workshop Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.	3
7.2 Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	3
7.3 Tools Common hand tool; Common power tool types; Operation and use of precision measuring tools; Lubrication, function and use of electrical general test equipment.	3
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-
7.5 Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Writing diagrams and schematic diagrams.	2
7.6 Fits and Clearances Drill size for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limit for bow, twist and wear; Standard methods for checking shaft, bearings and other parts.	2
7.7 Electrical Cables and Connectors Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.	2
7.8 Riveting Riveted joints, rivets spacing and pitch; Tools use for riveting and dimpling; Inspection of riveted joints.	2



7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	2
7.10 Springs Inspection and testing of springs.	1
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	2
7.12 Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets. Inspection of screw jacks, lever devices, push-pull rod systems.	2
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	2
7.14 Material handling 7.14.1 Sheet Metal Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	2
7.14.2 Composite and non-metallic Bonding practices; Environmental conditions; Inspection methods.	2
7.15 Welding, Brazing, Soldering and Bonding (a) Soldering methods; inspection of soldering joints;	2
(b) Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	2
7.16 Aircraft Weight and Balance (a) Centre of Gravity/Balance limits calculation: use of relevant documents;	2
(b) Preparation of aircraft for weighing; Aircraft weighing.	2
7.17 Aircraft Handling and Storage Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, choking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies;	2



Effects of environmental conditions on aircraft handling and operations.	
7.18 Disassembly, Inspection, Repair and Assembly Techniques	
(a) Types of defects and visual inspection techniques; Corrosion removal, assessment and re-protection;	3
(b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programs;	2
(c) Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods;	2
(d) Disassembly and re-assembly techniques;	2
(e) Trouble shooting techniques.	2
7.19 Abnormal Events	
(a) Inspections following lightning strikes and HIRF penetration.	2
(b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2
7.20 Maintenance Procedures Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operations; Maintenance Inspections/Quality Control/Quality Assurance; Additional maintenance procedures; Control of life limited components.	2

MODULE 8. BASIC AERODYNAMICS	Level			
	A	B1	B2	B3
8.1 Physics of the Atmosphere International Standard Atmosphere (ISA), application to aerodynamics.	1	2	2	1
8.2 Aerodynamics Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant;	1	2	2	1



Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.				
8.3 Theory of Flight Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.	1	2	2	1
8.4 Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).	1	2	2	1

MODULE 9A. HUMAN FACTORS Note: This module does not apply to category B3. Relevant subject matter for category B3 are defined in module 9B	Level		
	A	B1	B2
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.	1	2	2
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	1	2	2
9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership.	1	1	1
9.4 Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.	2	2	2



9.5 Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	1	1	1
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1	1	1
9.7 Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	2	2	2
9.8 Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents) Avoiding and managing errors.	1	2	2
9.9 Safety Management System (SMS) Safety Policy and Objectives; Safety Risk Management; Safety Assurance; Safety Promotion;	2	2	2

MODULE 9B. HUMAN FACTORS	Level
Note: The scope of this module shall reflect the less demanding environment of maintenance for B3 licence holders	B3
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; "Murphy's" law.	2
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	2
9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; "Culture" issues; Team work; Management, supervision and leadership.	1



9.4 Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.	2
9.5 Physical Environment Noise and fumes; Illuminations; Climate and temperature Motion and vibration; Working environment.	1
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1
9.7 Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	2
9.8 Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents); Avoiding and managing errors.	2
9.9 Safety Management System (SMS) Safety Policy and Objectives; Safety Risk Management; Safety Assurance; Safety Promotion;	2

MODULE 10. AVIATION LEGISLATION	Level			
	A	B1	B2	B3
10.1 Regulatory Framework Role of International Civil Aviation Organisation; Role of the General Civil Aviation Authority; Relationship between CAR 145, CAR 66, CAR 147 and CAR M; Relationship with other Aviation Authorities.	1	1	1	1
10.2 CAR 66 — Certifying Staff — Maintenance Detailed understanding of CAR 66.	2	2	2	2
10.3 CAR 145 — Approved Maintenance Organisations Detailed understanding of CAR 145.	2	2	2	2
10.4 CAR-OPS — Commercial & Private Air Transportation Air Operators Certificates; Operators Responsibilities; Documents to be Carried; Aircraft Placarding (Markings);	1	1	1	1



10.5 Aircraft Certification				
(a) General Certification rules Type Certification; Supplemental Type Certification; CAR 21 Design/Production Organisation Approvals.	-	1	1	1
(b) Documents Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.	-	2	2	2
10.6 CAR M Detailed understanding of CAR M.	2	2	2	2
10.7 Applicable National and International Requirements				
(a) Maintenance Programmes, Maintenance checks and inspections; Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.;	1	2	2	2
(b) Continuing airworthiness; Test flights; ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations and minimum equipment requirements.	-	1	1	1

MODULE 11A. TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	Level	
	A1	B1.1
11.1 Theory of Flight		
11.1.1 Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers; — Pitch control: elevators, stabilators, variable incidence stabilisers and canards; — Yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using vortex generators, stall wedges or leading edge devices;	1	2



Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;		
11.1.2 High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number.	1	2
11.2 Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Aircraft bonding.	2	2
(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning. Airframe symmetry: methods of alignment and symmetry checks.	1	2
11.3 Airframe Structures — Aeroplanes 11.3.1 Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriage attachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation and safety devices; Windows and windscreen construction and mechanisms.	1	2
11.3.2 Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	2



11.3.3 Stabilisers (ATA 55) Construction; Control surface attachment.	1	2
11.3.4 Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic.	1	2
11.3.5 Nacelles/Pylons (ATA 54) Nacelles/Pylons — Construction; — Firewalls; — Engine mounts.	1	2
11.4 Air Conditioning and Cabin Pressurisation (ATA 21) 11.4.1 Air supply Sources of air supply including engine bleed, APU and ground cart;	1	2
11.4.2 Air Conditioning Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems; Flow, temperature and humidity control system.	1	3
11.4.3 Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers.	1	3
11.4.4 Safety and warning devices Protection and warning devices.	1	3
11.5 Instruments/Avionic Systems 11.5.1 Instrument Systems (ATA 31) Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems; Glass cockpit Other aircraft system indication.	1	2
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (ATA 22); — Communications (ATA 23); — Navigation Systems (ATA 34)	1	1
11.6 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation;	1	3



Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection. External/Ground power;		
11.7 Equipment and Furnishings (ATA 25)		
(a) Emergency equipment requirements; Seats, harnesses and belts.	2	2
(b) Cabin lay-out; Equipment lay-out; Cabin Furnishing Installation; Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.	1	1
11.8 Fire Protection (ATA 26)		
(a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1	3
(b) Portable fire extinguisher.	1	1
11.9 Flight Controls (ATA 27)	1	3
Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks systems; Balancing and rigging; Stall protection/warning system.		
11.10 Fuel Systems (ATA 28)	1	3
System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling; Longitudinal balance fuel systems.		
11.11 Hydraulic Power (ATA 29)	1	3
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic;		



Emergency pressure generation; Filters Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.		
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic and chemical; Rain repellant; Probe and drain heating; Wiper systems.	1	3
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing	2	3
11.14 Lights (ATA 33) External: navigation, anti-collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	3
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.	1	3
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3
11.17 Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	2	3
11.18 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2



11.19 Integrated Modular Avionics (ATA 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionic Communication, Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc. Core System; Network Components.	1	2
11.20 Cabin Systems (ATA 44) The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions. The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels. The Cabin Network Service typically consists on a server, typically interfacing with, among others the following systems: — Data/Radio Communication, In-Flight Entertainment System. The Cabin Network Service may host functions such as: — Access to pre-departure/departure reports, — Email/intranet/Internet access, — Passenger database; Cabin Core System; In-flight Entertainment System; External Communication System; Cabin Mass Memory System; Cabin Monitoring System; Miscellaneous Cabin System.	1	2
11.21 Information Systems (ATA 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.	1	2

MODULE 11B. PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	Level	
	A2	B1.2
Note 1: This module does not apply to category B3. Relevant subject matters for category B3 are defined in module 11C. Note 2: The scope of this Module should reflect the technology of aeroplanes pertinent to the A2 and B1.2 subcategory.		
11.1 Theory of Flight 11.1.1 Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers; — Pitch control: elevators, stabilators, variable incidence stabilisers and canards; — Yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;	1	2
11.1.2 High Speed Flight – N/A	-	-
11.2 Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Aircraft bonding.	2	2
	1	2



(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks		
11.3 Airframe Structures — Aeroplanes 11.3.1 Fuselage (ATA 52/53/56) Construction and pressurisation sealing; Wing, tail-plane pylon and undercarriage attachments; Seat installation; Doors and emergency exits: construction and operation; Window and windscreen attachment.	1	2
11.3.2 Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	2
11.3.3 Stabilisers (ATA 55) Construction; Control surface attachment.	1	2
11.3.4 Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing - mass and aerodynamic.	1	2
11.3.5 Nacelles/Pylons (ATA 54) Nacelles/Pylons: — Construction; — Firewalls; — Engine mounts.	1	2
11.4 Air Conditioning and Cabin Pressurisation (ATA 21) Pressurisation and air conditioning systems; Cabin pressure controllers, protection and warning devices; Heating Systems.	1	3
11.5 Instruments/Avionic Systems 11.5.1 Instrument Systems (ATA 31) Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems. Glass cockpit	1	2



Other aircraft system indication.		
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (ATA 22), — Communications (ATA 23), — Navigation Systems (ATA 34).	1	1
11.6 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.	1	3
11.7 Equipment and Furnishings (ATA 25) (a) Emergency equipment requirements; Seats, harnesses and belts.	2	2
(b) Cabin lay-out; Equipment lay-out; Cabin Furnishing Installation; Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.	1	1
11.8 Fire Protection (ATA 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1	3
(b) Portable fire extinguisher.	1	3
11.9 Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.	1	3
11.10 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings;	1	3



Refuelling and defuelling.		
11.11 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Filters Pressure Control; Power distribution; Indication and warning systems.	1	3
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.	1	3
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing.	2	3
11.14 Lights (ATA 33) External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	3
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;	1	3
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3
11.17 Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	2	3

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11.3.2 Wings (ATA 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1
11.3.3 Stabilisers (ATA 55) Construction; Control surface attachment.	1
11.3.4 Flight Control Surfaces (ATA 55/57) Construction and attachment; Balancing — mass and aerodynamic.	1
11.3.5 Nacelles/Pylons (ATA 54) Nacelles/Pylons: — Construction; — Firewalls; — Engine mounts	1
11.4 Air Conditioning (ATA 21) Heating and ventilation systems.	1
11.5 Instruments/Avionic Systems 11.5.1 Instrument Systems (ATA 31) Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems. Glass cockpit; Other aircraft system indication.	1
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (ATA 22); — Communications (ATA 23); — Navigation Systems (ATA 34).	1
11.6 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.	2
11.7 Equipment and Furnishings (ATA 25) Emergency equipment requirements; Seats, harnesses and belts.	2
11.8 Fire Protection (ATA 26) Portable fire extinguisher	2
11.9 Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder;	3



Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.	
11.10 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.	2
11.11 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Filters; Pressure Control; Power distribution; Indication and warning systems.	2
11.12 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.	1
11.13 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering	2
11.14 Lights (ATA 33) External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.	2
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure and vacuum pumps;	2



Distribution; Indications and warnings; Interfaces with other systems.	
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MODULE 12. HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	Level	
	A3 A4	B1.3 B1.4
12.1 Theory of Flight — Rotary Wing Aerodynamics Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, Blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power settling, overpitching; Auto-rotation; Ground effect.	1	2
12.2 Flight Control Systems Cyclic control; Collective control; Swashplate; Yaw control: Anti-Torque Control, Tail rotor, bleed air; Main Rotor Head: Design and Operation features; Blade Dampers: Function and construction; Rotor Blades: Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical and fly-by-wire; Artificial feel; Balancing and Rigging.	2	3
12.3 Blade Tracking and Vibration Analysis Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.	1	3
12.4 Transmissions Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake; Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers.	1	3
12.5 Airframe Structures (a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts;	2	2



Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, and methods of skinning and anti-corrosive protection. Pylon, stabiliser and undercarriage attachments; Seat installation; Doors: construction, mechanisms, operation and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning. Airframe symmetry: methods of alignment and symmetry checks.	1	2
12.6 Air Conditioning (ATA 21)		
12.6.1 Air supply Sources of air supply including engine bleed and ground cart;	1	2
12.6.2 Air Conditioning Air conditioning systems; Distribution systems; Flow and temperature control systems; Protection and warning devices.	1	3
12.7 Instruments/Avionic Systems		
12.7.1 Instrument Systems (ATA 31) Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Vibration indicating systems — HUMS; Glass cockpit Other aircraft system indication.	1	2
12.7.2 Avionic Systems Fundamentals of system layouts and operation of: Auto Flight (ATA 22);	1	1



Communications (ATA 23); Navigation Systems (ATA 34).		
12.8 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation, AC power generation; Emergency power generation; Voltage regulation, Circuit protection. Power distribution; Inverters, transformers, rectifiers; External/Ground power.	1	3
12.9 Equipment and Furnishings (ATA 25) (a) Emergency equipment requirements; Seats, harnesses and belts; Lifting systems. (b) Emergency flotation systems; Cabin lay-out, cargo retention; Equipment lay-out; Cabin Furnishing Installation.	2 1	2 1
12.10 Fire Protection (ATA 26) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1	3
12.11 Fuel Systems (ATA 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.	1	3
12.12 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.	1	3
12.13 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing and de-icing systems: electrical, hot air and chemical; Rain repellent and removal; Probe and drain heating.	1	3



Wiper system.		
12.14 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, tyres, brakes; Steering; Skids, floats.	2	3
12.15 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	3
12.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3
12.17 Integrated Modular Avionics (ATA 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionic Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indicator, Oleo Pressure Indication, Brake Temperature Monitoring, etc. Core System; Network Components.	1	2
12.18 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2
12.19 Information Systems(ATA 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.	1	2



Typical examples include Air Traffic and Information Management Systems and Network Server Systems		
Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.		

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS		Level
		B2
13.1 Theory of Flight		
(a) Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices: slots, slats, flaps; Drag inducing devices: spoilers, lift dumpers, speed brakes; Operation and effect of trim tabs, servo tabs, control surface bias.		1
(b) High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number.		1
(c) Rotary Wing Aerodynamics Terminology; Operation and effect of cyclic, collective and anti-torque controls.		1
13.2 Structures — General Concepts		
(a) Fundamentals of structural systems.		1
(b) Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.		2
13.3 Autoflight (ATA 22) Fundamentals of automatic flight control including working principles and current terminology; Command signal processing; Modes of operation: roll, pitch and yaw channels; Yaw dampers; Stability Augmentation System in helicopters; Automatic trim control; Autopilot navigation aids interface; Autothrottle systems;		3



Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions.	
13.4 Communication/Navigation (ATA 23/34) Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; Working principles of following systems: — Very High Frequency (VHF) communication; — High Frequency (HF) communication; — Audio; — Emergency Locator Transmitters; — Cockpit Voice Recorder; — Very High Frequency omnidirectional range (VOR); — Automatic Direction Finding (ADF); — Instrument Landing System (ILS); — Microwave Landing System (MLS); — Flight Director systems; Distance Measuring Equipment (DME); — Very Low Frequency and hyperbolic navigation (VLF/Omega); — Doppler navigation; — Area navigation, RNAV systems; — Flight Management Systems; — Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS); — Inertial Navigation System; — Air Traffic Control transponder, secondary surveillance radar; — Traffic Alert and Collision Avoidance System (TCAS); — Weather avoidance radar; — Radio altimeter; — ARINC communication and reporting;	3
13.5 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.	3
13.6 Equipment and Furnishings (ATA 25) Electronic emergency equipment requirements; Cabin entertainment equipment.	3
13.7 Flight Controls (ATA 27) (a) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic;	2



Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems.	
(b) System operation: electrical, fly-by-wire.	3
13.8 Instruments (ATA 31) Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators; Machmeters; Altitude reporting/alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems. Fuel quantity indicating systems; Gyroscopic principles; Artificial horizons; Slip indicators; Directional gyros; Ground Proximity Warning Systems; Compass systems; Flight Data Recording systems; Electronic Flight Instrument Systems; Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration measurement and indication. Glass cockpit	3
13.9 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	3
13.10 On board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	3
13.11 Air Conditioning and Cabin Pressurisation (ATA 21) 13.11.1. Air supply	2



Sources of air supply including engine bleed, APU and ground cart;	
13.11.2. Air Conditioning	
Air conditioning systems;	2
Air cycle and vapour cycle machines;	3
Distribution systems;	1
Flow, temperature and humidity control system.	3
13.11.3. Pressurisation	3
Pressurisation systems;	
Control and indication including control and safety valves;	
Cabin pressure controllers.	
13.11.4. Safety and warning devices	3
Protection and warning devices	
13.12 Fire Protection (ATA 26)	
(a) Fire and smoke detection and warning systems;	3
Fire extinguishing systems;	
System tests.	
(b) Portable fire extinguisher	1
13.13 Fuel Systems (ATA 28)	
System lay-out;	1
Fuel tanks;	1
Supply systems;	1
Dumping, venting and draining;	1
Cross-feed and transfer;	2
Indications and warnings'	3
Refuelling and defuelling;	2
Longitudinal balance fuel systems.	3
13.14 Hydraulic Power (ATA 29)	
System lay-out;	1
Hydraulic fluids;	1
Hydraulic reservoirs and accumulators;	1
Pressure generation: electrical, mechanical, pneumatic;	3
Emergency pressure generation;	3
Filters;	1
Pressure control;	3
Power distribution;	1
Indication and warning system;	3
Interface with other systems.	3
13.15 Ice and Rain Protection (ATA 30)	
Ice formation, classification and detection;	2
Anti-icing systems: electrical, hot air and chemical;	2
De-icing systems: electrical, hot air, pneumatic and chemical;	3
Rain repellant;	1
Probe and drain heating;	3
Wiper Systems.	1
13.16 Landing Gear (ATA 32)	



Construction, shock absorbing;	1
Extension and retraction systems: normal and emergency;	3
Indications and warning;	3
Wheels, brakes, antiskid and autobraking;	3
Tyres;	1
Steering;	3
Air-ground sensing.	3
13.17 Oxygen (ATA 35)	
System lay-out: cockpit, cabin;	3
Sources, storage, charging and distribution;	3
Supply regulation;	3
Indications and warnings;	3
13.18 Pneumatic/Vacuum (ATA 36)	
System lay-out;	2
Sources: engine/APU, compressors, reservoirs, ground supply;	2
Pressure control;	3
Distribution;	1
Indications and warnings;	3
Interfaces with other systems.	3
13.19 Water/Waste (ATA 38)	2
Water system lay-out, supply, distribution, servicing and draining;	
Toilet system lay-out, flushing and servicing.	
13.20 Integrated Modular Avionics (ATA 42)	3
Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionic Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indicator, Oleo Pressure Indication, Brake Temperature Monitoring, etc.	
Core System;	
Network Components.	
13.21 Cabin Systems (ATA 44)	3
The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions.	
The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels.	
The Cabin Network Service typically consists on a server, typically interfacing with, among others the following systems:	
— Data/Radio Communication, In-Flight Entertainment System.	
The Cabin Network Service may host functions such as:	
— Access to pre-departure/departure reports,	



— Email/intranet/Internet access, — Passenger database; Cabin Core System; In-flight Entertainment System; External Communication System; Cabin Mass Memory System; Cabin Monitoring System; Miscellaneous Cabin System.	
13.22 Information Systems (ATA 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display. Typical examples include Air Traffic and Information Management Systems and Network Server Systems Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.	3

MODULE 14. PROPULSION	Level
	B2
14.1 Turbine Engines (a) Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines; (b) Electronic Engine control and fuel metering systems (FADEC).	1
14.2 Engine Indicating Systems Exhaust gas temperature/Interstage turbine temperature systems; Engine speed; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.	2
14.3 Starting and Ignition Systems Operation of engine start system and components; Ignition systems and components; Maintenance safety requirements.	2



MODULE 15. GAS TURBINE ENGINE	Level	
	A	B1
15.1 Fundamentals Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity, acceleration; Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop.	1	2
15.2 Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow; Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.	-	2
15.3 Inlet Compressor inlet ducts Effects of various inlet configurations; Ice protection.	2	2
15.4 Compressors Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation: Causes and effects of compressor stall and surge; Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; Compressor ratio.	1	2
15.5 Combustion Section Constructional features and principles of operation.	1	2
15.6 Turbine Section Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.	2	2
15.7 Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.	1	2
15.8 Bearings and Seals Constructional features and principles of operation.	-	2



15.9 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2
15.10 Lubrication Systems System operation/lay-out and components.	1	2
15.11 Fuel Systems Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1	2
15.12 Air Systems Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.	1	2
15.13 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.	1	2
15.14 Engine Indication Systems Exhaust Gas Temperature/Interstage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque; Power.	1	2
15.15 Power Augmentation Systems Operation and applications; Water injection, water methanol; Afterburner systems.	-	1
15.16 Turbo-prop Engines Gas coupled/free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.	1	2
15.17 Turbo-shaft engines Arrangements, drive systems, reduction gearing, couplings, control systems.	1	2
15.18 Auxiliary Power Units (APUs) Purpose, operation, protective systems.	1	2
15.19 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2



15.20 Fire Protection Systems Operation of detection and extinguishing systems.	1	2
15.21 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Trend (including oil analysis, vibration and boroscope) monitoring; Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.	1	3
15.22 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2

MODULE 16. PISTON ENGINE	Level		
	A	B1	B3
16.1 Fundamentals Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.	1	2	2
16.2 Engine Performance Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition.	1	2	2
16.3 Engine Construction Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.	1	2	2
16.4 Engine Fuel Systems			
16.4.1 Carburettors Types, construction and principles of operation; Icing and heating.	1	2	2
16.4.2 Fuel injection systems Types, construction and principles of operation.	1	2	2
16.4.3 Electronic engine control Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1	2	2



16.5 Starting and Ignition Systems Starting systems, pre-heat systems; Ignition harnesses, spark plugs; Low and high tension systems.	1	2	2
16.6 Induction, Exhaust and Cooling Systems Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems — air and liquid.	1	2	2
16.7 Supercharging/Turbocharging Principles and purpose of supercharging and its effects on engine parameters; Construction and operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.	1	2	2
16.8 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2	2
16.9 Lubrication Systems System operation/lay-out and components.	1	2	2
16.10 Engine Indication Systems Engine speed; Cylinder head temperature; Coolant temperature; Oil pressure and temperature; Exhaust Gas Temperature; Fuel pressure and flow; Manifold pressure.	1	2	2
16.11 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2	2
16.12 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.	1	3	2
16.13 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2	1



MODULE 17A. PROPELLER Note: This module does not apply to category B3. Relevant subject matter for category B3 is defined in module 17B	Level	
	A	B1
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.	1	2
17.2 Propeller Construction Construction methods and materials used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.	1	2
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	1	2
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	-	2
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	1	2
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.	1	2
17.7 Propeller Storage and Preservation Propeller preservation and depreservation.	1	2



MODULE 17B. PROPELLER Note: The scope of this Module shall reflect the propeller technology of aeroplanes pertinent to the B3 category.	Level B3
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance	2
17.2 Propeller Construction Construction methods and materials used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.	2
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	2
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	2
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	2
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.	2
17.7 Propeller Storage and Preservation Propeller preservation and depreservation.	2



APPENDIX II to CAR 66 - BASIC EXAMINATION STANDARD

1. General

- 1.1. All basic examinations must be carried out using the multi-choice question format and essay questions as specified below. The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers. The use of calculators or other electronic devices will not be allowed during the examination.
- 1.2. Each multi-choice question must have three alternative answers of which only one must be the correct answer and the candidate must be allowed a time per module which is based upon a nominal average of 75 seconds per question.

If any of the modular examinations consists of 120 questions or more, the examinations may be split into two examinations or if conducted as part of the full training course may be carried out in phases provided a procedure is established in the MTOE and approved by the GCAA.
- 1.3. Each essay question requires the preparation of a hand written answer and the candidate must be allowed 20 minutes to answer each such question.
- 1.4. Suitable essay questions must be drafted and evaluated using the knowledge syllabus in Appendix I for Modules 7A, 7B, 9A, 9B and 10.
- 1.5. Each question will have a model answer drafted for it, which will also include any known alternative answers that may be relevant for other subdivisions.
- 1.6. The model answer will also be broken down into a list of the important points known as Key Points.
- 1.7. The pass mark for each module and sub-module multi-choice part of the examination is 75 %.
- 1.8. The pass mark for each essay question is 75 % in that the candidates answer must contain 75 % of the required key points addressed by the question and no significant error related to any required key point.
- 1.9. If either the multi-choice part only or the essay part only is failed, then it is only necessary to retake the multi-choice or essay part, as appropriate. If one of the essay questions is failed in module 7, then both essay questions must be retaken. Both the essay paper and MCQ for the same module must be completed if either have been failed following three consecutive attempts (see 1.13) and both must be completed at the same examination location.
- 1.10. Penalty marking systems must not be used to determine whether a candidate has passed.
- 1.11. A failed module may not be retaken for at least 90 days following the date of the failed module examination, except in the case of a CAR 147 approved maintenance training organisation which conducts a course of retraining tailored to the failed subjects in the particular module when the failed module may be retaken after 30 days.
- 1.12. The time periods required by point 66.25 apply to each individual module examination, with the exception of those module examinations which were passed as part of another category licence, where the licence has already been issued.
- 1.13. The maximum number of consecutive attempts for each module is three. Further sets of three attempts are allowed with a 1 year waiting period between sets. (see 1.9).
- 1.14. If the candidate is attending a full B1, B2 or B3 CAR 147 approved training course, and has failed the examinations after three consecutive attempts, the candidate will be allowed one further attempt following training on the



failed module in full. If applicable both the essay paper and MCQ for the same module must be completed if either have been failed. If this further attempt is failed, further sets of three attempts will only be allowed following a 1 year waiting period. Organisations adopting this policy must have this process approved in the MTOE.

- 1.15. The applicant shall confirm in writing to the approved maintenance training organisation or the GCAA to which they apply for an examination, the number and dates of attempts during the last year and the organisation where these attempts took place. The maintenance training organisation or the GCAA is responsible for checking the number of attempts within the applicable timeframes.

Any false declaration made by the candidate will result in the cancellation of any examinations taken and may lead to enforcement action(s).

2. Number of questions per module

2.1. Module 1- Mathematics:

Category A; 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1; 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B2; 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B3; 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.2. Module 2- Physics:

Category A; 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B1; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B3; 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.3. Module 3- Electrical Fundamentals:

Category A; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B3; 24 multi-choice and 0 essay questions. Time allowed 30 minutes.



2.4. Module 4- Electronic Fundamentals:

Category B1; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2; 40 multi-choice and 0 essay questions. Time allowed 50 minutes.

Category B3; 8 multi-choice and 0 essay questions. Time allowed 10 minutes.

2.5. Module 5- Digital Techniques/Electronic Instrument Systems:

Category A; 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1.1 & B1.3; 40 multi-choice and 0 essay questions. Time allowed 50 minutes.

Category B1.2 & B1.4; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2; 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B3; 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

2.6. Module 6- Materials and Hardware:

Category A; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1; 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B2; 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

Category B3; 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

2.7. Module 7A- Maintenance Practices:

Category A; 72 multi-choice and 2 essay questions. Time allowed 90 minutes plus 40 minutes.

Category B1; 80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes.

Category B2; 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes

Module 7B- Maintenance Practices:

Category B3; 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.

2.8. Module 8- Basic Aerodynamics:

Category A; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B3; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

2.9. Subject Module 9A Human factors:



Category A; -20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

Category B1; 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

Category B2; 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

Module 9B Human factors:

Category B3: 16 multi-choice and 1 essay questions. Time allowed 20 minutes plus 20 minutes.

2.10. Module 10- Aviation Legislation:

Category A; 32 multi-choice and 1 essay question. Time allowed 40 minutes plus 20 minutes.

Category B1; 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.

Category B2; 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.

Category B3: 32 multi-choice and 1 essay questions. Time allowed 40 minutes plus 20 minutes.

2.11. Module 11A- Turbine Aeroplane Aerodynamics, Structures and Systems:

Category A; 108 multi-choice and 0 essay questions. Time allowed 135 minutes.

Category B1; 140 multi-choice and 0 essay questions. Time allowed 175 minutes.

Module 11B- Piston Aeroplane Aerodynamics, Structures and Systems:

Category A; 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B1; 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

Module 11C- Piston Aeroplane Aerodynamics, Structures and Systems:

Category B3: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

2.12. Module 12-Helicopter Aerodynamics, Structures and Systems:

Category A; 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

Category B1; 128 multi-choice and 0 essay questions. Time allowed 160 minutes.

2.13. Module 13- Aircraft Aerodynamics, Structures and Systems:

Category B2; 180 multi-choice and 0 essay questions. Time allowed 225 minutes.

2.14. Module 14 Propulsion:

Category B2; 24 multi-choice and 0 essay questions. Time allowed 30 minutes.

2.16. Module 15 Gas Turbine Engine:



Category A-60 multi-choice and 0 essay questions. Time allowed 75 minutes.

Category B1-92 multi-choice and 0 essay questions. Time allowed 115 minutes.

2.17. Module 16 Piston Engine:

Category A; 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1; 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B3: 68 multi-choice and 0 essay questions. Time allowed 85 minutes.

2.18. Module 17A Propeller:

Category A; 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1; 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Module 17B Propeller:

Category B3: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.



APPENDIX III to CAR 66 - AIRCRAFT TYPE TRAINING AND EXAMINATION STANDARD – OJE

1. General

Aircraft type training shall consist of theoretical training and examination, and, except for the category C ratings, practical training and assessment.

(a) Theoretical training and examination shall comply with the following requirements:

- (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with CAR 147 or, when conducted by other organisations, as directly approved by the GCAA. This includes courses conducted by the OEM.
- (ii) Shall comply with the standard described in paragraph 3.1 and 4 of this Appendix III, except as permitted by the differences training described below.
- (iii) In the case of a category C person qualified by holding an academic degree as specified in point 66.30(a)(5), the first relevant aircraft type theoretical training shall be at the category B1 or B2 level.
- (iv) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement. If the application exceeds the 3 year limit, the GCAA may consider an application if further training and examination is carried out, however the application will not be accepted if it exceeds 5 years.
- (v) Courses that are not CAR 147 approved must be directly approved by the GCAA as defined in par (a) (i) above. The application for the approval of these courses must be made not less than 30 days prior to the start of the course, and the course approval document must accompany the type rating application. Courses will only be approved if the training is not available from a GCAA approved MTO.

(b) Practical training and assessment shall comply with the following requirements:

- (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with CAR 147 or, when conducted by other organisations, as directly approved by the GCAA. This includes courses conducted by the OEM.
- (ii) Shall comply with the standard described in paragraph 3.2 and 4 of this Appendix III, except as permitted by the differences training described below.
- (iii) Shall include a representative cross section of maintenance activities relevant to the aircraft type.
- (iv) Shall include demonstrations using equipment, components, simulators, other training devices or aircraft.
- (v) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.
- (vi) Courses that are not CAR 147 approved must be directly approved by the GCAA as defined in para (b) (i) above. The application for the approval of these courses must be made not less than 30 days prior to the start of the course, and the course approval document must accompany the type rating application. Courses will only be approved if the training is not available from a GCAA approved MTO.



(c) Differences training

- (i) Differences training is the training required in order to cover the differences between two different aircraft type ratings of the same manufacturer as determined by the GCAA.
- (ii) Differences' training has to be defined on a case-to-case basis taking into account the requirements contained in this Appendix III in respect of both theoretical and practical elements of type rating training.
- (iii) A type rating shall only be endorsed on a licence after differences training when the applicant also complies with one of the following conditions:
 - having already endorsed on the licence the aircraft type rating from which the differences are being identified or
 - having completed the type training requirements for the aircraft from which the differences are being identified.

2. Aircraft type training levels

The three levels listed below define the objectives, the depth of training and the level of knowledge that the training is intended to achieve.

- ***Level 1: A brief overview of the airframe, systems and powerplant as outlined in the Systems Description Section of the Aircraft Maintenance Manual/Instructions for Continued Airworthiness.***

Course objectives: Upon completion of Level 1 training, the student will be able to:

- (a) provide a simple description of the whole subject, using common words and examples, using typical terms and identify safety precautions related to the airframe, its systems and powerplant;
- (b) identify aircraft manuals, maintenance practices important to the airframe, its systems and powerplant;
- (c) define the general layout of the aircraft's major systems;
- (d) define the general layout and characteristics of the powerplant;
- (e) identify special tooling and test equipment used with the aircraft.

- ***Level 2: Basic system overview of controls, indicators, principal components, including their location and purpose, servicing and minor troubleshooting. General knowledge of the theoretical and practical aspects of the subject.***

Course objectives: In addition to the information contained in the Level 1 training, at the completion of Level 2 training, the student will be able to:

- (a) understand the theoretical fundamentals; apply knowledge in a practical manner using detailed procedures;
- (b) recall the safety precautions to be observed when working on or near the aircraft, powerplant and systems;
- (c) describe systems and aircraft handling particularly access, power availability and sources;
- (d) identify the locations of the principal components;



- (e) explain the normal functioning of each major system, including terminology and nomenclature;
- (f) perform the procedures for servicing associated with the aircraft for the following systems: Fuel, Power Plants, Hydraulics, Landing Gear, Water/Waste, and Oxygen;
- (g) demonstrate proficiency in use of crew reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the MEL/CDL;
- (h) demonstrate the use, interpretation and application of appropriate documentation including instructions for continued airworthiness, maintenance manual, illustrated parts catalogue, etc.

— ***Level 3: Detailed description, operation, component location, removal/installation and bite and troubleshooting procedures to maintenance manual level.***

Course objectives: In addition to the information contained in Level 1 and Level 2 training, at the completion of Level 3 training, the student will be able to:

- (a) demonstrate a theoretical knowledge of aircraft systems and structures and interrelationships with other systems, provide a detailed description of the subject using theoretical fundamentals and specific examples and to interpret results from various sources and measurements and apply corrective action where appropriate;
- (b) perform system, powerplant, component and functional checks as specified in the aircraft maintenance manual;
- (c) demonstrate the use, interpret and apply appropriate documentation including structural repair manual, troubleshooting manual, etc.;
- (d) correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level;
- (e) describe procedures for replacement of components unique to aircraft type.

3. Aircraft type training standard

Although aircraft type training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or for a combination of both.

3.1. Theoretical element

(a) Objective:

On completion of a theoretical training course the student shall be able to demonstrate, to the levels identified in the Appendix III syllabus, the 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.



(b) Level of training:

Training levels are those levels defined in point 2 above.

After the first type course for category C certifying staff all subsequent courses need only be to level 1.

During a level 3 theoretical training, level 1 and 2 training material may be used to teach the full scope of the chapter if required. However, during the training the majority of the course material and training time shall be at the higher level.

(c) Duration:

The theoretical training minimum tuition hours are contained in the following table:

Category	Hours
<i>Aeroplanes with a maximum take-off mass above 30 000kg;</i>	
B1.1	150
B1.2	120
B2	100
C	30
<i>Aeroplanes with a maximum take-off mass equal or less than 30 000kg and above 5 700kg</i>	
B1.1	120
B1.2	100
B2	100
C	25
<i>Aeroplanes with a maximum take-off mass of 5 700kg and below (*)</i>	
B1.1	80
B1.2	60
B2	60
C	15
<i>Helicopters (**)</i>	
B1.3	120
B1.4	100
B2	100
C	25
(*) For non pressurised piston engine aeroplanes below 2000kg MTOM the minimum duration can be reduced by 50%	
(**) For helicopters in group 2 the minimum duration can be reduced by 30%	

For the purpose of the table above, a tuition hour means 60 minutes of teaching and excludes any breaks, examination, revision, preparation and aircraft visit.

These hours apply only to theoretical courses for complete aircraft/engine combinations according to the type rating as defined by the GCAA.



(d) Justification of course duration:

Training courses carried out in a maintenance training organisation approved in accordance with CAR 147 and courses directly approved by the GCAA shall justify their hour duration and the coverage of the full syllabus by a training needs analysis based on:

- the design of the aircraft type, its maintenance needs and the types of operation,
- detailed analysis of applicable chapters — see contents table in point 3.1(e) below,
- detailed competency analysis showing that the objectives as stated in point 3.1(a) above are fully met.

Where the training needs analysis shows that more hours are needed, course lengths shall be longer than the minimum specified in the table.

Similarly, tuition hours of differences courses or other training course combinations (such as combined B1/B2 courses), and in cases of theoretical type training courses below the figures given in point 3.1(c) above, these shall be justified to the GCAA by the training needs analysis as described above.

In addition, the course must describe and justify the following:

- The minimum attendance required to the trainee, in order to meet the objectives of the course.
- The maximum number of hours of training per day, taking into account pedagogical and human factors principles.

If the minimum attendance required is not met, the certificate of recognition shall not be issued. Additional training may be provided by the training organisation in order to meet the minimum attendance time.

(e) Content:

As a minimum, the elements in the Syllabus below that are specific to the aircraft type shall be covered. Additional elements introduced due to type variations, technological changes, etc. shall also be included.

The training syllabus shall be focused on mechanical and electrical aspects for B1 personnel, and electrical and avionic aspects for B2.



Chapters	Level	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
		B1	C	B1	C	B1	C	B1	C	
Licence category		B1	C	B1	C	B1	C	B1	C	B2
Introduction module:										
05	Time limits/maintenance checks	1	1	1	1	1	1	1	1	1
06	Dimensions/Areas (MTOM, etc.)	1	1	1	1	1	1	1	1	1
07	Lifting and shoring	1	1	1	1	1	1	1	1	1
08	Levelling and weighing	1	1	1	1	1	1	1	1	1
09	Towing and taxiing	1	1	1	1	1	1	1	1	1
10	Parking /mooring, Storing and Return to Service	1	1	1	1	1	1	1	1	1
11	Placards and Markings	1	1	1	1	1	1	1	1	1
12	Servicing	1	1	1	1	1	1	1	1	1
20	Stand practices – only type particular	1	1	1	1	1	1	1	1	1
Helicopters:										
18	Vibration and Noise Analysis (Blade tracking)	-	-	-	-	3	1	3	1	-
60	Standard Practices Rotor	-	-	-	-	3	1	3	1	-
62	Rotors	-	-	-	-	3	1	3	1	1
62A	Rotors – Monitoring and indicating	-	-	-	-	3	1	3	1	3
63	Rotor Drives	-	-	-	-	3	1	3	1	1
63A	Rotor Drives – Monitoring and indicating	-	-	-	-	3	1	3	1	3
64	Tail Rotor	-	-	-	-	3	1	3	1	1
64A	Tail Rotor – Monitoring and indicating	-	-	-	-	3	1	3	1	3
65	Tail Rotor Drive	-	-	-	-	3	1	3	1	1
65A	Tail Rotor Drive – Monitoring and indicating	-	-	-	-	3	1	3	1	3
66	Folding Blades/Pylon	-	-	-	-	3	1	3	1	-
67	Rotors Flight Control	-	-	-	-	3	1	3	1	-
53	Airframe Structure (Helicopter)	-	-	-	-	3	1	3	1	-
25	Emergency Flotation Equipment	-	-	-	-	3	1	3	1	1
Airframe structures:										
51	Standard practices and structures (damage classification, assessment and repair)	3	1	3	1	-	-	-	-	1
53	Fuselage	3	1	3	1	-	-	-	-	1
54	Nacelles/Pylons	3	1	3	1	-	-	-	-	1
55	Stabilisers	3	1	3	1	-	-	-	-	1
56	Windows	3	1	3	1	-	-	-	-	1
57	Wings									
27A	Flight Control Surface (All)	3	1	3	1	-	-	-	-	1



52 Doors	3	1	3	1	-	-	-	-	1
Zonal and Station Identification Systems	1	1	1	1	1	1	1	1	1
Airframe systems:									
21 Air Conditioning	3	1	3	1	3	1	3	1	3
21A Air Supply	3	1	3	1	1	3	3	1	2
21B Pressurisation	3	1	3	1	3	1	3	1	3
21C Safety and Warning Devices	3	1	3	1	3	1	3	1	3
22 Autoflight	2	1	2	1	2	1	2	1	3
23 Communications	2	1	2	1	2	1	2	1	3
24 Electrical Power	3	1	3	1	3	1	3	1	3
25 Equipment Furnishings	3	1	3	1	3	1	3	1	1
25A Electronic Equipment including emergency equipment	1	1	1	1	1	1	1	1	3
26 Fire Protection	3	1	3	1	3	1	3	1	3
27 Flight Controls	3	1	3	1	3	1	3	1	2
27A Sys. Operation: Electrical Fly-by-Wire	3	1	-	-	-	-	-	-	3
28 Fuel Systems	3	1	3	1	3	1	3	1	2
28A Fuel Systems - Monitoring and indicating	3	1	3	1	3	1	3	1	3
29 Hydraulic Power	3	1	3	1	3	1	3	1	2
29A Hydraulic Power - Monitoring and indicating	3	1	3	1	3	1	3	1	3
30 Ice and Rain Protection	3	1	3	1	3	1	3	1	3
31 Indicating/Recording Systems	3	1	3	1	3	1	3	1	3
31A Instrument Systems	3	1	3	1	3	1	1	3	3
32 Landing Gear	3	1	3	1	3	1	3	1	2
32A Landing Gear – Monitoring and indicating	3	1	3	1	3	1	3	1	3
33 Lights	3	1	3	1	3	1	3	1	3
34 Navigation	2	1	2	1	2	1	2	1	3
35 Oxygen	3	1	3	1	-	-	-	-	2
36 Pneumatic	3	1	3	1	3	1	3	1	2
36A Pneumatic – Monitoring and indicating	3	1	3	1	3	1	3	1	3
37 Vacuum	3	1	3	1	3	1	3	1	2
38 Water/Waste	3	1	3	1	-	-	-	-	2
41 Water Ballast	3	1	3	1	-	-	-	-	1
42 Integrated modular avionics	2	1	2	1	2	1	2	1	3
44 Cabin Systems	2	1	2	1	2	1	2	1	3
45 On-Board Maintenance System (or covered in 31)	3	1	3	1	3	1	-	-	3
46 Information Systems	2	1	2	1	2	1	2	1	3
50 Cargo and Accessory Compartments	3	1	3	1	3	1	3	1	1



Chapters	Level	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
		B1	C	B1	C	B1	C	B1	C	
Licence category		B1	C	B1	C	B1	C	B1	C	B2
Turbine engine:										
70	Standard Practices – Engines	3	1	-	-	3	1	-	-	1
70A	constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems).	3	1	-	-	3	1	-	-	1
70B	Engine Performance	3	1	-	-	3	1	-	-	1
71	Powerplant	3	1	-	-	3	1	-	-	1
72	Engine Turbine/Turbo Prop/Ducted Fan/Unducted Fan	3	1	-	-	3	1	-	-	1
73	Engine Fuel and Control	3	1	-	-	3	1	-	-	1
75	Air	3	1	-	-	3	1	-	-	1
76	Engine Controls	3	1	-	-	3	1	-	-	1
78	Exhaust	3	1	-	-	3	1	-	-	1
79	Oil	3	1	-	-	3	1	-	-	1
80	Starting	3	1	-	-	3	1	-	-	1
82	Water Injections	3	1	-	-	3	1	-	-	1
83	Accessory Gear Boxes	3	1	-	-	3	1	-	-	1
84	Propulsion Augmentation	3	1	-	-	3	1	-	-	1
73A	FADEC	3	1	-	-	3	1	-	-	3
74	Ignition	3	1	-	-	3	1	-	-	3
77	Engine Indication Systems	3	1	-	-	3	1	-	-	3
49	Auxiliary Power Units (APUs)	3	1	-	-	3	1	-	-	2
Piston Engine:										
70	Standard Practices – Engines	-	-	3	1	-	-	3	1	1
70A	Constructional arrangement and operation (Installation, Carburettors, Fuel injection systems, Induction, Exhaust and Cooling Systems, Supercharging/Turbocharging, Lubrication Systems).	-	-	3	1	-	-	3	1	1
70B	Engine Performance	-	-	3	1	-	-	3	1	1
71	Powerplant	-	-	3	1	-	-	3	1	1
73	Engine Fuel and Control	-	-	3	1	-	-	3	1	1
76	Engine Control	-	-	3	1	-	-	3	1	1
79	Oil	-	-	3	1	-	-	3	1	1
80	Starting	-	-	3	1	-	-	3	1	1



81	Turbines	-	-	3	1	-	-	3	1	1
82	Water Injections	-	-	3	1	-	-	3	1	1
83	Accessory Gear Boxes	-	-	3	1	-	-	3	1	1
84	Propulsion Augmentation	-	-	3	1	-	-	3	1	1
Piston Engine:										
73A	FADEC	-	-	3	1	-	-	3	1	3
74	Ignition	-	-	3	1	-	-	3	1	3
77	Engine Indication Systems	-	-	3	1	-	-	3	1	3
Propellers:										
60A	Standard Practices – Propeller	3	1	3	1	-	-	-	-	1
61	Propellers/Propulsion	3	1	3	1	-	-	-	-	1
61A	Propeller Construction	3	1	3	1	-	-	-	-	-
61B	Propeller Pitch Control	3	1	3	1	-	-	-	-	-
61C	Propeller Synchronising	3	1	3	1	-	-	-	-	1
61D	Propeller Electronic Control	3	1	3	1	-	-	-	-	3
61E	Propeller Ice Protection	3	1	3	1	-	-	-	-	-
61F	Propeller Maintenance	3	1	3	1	-	-	-	-	1

- (f) Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training elements either in the classroom or in a virtual controlled environment subject to the acceptance of the GCAA approving the training course.

3.2. Practical element

(a) Objective:

The objective of practical training is to gain the required competence in performing safe 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. It includes the awareness of the use of all technical literature and documentation for the aircraft, the use of specialist/special tooling and test equipment for performing removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

(b) Content:

At least 50 % of the crossed items in the table below, which are relevant to the particular aircraft type, shall be completed as part of the practical training.

Tasks crossed represent subjects that are important for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks is adequately addressed; particularly where these cannot be fully explained by theoretical training alone. Although the list details the minimum practical training subjects, other items may be added where applicable to the particular aircraft type.

Tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks. Glossary may be included, other more complex tasks shall also be incorporated and undertaken as appropriate to the aircraft type of the table: **LOC**: Location; **FOT**: Functional/Operational Test; **SGH**: Service and Ground Handling; **R/I**: Removal/Installation; **MEL**: Minimum Equipment List; **TS**: Troubleshooting.



Chapters	B1/B2	B1					B2				
	LOC	FOT	SGH	R/I	MEL	TS	FOT	SGH	R/I	MEL	TS
Introduction module:											
5 Time limits/maintenance checks	X/X	-	-	-	-	-	-	-	-	-	-
6 Dimensions/Areas (MTOM, etc.)	X/X	-	-	-	-	-	-	-	-	-	-
7 Lifting and Shoring	X/X	-	-	-	-	-	-	-	-	-	-
8 Levelling and weighing	X/X	-	X	-	-	-	-	X	-	-	-
9 Towing and taxiing	X/X	-	X	-	-	-	-	X	-	-	-
10 Parking/mooring, Storing and Return to Service	X/X	-	X	-	-	-	-	X	-	-	-
11 Placards and Markings	X/X	-	-	-	-	-	-	-	-	-	-
12 Servicing	X/X	-	X	-	-	-	-	X	-	-	-
20 Standard practices – only type particular	X/X	-	X	-	-	-	-	X	-	-	-
Helicopters:											
18 Vibration and Noise Analysis (Blade tracking)	X/-	-	-	-	-	X	-	-	-	-	-
60 Standard Practices Rotor – only type specific	X/X	-	X	-	-	-	-	X	-	-	-
62 Rotors	X/-	-	X	X	-	X	-	-	-	-	-
62A Rotors – Monitoring and indicating	X/X	X	X	X	X	X	-	-	X	-	X
63 Rotor Drives	X/-	X	-	-	-	X	-	-	-	-	-
63A Rotor Drive – Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	x
64 Tail Rotor	X/-	-	X	-	-	X	-	-	-	-	-
64A Tail Rotor – Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	x
65 Tail Rotor Drive	X/-	X	-	-	-	X	-	-	-	-	-



Helicopters:											
65A Tail Rotor Drive – Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	X
66 Folding Blades/Pylon	X/-	X	X	-	-	X	-	-	-	-	-
67 Rotor Flight Control	X/-	X	X	-	X	X	-	-	-	-	-
53 Airframe Structure (Helicopter) Note: covered under Airframe	X/X	X	X	X	X	X	X	X	-	-	-
25 Emergency Flotation Equipment											
Airframe Structures:											
51 Standard Practices and Structures (damage classification, assessment and repair)											
53 Fuselage	X/-	-	-	-	-	X	-	-	-	-	-
54 Nacelles/Pylons	X/-	-	-	-	-	-	-	-	-	-	-
55 Stabilisers	X/-	-	-	-	-	-	-	-	-	-	-
56 Windows	X/-	-	-	-	-	X	-	-	-	-	-
57 Wings	X/-	-	-	-	-	-	-	-	-	-	-
27A Flight Control Surfaces	X/-	-	-	-	-	X	-	-	-	-	-
52 Doors	X/-	X	X	-	-	-	-	X	-	-	-
Airframe Systems:											
21 Air Conditioning	X/X	X	X	-	X	X	X	X	-	X	X
21A Air Supply	X/X	X	-	-	-	-	X	-	-	-	-
21B Pressurisation	X/X	X	-	-	X	X	X	-	-	X	X
21C Safety and Warning Devices	X/X	-	X	-	-	-	-	X	-	-	-
22 Autoflight	X/X	-	-	-	X	-	X	X	X	X	X
23 Communications	X/X	-	X	-	X	-	X	X	X	X	X
Airframe Systems:											



24	Electrical Power	X/X	X	X	X	X	X	X	X	X	X	X
25	Equipment and Furnishings	X/X	X	X	X	-	-	X	X	X	-	-
25A	Electronic Equipment including Emergency Equipment	X/X	X	X	X	-	-	X	X	X	-	-
26	Fire Protection	X/X	X	X	X	X	X	X	X	X	X	X
27	Flight Controls	X/X	X	X	X	X	X	X	-	-	-	-
27A	Sys. Operation: Electrical/Fly-by Wire	X/X	X	X	X	X	-	X	-	X	-	X
28	Fuel Systems	X/X	X	X	X	X	X	X	X	-	X	-
28A	Fuel Systems – Monitoring and indicating	X/X	X	-	-	-	-	X	-	X	-	X
29	Hydraulic Power	X/X	X	X	X	X	X	X	X	-	X	-
29A	Hydraulic Power – Monitoring and indicating	X/X	X	-	X	X	X	X	-	X	X	X
30	Ice and Rain Protection	X/X	X	X	-	X	X	X	X	-	X	X
31	Indicating/Recording Systems	X/X	X	X	X	X	X	X	X	X	X	X
31A	Instrument Systems	X/X	X	X	X	X	X	X	X	X	X	X
32	Landing Gear	X/X	X	X	X	X	X	X	X	X	X	-
32A	Landing Gear–Monitoring and indicating	X/X	X	-	X	X	X	X	-	X	X	X
33	Lights	X/X	X	X	-	X	-	X	X	X	X	-
34	Navigation	X/X	-	X	-	X	-	X	X	X	X	X
35	Oxygen	X/-	X	X	X	-	-	X	X	-	-	-
36	Pneumatic	X/-	X	-	X	X	X	X	-	X	X	X
36A	Pneumatic – Monitoring and indicating	X/X	X	X	X	X	X	X	X	X	X	X
37	Vacuum	X/-	X	-	X	X	X	-	-	-	-	-
38	Water/Waste	X/-	X	X	-	-	-	X	X	-	-	-
41	Water Ballast	X/-	-	-	-	-	-	-	-	-	-	-



42	Integrated modular avionics	X/X	-	-	-	-	-	X	X	X	X	X
44	Cabin Systems	X/X	-	-	-	-	-	X	X	X	X	X
45	On-Board Maintenance Systems (or covered in 31)	X/X	X	X	X	X	X	X	X	X	X	X
46	Information Systems	X/X	-	-	-	-	-	X	-	X	X	X
50	Cargo and Accessory Compartments	X/X	-	X	-	-	-	-	-	-	-	-
Turbine/Piston Engine Module:												
70	Standard Practices – Engines – only type particular	-	-	X	-	-	-	-	X	-	-	-
70A	Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems)	X/X	-	-	-	-	-	-	-	-	-	-
Turbine Engines:												
70B	Engine Performance	-	-	-	-	-	X	-	-	-	-	-
71	Power Plant	X/-	X	X	-	-	-	-	X	-	-	-
72	Engine/Turbine/Turbo Prop/Ducted Fan/Unducted Fan	X/-	-	-	-	-	-	-	-	-	-	-
73	Engine Fuel and Control	X/X	X	-	-	-	-	-	-	-	-	-
73A	FADEC Systems	X/X	X	-	X	X	X	X	-	X	X	X
74	Ignition	X/X	X	-	-	-	-	X	-	-	-	-
75	Air	X/-	-	-	X	-	X	-	-	-	-	-
76	Engine Controls	X/-	X	-	-	-	X	-	-	-	-	-
77	Engine Indicating	X/X	X	-	-	X	X	X	-	-	X	X



Chapters	B1/B2	B1					B2				
	LOC	FOT	SGH	R/I	MEL	TS	FOT	SGH	R/I	MEL	TS
Turbine Engines:											
78 Exhaust	X/-	X	-	-	X	-	-	-	-	-	-
79 Oil	X/-	-	X	X	-	-	-	-	-	-	-
80 Starting	X/-	X	-	-	X	X	-	-	-	-	-
82 Water Injection	X/-	X	-	-	-	-	-	-	-	-	-
83 Accessory Gearboxes	X/-	-	X	-	-	-	-	-	-	-	-
84 Propulsion Augmentation	X/-	X	-	-	-	-	-	-	-	-	-
Auxiliary Power Units (APUs):											
49 Auxiliary Power Units (APUs)	X/-	X	X	-	-	X	-	-	-	-	-
Piston Engines:											
70 Standard Practices – Engines – only type particular	-	-	X	-	-	-	-	X	-	-	-
70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems)	X/X	-	-	-	-	-	-	-	-	-	-
70B Engine Performance	-	-	-	-	-	X	-	-	-	-	-
71 Power Plant	X/-	X	X	-	-	-	-	X	-	-	-
72 Engine Turbine/Turbo Prop/Ducted Fan/Unducted Fan	X/-	-	-	-	-	-	-	-	-	-	-
73 Engine Fuel and Control	X/X	X	-	-	-	-	-	-	-	-	-
73A FADEC Systems	X/X	X	-	X	X	X	X	X	X	X	X
74 Ignition	X/X	X	-	-	-	-	X	-	-	-	-



75 Air	X/-	-	-	X	-	X	-	-	-	-	-
76 Engine Controls	X/-	X	-	-	-	X	-	-	-	-	-
77 Engine Indicating	X/X	X	-	-	X	X	X	-	-	X	X
Piston Engines:											
78 Exhaust	X/-	X	-	-	X	X	-	-	-	-	-
79 Oil	X/-	-	X	X	-	-	-	-	-	-	-
80 Starting	X/-	X	-	-	X	X	-	-	-	-	-
81 Turbines	X/-	X	X	X	-	X	-	-	-	-	-
82 Water Injection	X/-	X	-	-	-	-	-	-	-	-	-
83 Accessory Gearboxes	X/-	-	X	X	-	-	-	-	-	-	-
84 Propulsion Augmentation	X/-	X	-	-	-	-	-	-	-	-	-
Propellers:											
60A Standard Practices – Propeller	-	-	-	X	-	-	-	-	-	-	-
61 Propeller/Propulsion	X/X	X	X	-	X	X	-	-	-	-	-
61A Propeller Construction	X/X	-	X	-	-	-	-	-	-	-	-
61B Propeller Pitch Control	X/-	X	-	X	X	X	-	-	-	-	-
61C Propeller Synchronising	X/-	X	-	-	-	X	-	-	-	X	-
61D Propeller Electronic Control	X/X	X	X	X	X	X	X	X	X	X	X
61E Propeller Ice Protection	X/-	X	-	X	X	X	-	-	-	-	-
61F Propeller Maintenance	X/X	X	X	X	X	X	X	X	X	X	X



4. Type training examination and assessment standard

4.1 Theoretical element examination standard

After the theoretical portion of the aircraft type training has been completed, a written examination shall be performed, which shall comply with the following:

- (a) Format of the examination is of the multiple-choice type. Each multiple-choice question must have 3 alternative answers of which only one must be the correct answer. The total time is based on the total number of questions and the time for answering is based upon a nominal average of 90 seconds per question.
- (b) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.
- (c) In numerical questions, the incorrect answers shall correspond to procedural errors such as the use of incorrect sense (+ versus -) or incorrect measurement units. They shall not be mere random numbers.
- (d) The level of examination for each chapter (*) shall be the one defined in point 2 "Aircraft type training levels". However, the use of a limited number of questions at a lower level is acceptable.
- (e) The examination shall be of the closed book type. No reference material is permitted. An exception will be made for the case of examining a B1 or B2 candidate's ability to interpret technical documents.
- (f) The number of questions shall be at least 1 question per hour of instruction. The number of questions for each chapter and level shall be proportionate to:
 - the effective training hours spent teaching at that chapter and level,
 - the learning objectives as given by the training needs analysis.

The GCAA will assess the number and the level of the questions when approving the course.

- (g) The minimum examination pass mark is 75 %. When the type training examination is split in several examinations, each examination shall be passed with at least a 75 % mark. In order to be possible to achieve exactly a 75 % pass mark, the number of questions in the examination shall be a multiple of 4.
 - (h) Penalty marking (negative points for failed questions) is not to be used.
 - (i) End of module phase examinations cannot be used as part of the final examination unless they contain the correct number and level of questions required.
- (*) For the purpose of this point 4, a "chapter" means each one of the rows preceded by a number in the table contained in point 3.1(e).



4.2. Practical element assessment standard

After the practical element of the aircraft type training has been completed, an assessment must be performed, which must comply with the following:

- (a) The assessment shall be performed by designated assessors appropriately qualified.
- (b) The assessment shall evaluate the knowledge and skills of the trainee.

5. Type examination standard

Type examination will be conducted by the GCAA, or an organisation specifically approved by the GCAA for this purpose.

The examination shall be oral, written or practical assessment based, or a combination thereof and it shall comply with the following requirements.

- (a) Oral examination questions shall be open.
- (b) Written examination questions shall be essay type or multiple-choice questions.
- (c) Practical assessment shall determine a person's competence to perform a task.
- (d) Examinations shall be on a sample of chapters (**) drawn from paragraph 3 training/examination syllabus, at the indicated level.
- (e) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.
- (f) In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers.
- (g) The examination shall ensure that the following objectives are met:
 - 1. Properly discuss with confidence the aircraft and its systems.
 - 2. 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, aircraft, rigging and functional checks such as engine run, etc., if required.
 - 3. Correctly use all technical literature and documentation for the aircraft.
 - 4. Correctly use specialist/special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity
- (h) The following conditions apply to the examination:
 - 1. The maximum number of consecutive attempts is three. Further sets of three attempts are allowed with a 1 year waiting period between sets. A waiting period of 30 days is required after the first failed attempt within one set, and a waiting period of 60 days is required after the second failed attempt.



2. The applicant shall confirm in writing to the maintenance training organisation or the GCAA to which they apply for an examination, the number and dates of attempts during the last year and the maintenance training organisation or the GCAA where these attempts took place. The maintenance training organisation or the GCAA is responsible for checking the number of attempts within the applicable timeframes.
 3. The type examination shall be passed and the required practical experience shall be completed within the 3 years preceding the application for the rating endorsement on the Aircraft Maintenance Engineers Licence.
 4. Type examination shall be performed with at least one examiner present. The examiner(s) shall not have been involved in the applicant's training.
- (i) A written and signed report shall be made by the examiner(s) to explain why the candidate has passed or failed.
- (**) For the purpose of this point 5, a "chapter" means each one of the rows preceded by a number in the tables contained in points 3.1(e) and 3.2(b).

6. On-the-Job Experience

On the Job Experience (OJE) shall be approved by the GCAA.

It shall be conducted at and under the control of a maintenance organisation appropriately approved for the maintenance of the particular aircraft type and shall be assessed by designated assessors appropriately qualified.

It shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

- (a) Objective:
The objective of OJE is to gain the required competence and experience in performing safe maintenance.
- (b) Content:
OJE shall cover a cross section of tasks acceptable to the GCAA. The OJE tasks to be completed shall be 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.

Each task shall be signed off by the student and countersigned by a designated supervisor. The tasks listed shall refer to an actual job card/work sheet, etc.

The final assessment of the completed OJE is mandatory and shall be performed by a designated assessor appropriately qualified.

The following data shall be addressed on the OJE worksheets/logbook:

1. Name of Trainee;
2. Date of Birth;
3. Approved Maintenance Organisation;
4. Location;
5. Name of supervisor(s) and assessor, (including licence number if applicable);



6. Date of task completion;
7. Description of task and job card/work order/tech log, etc.;
8. Aircraft type and aircraft registration;
9. Aircraft rating applied for.

In order to facilitate the verification by the GCAA, demonstration of the OJE shall consist of

- (i) detailed worksheets/logbook and
- (ii) a compliance report demonstrating how the OJE meets the requirement of this CAR.

AMC to Section 1 of Appendix III to CAR 66: Aircraft Type Training and Examination Standard

On-the-Job-Experience

1. Aircraft type training may be subdivided in airframe and/or powerplant and/or avionics/electrical systems type training courses:
 - Airframe type training course means a type training course including all relevant aircraft structure and electrical and mechanical systems excluding the powerplant.
 - Powerplant type training course means a type training course on the bare engine, including the build-up to a quick engine change unit.
 - The interface of the engine/airframe systems should be addressed by either airframe or powerplant type training course. 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.
 - 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.
2. Practical training may be performed either following or integrated with the theoretical elements. However, it should not be performed before theoretical training.
3. The content of the theoretical and practical training should:
 - address the different parts of the aircraft which are representative of the structure, the systems/components installed and the cabin; and
 - include training on the use of technical manuals, maintenance procedures and the interface with the operation of the aircraft.

Therefore, it should be based on the following elements:

- Type design including relevant type design variants, new technology and techniques;
- Feedback from in-service difficulties, occurrence reporting, etc.;
- Significant applicable airworthiness directives and service bulletins;
- Known human factor issues associated with the particular aircraft type;
- Use of common and specific documentation, (when applicable, such as MMEL, AMM, MPD, TSM, SRM, WD, AFM, tool handbook), philosophy of the troubleshooting, etc.;
- Knowledge of the maintenance on-board reporting systems and ETOPS maintenance conditions, when applicable;



- Use of special tooling and test equipment and specific maintenance practices including critical safety items and safety precautions;
- Significant and critical tasks/aspects from the MMEL, CDL, Fuel Tank Safety (FTS), airworthiness limitation items (ALI) including Critical Design Configuration Control Limitations (CDCCL), CMR and all ICA documentation such as MRB, MPD, SRM, AMM, etc., when applicable.
- Maintenance actions and procedures to be followed as a consequence of specific certification requirements, such as, but not limited to, RVSM (Reduced Vertical Separation Minimum) and NVIS (Night Vision Imaging Systems);
- Knowledge of relevant inspections and limitations as applicable to the effects of environmental factors or operational procedures such as cold and hot climates, wind, moisture, sand, de-icing/anti-icing, etc.

The type training does not necessarily need to include all possible customer options corresponding to the type rating described in the Appendix I to AMC to CAR 66.

4. Limited avionic system training should be included in the category B1 type training as the B1 privileges include work on avionics systems requiring simple tests to prove their serviceability.
5. Electrical systems should be included in both categories of B1 and B2 type training.
6. The theoretical and practical training should be complementary and may be:
 - Integrated or split;
 - Supported by the use of training aids, such as, trainers, virtual aircraft, aircraft components, synthetic training devices (STD), computer-based training devices (CBT), etc.

AMC to Paragraph 3.1 (d) of Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-Job Training

Training Needs Analysis for the Theoretical Element of the Aircraft Type Training

1. The minimum duration for the theoretical element of the type rating training course, as described in Appendix III to CAR 66, has been determined based on:
 - generic categories of aircraft and minimum standard equipment fit;
 - the estimated average duration of standard courses.
2. The purpose of the Training Needs Analysis (TNA) is to adapt and justify the duration of the course for a specific aircraft type. This means that the TNA is the main driver for determining the duration of the course, regardless of whether it is above or below the minimum duration described in Appendix III to CAR 66.

In the particular case of type training courses approved on the basis of the requirements valid before CAR 66 revision 01 was applicable (01 July 2013) and having a duration for the theoretical element equal to or above the minimum duration contained in paragraph 3.1(c) of Appendix III to

CAR 66, it is acceptable that the TNA only covers the differences introduced by CAR 66 revision 01 in paragraph 3.1(e) "Content" and the criteria introduced in paragraph 3.1(d) "Justification of course duration" related to the minimum attendance and the maximum number of training hours per day. This TNA may result in a change in the duration of the theoretical element.



3. The content and the duration deriving from the TNA may be supported by an analysis from the Type Certificate holder.
4. In order to approve a reduction of such minimum duration, the evaluation done by the GCAA will be performed on a case-by-case basis appropriate to the aircraft type. For example, while it would be exceptional for a theoretical course for a large transport category aircraft such as an A330 or B757 to be below the minimum duration shown, it would not necessarily be exceptional in the case of a General Aviation (GA) business aircraft such as a Learjet 45 or similar. Typically, the TNA for a GA aircraft course would demonstrate that a course of a shorter duration satisfies the requirements.
5. When developing the TNA, the following should be considered:
 - (a) The TNA should include an analysis identifying all the areas and elements where there is a need for training as well as the associated learning objectives, considering the design philosophy of the aircraft type, the operational environment, the type of operations and the operational experience. This analysis should be written in a manner which provides a reasonable understanding of which areas and elements constitute the course to meet the learning objectives.
 - (b) As a minimum, the Training Need Analysis (TNA) should take into account all the applicable elements contained in paragraph 3.1 of CAR 66 Appendix III and associated AMCs.
 - (c) The TNA should set up the course content considering the Appendix III objectives for each level of training and the prescribed topics in the theoretical element table contained in paragraph 3.1 of CAR 66 Appendix III.
 - (d) For each Chapter described in the theoretical element table contained in paragraph 3.1 of CAR 66 Appendix III, the corresponding training time should be recorded.
 - (e) Typical documents to be used to identify the areas and elements where there is a need for training typically include, among others, the Aircraft Maintenance Manual, MRB report, CMRs, airworthiness limitations, Troubleshooting Manual, Structural Repair Manual, Illustrated Parts Catalogue, Airworthiness Directives and Service Bulletins.
 - (f) During the analysis of these documents:
 - Consideration should be given to the following typical activities:
 - Activation/reactivation;
 - Removal/installation;
 - Testing;
 - Servicing;
 - Inspection, check and repairs;
 - Troubleshooting/diagnosis.



- For the purpose of identifying the specific elements constituting the training course, it is acceptable to use a filtering method based on criteria such as:
 - Frequency of the task;
 - Human factor issues associated to the task;
 - Difficulty of the task;
 - Criticality and safety impact of the task;
 - In-service experience;
 - Novel or unusual design features (not covered by CAR 66 Appendix I);
 - Similarities with other aircraft types;
 - Special tests and tools/equipment.
- It is acceptable to follow an approach based on:
 - Tasks or groups of tasks; or
 - Systems or subsystems or components.

(g) The TNA should:

- Identify the learning objectives for each task, group of tasks, system, subsystem or component;
- Associate the identified tasks to be trained to the regulatory requirements (table in paragraph 3.1 of Appendix III to CAR 66);
- Organise the training into modules in a logical sequence (adequate combination of chapters as defined in Appendix III of CAR 66);
- Determine the sequence of learning (within a lesson and for the whole syllabus);
- Identify the scope of information and level of detail with regard to the minimum standard to which the topics of the TNA should be taught according to the set-up objectives.
- Address the following:
 - Description of each system/component including the structure (where applicable);
 - System/component operation taking into account:
 - (a) Complexity of the system (e.g. the need of further breakdown into subsystems, etc.);
 - (b) Design specifics which may require more detailed presentation or may contribute to maintenance errors;
 - (c) Normal and emergency functioning;
 - (d) Troubleshooting;
 - (e) Interpretation of indications and malfunctions;
 - (f) Use of maintenance publications;
 - (g) Identification of special tools and equipment required for servicing and maintaining the aircraft;
 - (h) Maintenance Practices;
 - (i) Routine inspections, functional or operational tests, rigging/adjustment, etc.
- Describe the following:



- The instructional methods and equipment, teaching methods and blending of the teaching methods to ensure the effectiveness of the training;
 - The maintenance training documentation/material to be delivered to the student;
 - Facilitated discussions, questioning session, additional practice-oriented training, etc.;
 - The homework, if developed;
 - The training provider's resources available to the learner.
- (h) It is acceptable to differentiate between issues which have to be led by an instructor and issues which may be delivered through interactive simulation training devices and/or covered by web-based elements. Overall time of the course will be allocated accordingly.
- (i) The maximum number of training hours per day for the theoretical element of type 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 GCAA 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.
- (j) The minimum participation time for the trainee to meet the objectives of the course should not be less than 90 % of the tuition hours of the theoretical training course. 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.
- (k) The TNA is a living process and should be reviewed/updated based on operation feedback, maintenance occurrences, Airworthiness Directives, major service bulletins impacting maintenance activities or requiring new competencies for mechanics, alert service bulletins, feedback from trainees or customer satisfaction, evolution of the maintenance documentation such as MRBs, MPDs, MMs, etc. The frequency at which the TNA should be reviewed/updated is left to the discretion of the organisation conducting the course.

NOTE: The examination is not part of the TNA. However, it should be prepared in accordance with the learning objectives described in the TNA.



AMC to Paragraph 1(b), 3.2 and 4.2 of Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-job-Experience

Practical Element of the Aircraft Type Training

1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.
2. The tasks should be selected because of their frequency, complexity, variety, safety, criticality, novelty, etc. The selected tasks should cover all the chapters described in the table contained in paragraph 3.2 of Appendix III to CAR 66.
3. The duration of the practical training should ensure that the content of training required by paragraph 3.2 of Appendix III to CAR 66 is completed.

Nevertheless, for aeroplanes with a MTOM equal or above 30 000 kg, the duration for the practical element of a type rating training course should not be less than two weeks unless a shorter duration meeting the objectives of the training and taking into account pedagogical aspects (maximum duration per day) is justified to the GCAA.

4. The organisation providing the practical element of the type training should provide trainees with a schedule or plan indicating the list of tasks to be performed under instruction or supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks may be countersigned by the designated assessor. The logbook format and its use should be clearly defined.
5. In paragraph 4.2 of Appendix III to CAR 66, the term “designated assessors appropriately qualified” means that the assessors should demonstrate training and experience on the assessment process being undertaken and be authorised to do so by the organisation.
Further guidance about the assessment and the designated assessors is provided in Appendix III to AMC to CAR 66.
6. The practical element (for powerplant and avionic systems) of the Type Rating Training may be subcontracted by the approved CAR 147 organisation under its quality system according to the provisions of 147.145(d)3 and the corresponding Guidance Material.

AMC to Paragraph 1(c), of Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-job-Experience

Differences training

Approved difference training is not required for different variants within the same aircraft type rating (as specified in Appendix I to AMC to CAR 66) for the purpose of type rating endorsement on the Aircraft Maintenance Engineers Licence.

However, this does not necessarily mean that no training is required before a certifying staff authorisation can be issued by the maintenance organisation (refer to AMC 66.20(b)3).



AMC to section 5 of Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-Job-Experience

This Section 5 “Type Examination Standard” does not apply to the examination performed as part of type training. This Section only applies to those cases where type examination is performed as a substitute for type training.

AMC to section 6 of Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-job-Experience

On-the-job-Experience (OJE)

1. “A maintenance organisation appropriately approved for the maintenance of the particular aircraft type” means a CAR 145 or M.A. Subpart F approved maintenance organisation holding an A rating for such aircraft.
2. The OJE should include one-to-one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.
3. The use of simulators for OJE should not be allowed.
4. The OJE should cover at least 50 % of the tasks contained in Appendix II to AMC to CAR 66. Some tasks should be selected from each paragraph of the Appendix II list. Tasks should be selected among those applicable to the type of aircraft and licence (sub) category applied for. Other tasks than those in the Appendix II may be considered as a replacement when they are relevant. Typically, in addition to the variety and the complexity, the OJE tasks should be selected because of their frequency, safety, novelty, etc.
5. Up to 50 % of the required OJE may be undertaken before the aircraft theoretical type training starts, provided this is carried out within 90 days before the theoretical training starts.
6. The organisation providing the On-the-job-Experience should provide trainees with a schedule or plan indicating the list of tasks to be performed under supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks is countersigned by the corresponding supervisor. The logbook format and its use should be clearly defined.
7. Regarding the day-to-day supervision of the OJE programme in the approved maintenance organisation and the role of the supervisor(s), the following should be considered:
 - It is sufficient that the completion of individual OJE tasks is confirmed by the direct supervisor(s), without being necessary the direct evaluation of the assessor.
 - During the day-to-day OJE performance, the supervision aims at overseeing the complete process, including task completion, use of manuals and procedures, observance of safety measures, warnings and recommendations and adequate behaviour in the maintenance environment.
 - The supervisor(s) should personally observe the work being performed to ensure the safe completeness and should be readily available for consultation, if needed during the OJE performance.
 - The supervisor(s) should countersign the tasks and release the maintenance tasks as the trainee is still not qualified to do so.
 - The supervisor(s) should therefore:
 - have certifying staff or support staff privileges relevant to the OJE tasks;
 - be competent for the selected tasks;
 - be safety-orientated;
 - be capable to coach (setting objectives, giving training, performing supervision, evaluating, handling



trainee's reactions and cultural issues, managing objectively and positively debriefing sessions, determining the need for extra training or reorientate the training, reporting, etc.);

- be designated by the approved maintenance organisation to carry out the supervision.

8. Regarding the assessor, the following should be considered:

- The function of the assessor, as described in Section 6 of Appendix III to CAR 66, is to conduct the final assessment of the completed OJE. This assessment should include confirmation of the completion of the required diversity and quantity of OJE and should be based on the supervisor(s) reports and feedback.
- In Section 6 of Appendix III to CAR 66, the term “designated assessor appropriately qualified” means that the assessor should demonstrate training and experience on the assessment process being undertaken and should be authorised to do so by the organisation.

Further guidance about the assessment and the designated assessors is provided in Appendix III to AMC to CAR 66.

9. The procedures for OJE should be included into the Exposition Manual of the approved maintenance organisation.

AMC to Appendix III to CAR 66: Aircraft Type Training and Examination Standard, On-the-job-Experience

Aircraft Type Training and On-the-job-Experience

The theoretical and practical training providers, as well as the OJE provider, may contract the services of a language translator in the case where training is imparted to students not conversant in the language of the training material. Nevertheless, it remains essential that the students understand all the relevant maintenance documentation.

During the performance of examinations and assessments, the assistance of the translator should be limited to the translation of the questions, but should not provide clarifications or help in relation to those questions.



APPENDIX IV - EXPERIENCE REQUIREMENTS FOR EXTENDING A CAR 66 LICENCE

The table below shows the experience requirements for adding a new category or subcategory to an existing CAR 66 licence.

The experience must be practical maintenance experience on operating aircraft in the subcategory relevant to the application.

The experience requirement will be reduced by 50 % if the applicant has completed an approved CAR 147 course relevant to the subcategory.

To: From:	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2	B3
A1	-	6 Months	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	6 Months
A2	6 Months	-	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	6 Months
A3	6 Months	6 Months	-	6 Months	2 Years	1 Year	2 Years	6 Months	2 Years	1 Year
A4	6 Months	6 Months	6 Months	-	2 Years	1 Year	2 Years	6 Months	2 Years	1 Year
B1.1	None	6 Months	6 Months	6 Months	-	6 Months	6 Months	6 Months	1 Year	6 Months
B1.2	6 Months	None	6 Months	6 Months	2 Years	-	2 Years	6 Months	2 Years	None
B1.3	6 Months	6 Months	None	6 Months	6 Months	6 Months	-	6 Months	1 Year	6 Months
B1.4	6 Months	6 Months	6 Months	None	2 Years	6 Months	2 Years	-	2 Years	6 Months
B2	6 Months	6 Months	6 Months	6 Months	1 Year	1 Year	1 Year	1 Year	-	1 Year
B3	6 Months	None	6 Months	6 Months	2 Years	6 Months	2 Years	1 Year	2 Years	-



APPENDIX V - CAR 66 AIRCRAFT MAINTENANCE LICENCE

1. An example of the CAR 66 Aircraft Maintenance Engineers Licence can be found on the following pages (Appendix V).
2. The document must be printed in the standardised form shown but may be reduced in size to accommodate its computer generation if desired. When the size is reduced care should be exercised to ensure sufficient space is available in those places where official seals/stamps are required. Computer generated documents need not have all the boxes incorporated when any such box remains blank so long as the document can clearly be recognised as the CAR 66 Aircraft Maintenance Engineers Licence.
3. The document shall be printed in the English.
4. Each licence holder must have a unique licence number based upon a UAE identifier and an alpha-numeric designator.
5. The document may have the pages in any order and need not have some or any divider lines as long as the information contained is positioned such that each page layout can clearly be identified with the format of the example CAR 66 Aircraft Maintenance Engineers Licence contained herein. The aircraft type rating page need not be issued until the first type endorsement is included.
6. The document may be prepared by the GCAA or by any CAR 145 approved maintenance organisation in accordance with a procedure approved by the GCAA and contained in the CAR 145 maintenance organisation exposition except that in all cases the GCAA will issue the document.
7. The preparation of any variation to an existing CAR-66 Aircraft Maintenance Engineers Licence may be carried out by the GCAA or by any CAR 145 approved maintenance organisation in accordance with a procedure approved by the GCAA and contained in the CAR-145 maintenance organisation exposition except that in all cases the GCAA will issue the document with the variation.
8. The CAR 66 Aircraft Maintenance Engineers Licence once issued is required to be kept by the person to whom it applies in good condition and who shall remain accountable for ensuring that no unauthorised entries are made.
9. Failure to comply with paragraph 8 may invalidate the document and could lead to the holder not being permitted to hold any CAR 145 certification authorisation and may result in prosecution under UAE law.
10. With regard to the aircraft type rating page the GCAA may choose not to issue this page until the first aircraft type rating needs to be endorsed and will need to issue more than one aircraft type rating page when there are a number to be listed.
11. Notwithstanding 10 each page issued will be in this format and contain the specified information for that page.
12. If there are no limitations applicable, the LIMITATIONS page will be issued stating 'No limitations'.
13. Where a pre-printed format is used, any category, subcategory or type rating box which does not contain a rating entry shall be marked to show that the rating is not held.



**UNITED ARAB EMIRATES
GENERAL CIVIL AVIATION AUTHORITY**

**CAR-66
AIRCRAFT MAINTENANCE ENGINEER
LICENCE**

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**I. UNITED ARAB EMIRATES
GENERAL CIVIL AVIATION AUTHORITY**
II. CAR 66 AIRCRAFT MAINTENANCE ENGINEER LICENCE

III. License No: UAE.AMEL.A

IV. Full Name:

IV(a). Date of Birth:

IV(b). Place of Birth:

V. Address of Holder:

VI. Nationality:

VII. Signature of Holder _____

VIII(a). This license is issued in accordance with the provisions of U.A.E Civil Aviation Regulations and with Annex I to the Convention on International Civil Aviation signed on 7 December 1944

IX. License valid until: 01-SEP-2022

X. Signature of issuing officer & issuing date.
for Director General of
General Civil Aviation
Authority
02-SEP-2014

**XI. Stamp of General Civil
Aviation Authority:** _____

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VIII (b). Conditions:

- 1) This license must be signed by the holder.
- 2) Endorsement of any (sub) categories on the page(s) entitled CAR 66 (SUB) CATEGORIES only, does not permit the holder to issue a certificate of release to service for an aircraft.
- 3) This license when endorsed with an aircraft type rating meets the intent of ICAO Annex 1.
- 4) The privileges of the holder of this license are prescribed by CAR 66 and the applicable requirements of CAR M and CAR 145.
- 5) This license remains valid until the date specified unless previously suspended or revoked.
- 6) The privileges of this license may not be exercised unless in the preceding two years period the holder has had either six months of maintenance experience in accordance with the privileges granted by the license, or met the provision for the issue of the appropriate privileges.

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XII (a). CAR- 66 (SUB) CATEGORIES

<u>Category</u>	<u>Date</u>
A - Aeroplanes Turbines	01 Jul 2011
B1 - Aeroplanes Turbines	01 Jul 2011
C - Aircraft	19 Aug 2014

(NO FURTHER ENTRIES ON THIS PAGE)

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XII (b). CAR 66 AIRCRAFT TYPE OR GROUP RATINGS

<u>A/C Type or Group</u>	<u>Cat</u>	<u>Date</u>
Airbus A318/A319/A320/A321 (CFM56)	B1.1	01 Jul 2011
Airbus A319/A320/A321 (IAE V2500)	B1.1	01 Jul 2011
Airbus A330 (RR RB 211 Trent 700)	B1.1	01 Jul 2011
Airbus A330 (PW 4000)	B1.1	01 Jul 2011
Airbus A340 (CFM56)	B1.1	01 Jul 2011
Airbus A340 (RR RB 211 Trent 500)	B1.1	01 Jul 2011
Boeing 767-200/300/400 (GE CF6)	B1.1	01 Jul 2011
Boeing 777-200/300 (GE 90)	B1.1	01 Jul 2011
Airbus A318/A319/A320/A321 (CFM56)	C	19 Aug 2014
Airbus A319/A320/A321 (IAE V2500)	C	19 Aug 2014
Airbus A330 (RR RB 211 Trent 700)	C	19 Aug 2014
Airbus A330 (PW 4000)	C	19 Aug 2014
Airbus A340 (CFM56)	C	19 Aug 2014
Airbus A340 (RR RB 211 Trent 500)	C	19 Aug 2014
Boeing 767-200/300/400 (GE CF6)	C	19 Aug 2014
Boeing 777-200/300 (GE 90)	C	19 Aug 2014

(NO FURTHER ENTRIES ON THIS PAGE)

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XIII. CAR 66 LIMITATION

<u>A/C Type or Group</u>	<u>Cat</u>	<u>Limitations</u>
Aeroplanes Turbines	B1	1,9
Airbus A318/A319/A320/A321 (CFM56)	B1.1	1,9
Airbus A319/A320/A321 (IAE V2500)	B1.1	1,9
Airbus A330 (PW 4000)	B1.1	1,9
Airbus A330 (RR RB 211 Trent 700)	B1.1	1,9
Airbus A340 (CFM56)	B1.1	1,9
Airbus A340 (RR RB 211 Trent 500)	B1.1	1,9
Boeing 767-200/300/400 (GE CF6)	B1.1	1,9
Boeing 777-200/300 (GE 90)	B1.1	1,9

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XIV(a). AMEL is issued
based on foreign
licence:

XIV(b). Initial Issuing Date: 18-JUL-2004

XIV(c). Limitation Codes Description:

<u>Code</u>	<u>Description</u>
1	Excluding electrical power generation & distribution systems.
9	Excluding avionic LRUs

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APPENDIX VI - BASIC KNOWLEDGE AND TRAINING REQUIREMENTS FOR CATEGORY L LICENCE

The definition of the different levels of knowledge in this Appendix is described in Appendix 1.

MODULE 1L – BASIC KNOWLEDGE	Level
1L.1 Mathematics Arithmetic; Algebra; Geometry.	1
1L.2 Physics Matter; Mechanics; Temperature: thermometers and temperature scales.	1
1L.3 Electrics DC Circuits; Resistance/Resistor.	1
1L.4 Aerodynamics/Aerostatics Aerodynamics; Aerostatics	1
1L.5 Workplace Safety and Environmental Protection	2

MODULE 2L – HUMAN FACTORS	Level
2L.1 General	1
2L.2 Human Performance and Limitations	1
2L.3 Social Psychology	1
2L.4 Factors Affecting Performance	1
2L.5 Physical Environment	1

MODULE 3L – AVIATION LEGISLATION	Level
3L.1 Regulatory Framework Role of the GCAA; Applicable CAR Part IV Section E, CAR Part V Chapter 1 (Sections 2.2.2 & 8) and Chapter 5 – BMO and CAR 66;	1
3L.2 Repairs and Modifications Approval of Changes (repairs and modifications); Standard changes and standard repairs.	2
3L.3 Maintenance Data Equipment specifications, airworthiness directives (AD), instructions for continuing airworthiness (AMM, IPC etc.); Flight manual; Maintenance records; Aircraft inspection and repair FAA AC 43.13-1A (for reference).	2



MODULE 4L – HOT AIR BALLOONS	Level
4L.1 Basic Principles and Assembly of Hot Air Balloons/Airships Assembly and individual parts; Cladding material, belts, cables; Envelopes, ripping panel, valve (parachute), turning vent, scoop/skirt; Burner, burner frame and burner frame stanchions; Compressed gas tanks and compressed gas hoses; Basket and alternative devices (sears); Rigging accessories; Maintenance and servicing jobs; Annual inspection; Flight papers; Flight and maintenance manuals; Rigging and launch preparation; Launch.	3
4L.2 Practical Training Operating controls, maintenance and servicing jobs (according to flight manual)	3
4L.3 Envelope Fabrics; Load tapes, rip stoppers; Load cables; Parachute; Ripping panel; Turning valve; Rollers, pulleys; Control and shroud lines; Temperature control strip, envelope thermometer; Flying wires; Fitting, karabiners.	3
4L.4 Burner and Fuel System Burner coils; Blast, liquid and pilot valves; Burners/nozzles; Pilot burners/nozzles; Burner frame; Fuel lines/hoses; Fuel cylinders or tanks and valves and fittings.	3
4L.5 Basket and Basket Suspension (including Alternative Devices) Kind of baskets (including alternative devices); Basket cables; Carabineer, shackle and pins; Burner support rods; Fuel cylinder straps; Accessories and packing diagrams.	3



4L.6 Equipment Fire extinguisher, fire blanket; Instruments (single or combined).	3
4L.7 Minor Repairs Stitching; Bonding.	3
4L.8 Procedures for Physical Inspection Cleaning, use of lighting and mirror; Measuring tools; Measure of control deflection (airship only); Torque of screws and bolts; Wear of bearings (airship only); Inspection of equipment; Calibration of measuring tools; Fabric grab test.	2

MODULE 5L - RADIO COMMUNICATION/ELT/TRANSPONDER/INSTRUMENTS	Level
5L.1 Radio/ELT Channel spacing; Basic functional test; Batteries; Testing and maintenance requirements.	2
5L.2 Transponder Basic operation; Typical portable configuration including antenna; Explanation of Mode A, C, S; Testing and maintenance requirements.	2
5L.3 Instruments Handheld altimeter/variometers; Batteries; Basic function test.	2



APPENDIX VII - BASIC EXAMINATION STANDARD FOR CATEGORY L AIRCRAFT MAINTENANCE LICENCE

1. Standardisation basis for examinations related to Appendix VI basic knowledge requirements.
 - 1.1 All examinations must be carried out using the multi-choice question format as specified below. The incorrect alternatives must seem equally plausible to anyone ignorant of the subject. All of the alternatives should be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions the correct answers should correspond to the procedural errors such as corrections applied in the wrong sense or incorrect unit conversions, they must not be mere random numbers.
 - 1.2 Each multi-choice question must have three alternative answers of which only one must be the correct answer and the candidate must be allowed a time per module which is based upon a nominal average of 75 seconds per question.
 - 1.3 The pass mark for each module is 75%.
 - 1.4 Penalty marking (negative points for fail questions) is no to be used.
 - 1.5 The level of knowledge required in the question must be proportionate to the level of technology of the aircraft/balloon category.
2. Number of questions per module.
 - 2.1 Module 1L Basic Knowledge: 12 multi-choice questions. Time allowed 15 minutes.
 - 2.2 Module 2L Human Factors: 8 questions. Time allowed 10 minutes.
 - 2.3 Module 3L Aviation Legislation: 24 questions. Time allowed 30 minutes.
 - 2.4 Module 4L Hot Air Balloons: 36 question. Time allowed 45 minutes.
 - 2.5 Module 5L Radio Communications/ELT/Transponders/Instruments: 16 questions. Time allowed 20 minutes.



SECTION 3 - APPENDICES TO AMC OR GM TO CAR 66

APPENDIX I to AMC to CAR 66

AIRCRAFT TYPE RATINGS FOR CAR 66 AIRCRAFT MAINTENANCE ENGINEERS LICENCE

The following aircraft type ratings should be used to ensure a common standard.

The inclusion of an aircraft type in the list does not indicate that the aircraft type has been already granted a type certificate.

Notes on when the licence should be modified;

When a modification is introduced to an aircraft type rating or to an engine designation in the rating which affects licences already issued, the ratings on the AMEL licences may be modified at the next renewal or when the licence is reissued, unless there is an urgent reason to modify the licence.

Notes on aircraft modified by STC;

When an aircraft has been modified by an STC for installation of a different-engine, the CAR 66 type rating of this aircraft may change i.e. from Group 2 to Group 1. This is not reflected in this document. In case the applicant for a licence faces such a case, he/she or his/her company can inform the GCAA and a new type rating will be defined.

In the following tables:

- The column “TC Holder” includes the TC holder as defined in the TCDS (EASA, FAA or other) or the Specific Airworthiness Specifications (SAS)
- Some TC holders’ designations have been corrected to add the information: ‘Aircraft with an SAS’. This means that the aircraft listed under this TC holder designation is considered an ‘orphan aircraft’. An aircraft becomes orphan when the legal person, organisation or entity holding the Type Certificate (TC) ceases to exist; or The TC holder no longer complies with his regulatory obligations; or The TC holder surrenders the TC.
- In Group 3, a third column has been added which is called ‘Type of structure’ which intends to assist the GCAA Licensing Department in identifying the experience required for this type with a view of removing existing limitations on the licence.
- Wooden structure covered with fabric is considered to fall under wooden structure. For Aeroplanes with a combination of structures; e.g. metal tubing fuselage and wooden wings, both experience ‘metal tube covered with fabric’ and ‘wooden structure’ are required.
- Only the designations of ratings included in the column “CAR 66 Type rating endorsement” will be used for endorsing individual type ratings on a CAR 66 licences.
- In Group 3, a fourth column has been added titled ‘MTOM’ which intends to assist the GCAA Licensing Department in identifying the aeroplane types where the Maximum Take-off Mass (MTOM) is:
 - Above 2T and is subject to a B1.2 licence, or
 - 2T and below and is subject to a B1.2 or B3 licence.



Notes on TR endorsement covering several models/variant:

The endorsement of a type rating (TR) on the aircraft maintenance engineer licence (AMEL), covering several models/variants, does not automatically imply that the AMEL holder has acquired the appropriate knowledge on each model/variant. The TR course received or the experienced the AMEL holder has gained, may have been limited to one or several model(s) variant(s) but not to all models/variants.

To demonstrate adequate competence on the relevant model(s)/variant(s), the AMEL holder and/or the maintenance organisation where the AMEL holder is contracted/employed, are responsible to verify whether the model/variant has been adequately covered by the TR course or gained experience.

Further explanation can be found in AMC 66.20(b)3 and AMC 145.35(a).



GROUP 1 AEROPLANES

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
328 Support Services	328-100 series		Dornier 328-100 (PWC PW119)
	328-300 series		Dornier 328-300 (PWC PW306)
AIR TRACTOR	AT-802 Series		Air Tractor AT-800 Series (PWC PT6)
AIRBUS (Aircraft with SAS)	SN 601	Corvette	Aerospatiale SN-601 (PWC JT15D)
AIRBUS	A300 B1 A300 B2-1A A300 B2-1C A300 B2-202 A300 B2-203 A300 B2K-3C A300 B4-102 A300 B4-103 A300 B4-203 A300 B4-2C A300 C4-203 A300 F4-203		Airbus A300 basic model (GE CF6)
	A300 B2-320 A300 B4-120 A300 B4-220		Airbus A300 basic model (PW JT9D)
	A300 B4-601 A300 B4-603 A300 B4-605 R A300 C4-605 R – Variant F A300 F4-605 R		Airbus A300-600 (GE CF6)
	A300 B4-622 A300 B4-622 R A300 F4-622 R		Airbus A300-600 (PW 4000)
	A300 B4-620 A300 C4-620		Airbus A300-600 (PW JT9D)
	A300F4-608ST	Beluga	Airbus A300-600ST (GE CF6)
	A310-203 A310-203 C A310-221 A310-304 A310-308		Airbus A310 (GE CF6)
	A310-324 A310-325		Airbus A310 (PW 4000)
	A310-204 A310-222		Airbus A310 (PW JT9D)



	A310-322		
	A318-120 series		Airbus A318 (PW 6000)
	A318-110 series A319-110 series A320-111 A320-210 series A321-110 series A321-210 series		Airbus A318/A319/A320/A321 (CFM56)
	A319-130 series A320-230 series A321-130 series A321-230 series		Airbus A319/A320/A321 (IAE V2500)
	A319-170 A320-270 A321-270	A319 NEO A320 NEO A321 NEO	Airbus A319/A320/A321 (IAW PW1100G)
	A319-150 A320-250 A321-250	A319 NEO A320 NEO A321 NEO	Airbus A319/A320/A321 (CFM LEAP-1A)
	A330-200 series A330-300 series		Airbus A330 (GE CF6)
	A330-220 series A330-320 series		Airbus A330 (PW 4000)
	A330-240 series A330-340 series		Airbus A330 (RR RB 211 Trent 700)
	A330-734L	Beluga XL	
	A330-841 A330-941	A330 NEO	Airbus A330 (RR Trent 7000)
	A340-210 series A340-310 series		Airbus A340 (CFM56)
	A340-540 series A340-640 series		Airbus A340 (RR RB 211 Trent 500)
	A350-941series A350-1000		Airbus A350 (RR Trent XWB)
	A380-860 series		Airbus A380 (EA GP7200)
	A380-840 series		Airbus A380 (RR RB 211 Trent 900)
Airbus Military Sociedad Limitada	A400M-180		Airbus A400M (EPI TP400)
AIRCRAFT INDUSTRIES	L-410 M/UDP L-410 UVP-E L-410 UVP-E20 L-410 UVP-E20 CARGO L-410 UVP-E9 L-410 UVP-E- LW L-410 UVP-LW L-410 UVP-E20 L-410 UVP-E20 CARGO L-420	Turbolet Turbolet Turbolet Turbolet Turbolet Turbolet Turbolet Turbolet	Let L-410 (Walter M601) Let L- 410 (GE H80) Let L-420 (Walter M601)
ALENIA AERMACCHI	C-27J		Alenia C-27 (Allison/RR AE2100)



ANTONOV	AN-26 AN-26B		Antonov AN26 (Ivchenko AI-24)
Antonov Aeronautical Scientific and Technical Complex (Aircraft with SAS)	Antonov An-28		Antonov An-28 (TBA)
ATR-GIE Avions de Transport Régional	ATR 42-200 ATR 42-300 ATR 42-320		ATR 42-200/300 series (PWC PW120)
	ATR 42-400 ATR 42-500 ATR 42-500 ATR 72-212 A ATR 72-212 A	42-500 42-600 72-500 72-600	ATR 42-400/500/72-212A (PWC PW120)
	ATR 72-101 ATR 72-102 ATR 72-201 ATR 72-202 ATR 72-211 ATR 72-212		ATR 72-100/200 series (PWC PW120)
BAE SYSTEMS (OPERATIONS) Ltd	BAe ATP		ATP (PWC PW120)
	AVRO 146- RJ100 AVRO 146- RJ115 AVRO 146-RJ70 AVRO 146-RJ85 BAe 146 Series 100 BAe 146 Series 200 BAe 146 Series 300		BAe 146/ AVRO 146-RJ (Honeywell ALF500 Series)
	HP.137 Jetstream Mk.1 HP.137 Jetstream Mk.1	Jetstream 1 Jetstream 2	HP.137 (Turbomeca Astazou)
	HS 748 Series 2A HS 748 Series 2B HS.748 Series 1 HS.748 Series 2		HS748 (RRD Dart)
	Jetstream 200		Jetstream 200 (Turbomeca Astazou)
	Jetstream 3100 Jetstream 3200	Jetstream 31 Jetstream 32/32EP	Jetstream 31/32 (HoneywellTPE331)
	Jetstream 4100		Jetstream 41 (Honeywell TPE331)
BEECHCRAFT Corporation	65-90 65-A90 65-A90-1 65-A90-2 65-A90-4 B90 C90 C90GT	King Air	Beech 90 Series (PWC PT6)



	C90GTi E90 F90 H90		
	200/A200 200C/A200C 200CT/A200CT 200T B200 B200CGT B200CT B200GT B200T		Beech 200 Series (PWC PT6)
	390	Premier 1, 1A	Beech 390 (Williams FJ44)
	99 100 99A A100 A100A/C A99 A99A B99 C99	King Air King Air King Air Airliner Airliner Airliner	Beech 90/100 Series (PWC PT6)
	B100		Beech 100 (Honeywell TPE331)
	300 300LW B300 B300C	Super King Air Super King Air Super King Air 350 Super King Air 350C	Beech 300 Series (PWC PT6)
	Be-200ES-E		Beriev 200 (Ivchenko D-436TP)
B-N GROUP Ltd. (Britten-Norman)	BN2T/-2/-2R/-4R/-4S	Turbine Islander	Britten-Norman BN2T Series (RR Corp 250)
BOEING COMPANY (THE)	B707-200 B707-200B B707-300 Series		Boeing 707 (PW JT4)
	B707-400 Series		Boeing 707 (RR Conway)
	B707-100 B707-100B B707 -100B B707-300B Series B707-300C Series B720 B720B	Long Body Long Body Short Body	Boeing 707/720 (PW JT3D)
	B727 Series B727-100 Series B727-100C Series B727-200 Series B727C Series		Boeing 727 (PW JT8D)



	B737-100 B737-200 B737-200C		Boeing 737-100/200 (PW JT8D)
	B737-300 B737-400 B737-500		Boeing 737-300/400/500 (CFM56)
	B737-600 B737-700 B737-800 B737-900 B737-900ER		Boeing 737-600/700/800/900 (CFM56)
	B737-7 B737-8 B737-9	B737 MAX	Boeing 737-7/8/9 (CFM LEAP-1B)
	B747-100		Boeing 747-100 (PW JT9D)
	B747-200B B747-200C B747-200F B747-300		Boeing 747-200/300 (GE CF6)
	B747-200B B747-200C B747-200F B747-300		Boeing 747-200/300 (PW JT9D)
	B747-200B B747-200C B747-200F B747-300		Boeing 747-200/300 (RR RB211)
	B747-400 B747-400F/SF(BCF)		Boeing 747-400 (GE CF6)
	B747-400 B747-400F/SF(BCF)		Boeing 747-400 (PW 4000)
	B747-400 B747-400F/SF(BCF)		Boeing 747-400 (RR RB211)
	B747-8F B747-8I	Freighter Intercontinental	Boeing 747-8 (GE GEnx)
	B757-200 B757-200PF B757-300		Boeing 757-200/300 (PW 2000)
	B757-200 B757-200PF B757-300		Boeing 757-200/300 (RR RB211)
	B767-200 B767-300 B767-300BCF		Boeing 767-200/300 (PW 4000)
	B767-200 B767-300/ B767-300BCF		Boeing 767-200/300 (PW JT9D)



	B767-200 B767-300 B767-300F B767-300BCF B767-400ER		Boeing 767-200/300/400 (GE CF6)
	B767-300		Boeing 767-300 (RR RB211)
	B777-200 B777-200LR B777-300ER B777F	Freighter	Boeing 777-200/300 (GE 90)
	B777-200 B777-300		Boeing 777-200/300 (PW 4000)
	B777-200 B777-300		Boeing 777-200/300 (RR RB211 Trent 800)
	B787-8 B787-9 B787-10	Dreamliner	Boeing 787-8/9/10 (GE GENx)
	B787-8 B787-9 B787-10	Dreamliner	Boeing 787-8/9/10 (RR RB 211 Trent 1000)
BOMBARDIER	BD-100-1A10	Challenger 300	Bombardier BD-100-1A10 (Honeywell AS907)
	BD-500-1A10	C Series CS100	Bombardier BD-500 Series (PW PW1500G)
	BD-500-1A11	C Series CS300	Bombardier BD-500 Series (PW PW1500G)
	BD-700-1A10 BD-700-1A11	Global Express Global 6000 Global 5000 Global 5000 GVFD	Bombardier BD-700 Series (RRD BR710)
	CL600-1A11	Challenger 600	Bombardier CL-600-1A11 (Honeywell ALF502)
	CL-600-2A12 (601 Variant) CL-600-2B16 (601-3A Variant) CL-600-2B16 (601-3R Variant)	Challenger 601 Challenger 601-3A Challenger 601-3R	Bombardier CL-600-2A12/-2B16 (variant CL 601/601-3A/3R) (GE CF34)
	CL-600-2B16 (CL 604 Variant) CL-600-2B16 (CL 604 Variant)	Challenger-604 (MSN < 5701) Challenger-605 (MSN > 5701)	Bombardier CL-600-2B16 (variant CL 604) (GE CF34)



	CL-600-2B19 CL-600-2C10	Regional Jet Series 100	Bombardier CL-600-2B19/2C10/- 2D15/2D24/ 2E25 (GE CF34)
	CL-600-2D15 CL-600-2D24 CL-600-2E25	Regional Jet Series 700/701/702 Regional Jet Series 705 Regional Jet Series 900 Regional Jet Series 1000	
	DHC-8-101 DHC-8-102 DHC-8-103 DHC-8-106 DHC-8-201 DHC-8-202 DHC-8-30 DHC-8-311 DHC-8-314 DHC-8-315	DHC-8 Series 100 DHC-8 Series 100 DHC-8 Series 100 DHC-8 Series 100 DHC-8 Series 200 DHC-8 Series 200 DHC-8 Series 300 DHC-8 Series 300 DHC-8 Series 300 DHC-8 Series 300	Bombardier DHC-8-100/200/300 (PWC PW 120)
	DHC-8-401 DHC-8-402	DHC-8 Series 400 DHC-8 Series 400	Bombardier DHC-8-400 (PWC PW150)
	CL-215-1A10		Canadair CL-215 (PW R2800)
	CL-215-6B11 (CL-215T Variant)		Canadair CL-215 (PWC PW120)
	CL-215-6B11 (CL-415 Variant)		Canadair CL-415 (PWC PW123)
CESSNA AIRCRAFT Company	401/402 404 411 414 421		Cessna 401/402 (Continental)
	425	Corsair/ Conquest I	Cessna 425 (PWC PT6)
	441		Cessna 441 (Honeywell TPE331)
	500 501	Citation/ Citation I Citation I	Cessna 500/ 501/551 (PWC JT15D)
	510		Cessna 510 (PWC PW615)
	525	Citation Jet CJ1 Citation M2	Cessna 525/525A (Williams FJ 44)
	525A	Citation Jet CJ2	
	525B	Citation Jet CJ3	Cessna 525B (Williams FJ 44)
	525C	Citation Jet CJ4	Cessna 525C (Williams FJ44)
	550 560 560 S550 551	Citation II Citation V Citation Ultra Citation S/II Citation II	Cessna 550/560 (PWC JT15D)



	550 560 560	Citation Bravo Citation Encore Citation Encore +	Cessna 550/560 (PWC PW530/535)
	560 XLS 560 XLS+ 560 XL	Citation XLS Citation XLS+ Citation Excel	Cessna 560XL/XLS (PWC PW545)
	650 650	Citation III, VI Citation VII	Cessna 650 (Honeywell TFE731)
	680	Sovereign	Cessna 680 (PWC PW306)
	750	Citation X	Cessna 750 (RR Corp AE3007C)
CIRRUS Design Corporation	CIRRUS SF50 Single Engine Jet	CIRRUS SF50	CIRRUS SF50 (Williams)
DASSAULT AVIATION	Falcon 10		Falcon 10 (Honeywell TFE731)
	Fan Jet Falcon Fan Jet Falcon Series C Fan Jet Falcon Series D Fan Jet Falcon Series E Fan Jet Falcon Series F	(Basic) Fan Jet Falcon	Falcon 20 (GE CF700)
	Fan Jet Falcon Series G Mystère Falcon 200 Mystère Falcon 20GF		Falcon 200 (Honeywell ATF 3-6)
	Falcon 2000		Falcon 2000 (CFE 738)
	Falcon 2000EX		Falcon 2000EX (PWC PW308)
	Falcon 2000EX	F2000EX EASy F2000D F2000LX F2000LXS F2000S	Falcon 2000EX EASy (PWC PW308)
	Mystère Falcon 20-C5 Mystère Falcon 20-D5 Mystère Falcon 20-E5 Mystère Falcon 20-F5		Falcon 20-5 (Honeywell TFE731)
	Mystère Falcon 50		Falcon 50 (Honeywell TFE731)
	Mystère Falcon 50	F50EX	Falcon 50EX (Honeywell TFE731)
	Falcon 7X	F7X/F8X	Falcon 7X (PWC PW307)
	Mystère Falcon 900 Mystère Falcon 900	F900B	Falcon 900 (Honeywell TFE731)
	Mystère Falcon 900	F900C	Falcon 900C (Honeywell TFE731)
	Falcon 900EX		Falcon 900EX (Honeywell TFE731)
	Falcon 900EX Falcon 900EX Falcon 900EX	F900EX EASy F900DX F900LX	Falcon 900EX EASy (Honeywell TFE731)
	Falcon 900EX		Falcon 900EX (Honeywell TFE731)
DORNIER Seastar	Seastar CD2		Dornier Seastar CD2 (PWC PT6)
EADS CASA	C-212-CB C-212-CC C-212-CD C-212-CE C-212-CF	Aviocar Aviocar Aviocar Aviocar Aviocar	CASA C-212 (Honeywell TPE331)



	C-212-DD C-212-DF C-212-EE C-212-VA	Aviocar Aviocar Aviocar Aviocar	
	C-212-DE	Aviocar	CASA C-212 (PWC PT6)
	C-295		CASA C-295 (PWC PW127)
	CN-235 CN-235-100 CN-235-200 CN-235-300		CASA CN-235 (GE CT7)
ECLIPSE AEROSPACE Inc.	EA500		Eclipse EA500 (PWC PW610)
EMBRAER	EMB-110P1 EMB-110P2	Bandeirante Bandeirante	Embraer EMB-110 (PWC PT6)
	EMB-121A EMB-121A1	Xingu I Xingu II	Embraer EMB-121 (PWC PT6)
	EMB-120 EMB-120ER EMB-120RT	Brasilia Brasilia Brasilia	Embraer EMB-120 (PWC PW110 Series)
	EMB-135BJ EMB-135ER EMB-135LR EMB-145 EMB-145EP	Legacy 600 Legacy 650	Embraer EMB-135/145 (RR Corp AE3007A)
	EMB-145ER EMB-145EU EMB-145LR EMB-145LU EMB-145MK EMB-145MP		
	EMB-500	Phenom 100	Embraer EMB-500 (PWC PW617)
	EMB-505	Phenom 300	Embraer EMB-505 (PWC PW535)
	EMB-545 EMB-550	Legacy 450 Legacy 550	Embraer EMB-545/550 (Honeywell AS907)
	ERJ 170-100 LR ERJ 170-100 STD ERJ 170-200 LR ERJ 170-200 STD	ERJ-170 ERJ-170 ERJ-175 ERJ-175	Embraer ERJ-170 Series (GE CF34)
	ERJ 190-100 ECJ ERJ 190-100 IGW ERJ 190-100 LR ERJ 190-100 SR ERJ 190-100 STD ERJ 190-200 IGW ERJ 190-200 LR	Lineage 1000 ERJ-190 AR ERJ-190 ERJ-190 ERJ-190 ERJ-195 AR ERJ-195 ERJ-195	Embraer ERJ-190 Series (GE CF34)



	ERJ 190-200 STD		
MARYLAND AIR INDUSTRIES (FOKKER-FAIRCHILD)	F-27A to -M FH-227 FH-227B FH-227C FH-227D FH-227E		Fokker F27/Fairchild F-27/FH-227 Series (RRD Dart)
FOKKER SERVICES	F27 Mark 100 F27 Mark 200 F27 Mark 300 F27 Mark 400 F27 Mark 500 F27 Mark 600 F27 Mark 700	Friendship Friendship Friendship Friendship Friendship Friendship Friendship	
	F27 Mark 050 F27 Mark 0502 F27 Mark 0604	Fokker 50 Fokker 50 Fokker 60	Fokker 50/60 Series (PWC PW 125/127)
	F28 Mark 0070 F28 Mark 0100	Fokker 70 Fokker 100	Fokker 70/100 (RRD Tay)
	F28 Mark 1000 F28 Mark 1000C F28 Mark 2000 F28 Mark 3000 F28 Mark 3000C F28 Mark 3000R F28 Mark 3000RC F28 Mark 4000	Fellowship Fellowship Fellowship Fellowship Fellowship Fellowship Fellowship Fellowship	Fokker F28 Series (RRD Spey)
GOVERNMENT AIRCRAFT FACTORIES (ASTA)	N22/N22A to N22S N24/N24A		Nomad N22/24 Series (RR Corp 250)
GROB Aircraft AG			Grob G 520 Series (Honeywell TPE331)
GULFSTREAM AEROSPACE Corporation	G-1159 G-1159A G-1159B	Gulfstream II Gulfstream IIB Gulfstream III	Gulfstream G-1159 Series (RRD Spey)
	G-159	Gulfstream I	Gulfstream G-159 (RRD Dart)
	GIV (G300) GIV (G400) G-IV/GIV-SP	Gulfstream G300 Gulfstream G400 Gulfstream G-IV/GIV-SP	Gulfstream G-IV Series (RRD Tay)
	GIV-X (G350) GIV-X (G450)	Gulfstream G350 Gulfstream G450	Gulfstream GIV-X Series (RRD Tay)
	GV	Gulfstream GV	Gulfstream GV basic model (RRD BR710)
	GV-SP (G500) GV-SP (G550)	Gulfstream G500 Gulfstream G550	Gulfstream GV-SP Series (RRD BR710)



	GVI	G650	Gulfstream GVI (RRD BR725)
GULFSTREAM AEROSPACE LP (GALP) c/o Israel Aircraft Industries	1125 Westwind Astra Astra SPX G100	Gulfstream 100	Gulfstream (IAI) 100/1125/Astra SPX (Honeywell TFE731)
	Gulfstream 200/IAI Galaxy	Galaxy 200	Gulfstream (IAI) 200/Galaxy (PWC PW306)
	Gulfstream G150	Gulfstream G150	Gulfstream (IAI) G150 (Honeywell TFE731)
	Gulfstream G280	Gulfstream G280	Gulfstream (IAI) G280 (Honeywell AS907)
HAWKER BEECHCRAFT	400 400A	Beechjet Beechjet (Hawker 400XP) Beechjet Diamond I/IA Diamond II	Beech 400/Mitsubishi MU-300 (PWC JT15)
	400T MU-300 MU-300-10		
	BH.125 series 400 BH.125 series 600 DH.125 series 1 DH.125 series 3 DH.125 series 400 HS.125 series 1 HS.125 series 3 HS.125 series 400 HS.125 series 600 HS.125 series F3 HS.125 series F400 HS.125 series F600	"Beechcraft Hawker" "Beechcraft Hawker" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley"	BAe 125 Series (RR Viper)
	BAe.125 series 800 BH.125 series 400 BH.125 series 600 DH.125 series 1 DH.125 series 3 DH.125 series 400 Hawker 800 HS.125 series 3 HS.125 series 600 HS.125 series 700 HS.125 series F3 HS.125 series F400 HS.125 series F600	"Beechcraft Hawker" "Beechcraft Hawker" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley" "Hawker Siddeley"	BAe 125 Series /700/800 (Honeywell TFE731)
	BAe.125 series 1000A/B Hawker 1000		BAe 125 Series 1000 (PWC PW305)
	Hawker 750 Hawker 800XP Hawker 850XP Hawker 900XP	Hawker 750 Hawker 800XP Hawker 850XP Hawker 900XP	BAe 125 Series 750/800XP/850XP/900XP (Honeywell TFE731)



	4000	Hawker 4000	Hawker 4000 (PWC PW308)
ISRAEL AIRCRAFT INDUSTRIES	IAI 1121 IAI 1121A IAI 1121B IAI 1123	Jetcommander Jetcommander Jetcommander Commodore Jet	IAI 1121/1123 (GE CJ610)F
	IAI 1124 IAI 1124A	Westwind Westwind	IAI 1124 (Honeywell TFE731)
JSC Sukhoi Civil Aircraft	RRJ-95B	Superjet 100	RRJ-95 (PowerJet SaM146)
KELOWNA (Convair)	440		Convair 580 (RR Corp 501)
LEARJET	LJ 23		Learjet 23 (GE CJ610)
	24 /24A 24B / 24B-A 24C 24D / 24D-A 24E 24F / 24F-A 25 25A 25B 25C 25D 25F		Learjet 24/25 (GE CJ610)
	31 / 31A		Learjet 31 (Honeywell TFE731)
	35 / 35A 36 / 36A		Learjet 35/36 (Honeywell TFE731)
	31 / 31A		Learjet 31 (Honeywell TFE731)
	55 / 55B / 55C		Learjet 55 (Honeywell TFE731)
	Learjet 60	LJ60 LJ60XR	Learjet 60 (PWC PW305)
	Learjet 40 Learjet 45 Learjet 70 Learjet 75	LJ45 LJ40XR LJ45LJ 45XR LJ70 LJ75	Learjet Model 45 (Honeywell TFE731)
LOCKHEED MARTIN Corporation	1329-25	JetStar II	Lockheed 1329 (Honeywell TFE731)
	1329-23D	JetStar	Lockheed 1329 PW (PW JT12)
	Model 188C Model L188A	Electra Electra	Lockheed 188 (RR Corp 501)
	382G	Hercules	Lockheed 382 (RR Corp 501)
	L-1011-385-1 L-1011-385-1- 15 L-1011-385-3	TriStar TriStar TriStar	Lockheed L-1011 (RR RB211)
M7 AEROSPACE	SA-26-T		Fairchild SA26-T (PWC PT6)
	SA26AT		Fairchild SA26 AT (Honeywell TPE331)



	SA226-AT SA226-T SA226-T(B) SA226-TC		Fairchild SA226 Series (Honeywell TPE331)
	SA227-AC SA227-AT SA227-BC SA227-CC SA227-DC SA227-TT	Swearingen Metro	Fairchild SA227 Series (Honeywell TPE331)
	SA227-PC	Swearingen Metro	Fairchild SA227 Series (PWC PT6)
Mc DONNELL DOUGLAS Corporation BOEING COMPANY	DC-10-10 DC-10-30 DC-10-30F		DC-10/MD-10 (GE CF6)
	DC-8 Series 70 DC-8 Series 70F		DC-8 (CFM56)
	DC-8 Series 50 DC-8 Series 60 DC-8 Series 60F DC-8F		DC-8 (PW JT3D)
	DC-8 Series 40		DC-8 (RR Conway)
	DC-9-10 Series DC-9-20 Series DC-9-30 Series DC-9-40 Series DC-9-50 Series		DC-9 (PW JT8D)
	717-200		MD 717-200 (RRD BR700-715)
	MD-11 MD-11F		MD-11 (GE CF6)
	MD-11		MD-11 (PW 4000)
	DC-9-81 (MD-81) Series DC-9-82 (MD-82) Series DC-9-83 (MD-83) Series DC-9-87 (MD-87) Series MD-88	MD-81 MD-82 MD-83 MD-87	MD-80 Series (PW JT8D)
	MD-90 Series		MD-90 (IAE V2500)
MITSUBISHI Heavy Industries	MRJ-200		MRJ-200(PW-PW1217G)
	MU-2B-26A MU-2B-36A MU-2B-40 MU-2B-60		Mitsubishi MU-2B (Honeywell TPE331)
PIAGGIO Aero Industries	P.166 DP1		Piaggio P166 (PWC PT6)
	P180 P180	Avanti Avanti II	Piaggio P180 Avanti/Avanti II (PWC PT6)
PILATUS AIRCRAFT	PC-12		Pilatus PC-12 (PWC PT6)



	PC-12/45 PC-12/47 PC-12/47E		
PIPER AIRCRAFT	PA31T to T3	Cheyenne	Piper PA-31T Series (PWC PT6)
	PA-42-1000	Cheyenne 400LS	Piper PA-42 (Honeywell TPE-331)
	PA-42 PA-42-720 PA-42-720R	Cheyenne III Cheyenne IIIA	Piper PA-42 (PWC PT6)
	PA-46-500TP	Malibu Meridian	Piper PA-46-500TP (PWC PT6)
POLSKIE ZAKLADY LOTNICZE	PZL M28 00 PZL M28 02 PZL M28 05		PZL M 28 (PWC PT6)
ASI AVIATION	F 406	Caravan II	Reims-Cessna F 406 (PWC PT6)
RUAG Aerospace Services GmbH	DO 28 D-6 Dornier 128-6		Dornier Do 28 Series (PWC PT6)
	228-100 series 228-200 series		Dornier 228 (Honeywell TPE331)
SAAB AB, SAAB Aerosystems	340A(SF340A) 340B	Saab-Fairchild 340A	Saab (SF) 340 (GE CT7)
	2000		Saab 2000 (RR Corp AE2100)
SABRELINER Corporation	NA-265-65		Sabreliner NA-265 (Honeywell TFE731)
	NA-265-65		Sabreliner NA-265 (PW JT12)
SHORT BROTHERS	SC7 Series 3	Skyvan	Shorts SC7 (Honeywell TPE331)
	SD3-30 SD3-60 SD3-60 SHERPA SD3-SHERPA	Variant 200 Variant 200 Variant 200 Variant 200	Shorts SD3 Series-30/SD3-60 (PWC PT6)
SOCATA	TBM 700 A TBM 700 B TBM 700 C1 TBM 700 C2 TBM 700 N	TBM 850 TBM 900	Socata TBM 700/850 (PWC PT6)
TUPOLEV PSC	TU 204-120CE		Tupolev TU 204 (RR RB211)
TWIN COMMANDER AIRCRAFT Corporation	681 690 695 680-T 680-V 680-W 690A 690B 690C 690D 695A		Twin Commander 680/681/690/695 Series (Honeywell TPE331)



	695B		
VIKING AIR (Bombardier)(De Havilland)	DHC-6-1 DHC-6-100/110 DHC-6-200/210 DHC-6-300/310/320 DHC-6-400	Twin Otter	De Havilland DHC-6 (PWC PT6)
	DHC-7-100 DHC-7-101 DHC-7-102 DHC-7-103 DHC-7-110 DHC-7-111		De Havilland DHC-7 (PWC PT6)
VULCANAIR	AP68TP300 AP68TP600	Spartacus Viator	Vulcanair AP68TP Series (RR Corp 250)
	SF600 SF600A		Vulcanair SF600 (RR Corp 250)



STCs in AEROPLANES GROUP 1
GROUP 1 AEROPLANES

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
GOMOLZIG FLUGZEUG-UND MASCHINENBAU	Dornier DO 28 D-2		Dornier DO 28 (Walter M601)
JET AVIATION	Fan Jet Falcon Series E		Falcon 20E (Honeywell TFE731)
NEXTANT AEROSPACE L.L.C.	Beech 400A		Beech 440 A (Williams FJ44)

GROUP 1 HELICOPTERS

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
AGUSTA WESTLAND	A109E A109N A109S AW109SP		Agusta A109 Series (PWC PW206/207)
	A109 A109A A109All A109C		Agusta A109 Series (RR Corp 250)
	A109K2		Agusta A109 (Turbomeca Arriel 1)
	A109E A109LUH		Agusta A109 Series (Turbomeca Arrius 2)
	AB139 AW139		Agusta AB139/AW139 (PWC PT6)
	EH101-500 Series EH101-510 Series EH101-300		Agusta/Westland EH-101 (GE CT7)
	AW169		AW169 (PWC 210)
	Aw189		AW189 (GE CT7)
	AB 212		Bell 212/Agusta AB212 (PWC PT6)
BELL HELICOPTER TEXTRON, INC.	212		
AGUSTA	AB 204 B Series AB 205 A1		Agusta AB204, AB205/Bell 204, 205 (Honeywell T53)
BELL HELICOPTER TEXTRON, INC.	204B 205A-1		
BELL HELICOPTER TEXTRON, INC	412 412EP 412CF		Bell 412/Agusta AB412 (PWC PT6)
AGUSTA	AB 412		



	AB 412 EP		
BELL HELICOPTER TEXTRON	214B 214B-1		Bell 214 (Honeywell T5508)
	214ST		Bell 214ST(GE CT7)
	222 222B 222U		Bell 222 (Honeywell LTS 101)
BELL HELICOPTER CANADA	230 230 230	230 Executive 230 Utility 230 EMS	Bell 230 (RR Corp 250)
	427		Bell 427 (PWC PW207D)
	429		Bell 429 (PWC PW207D)
	430		Bell 430 (RR Corp 250)
ERICKSON AIR- CRANE	EAC S-64F		Erickson S-64 (PW JFTD 12)
AIRBUS HELICOPTERS	SA 330 J		Eurocopter SA 330 (Turbomeca Turmo)
	AS 332 C AS 332 L AS 332 C1 AS 332 L1		Eurocopter AS 332 (Turbomeca Makila 1A/1A1)
	AS 332 L2		Eurocopter AS 332 L2 (Turbomeca Makila 1A2)
	AS 355 E AS 355 F AS 355 F1 AS 355 F2		Eurocopter AS 355 (RR Corp 250)
	AS 355 N AS 355 NP		Eurocopter AS 355 (Turbomeca Arrius 1)
	SA 365 N SA 365 N1 AS 365 N2	Dauphin Dauphin	Eurocopter SA 365 N/N1, AS 365 N2 (Turbomeca Arriel 1)
	AS 365 N3	Dauphin	Eurocopter AS 365 N3 (Turbomeca Arriel 2C)
	EC 155 B EC 155 B1		Eurocopter EC 155 (Turbomeca Arriel 2)
	EC 175 B		Eurocopter EC 175 (PWC PT6C)
	EC 225 LP		Eurocopter EC 225 (Turbomeca Makila 2A)
	SA 365 C SA 365 C1 SA 365 C2 SA 365 C3	Dauphin Dauphin Dauphin Dauphin	Eurocopter SA 365 C Series (Turbomeca Arriel 1)
	SA 366 G1	Dauphin	Eurocopter SA 366 G1 Series (Lycoming LTS101)



	EP135 P3H		Airbus Helicopters EC135 P3H (PWC PW206)
	EP135 T3H		Airbus Helicopters EC135 T3H (Turbomeca Arrius 2B)
Philippine Aerospace Development Corp	P-BO 105 C P-BO 105 S		BO 105 series (RR Corp 250)
AIRBUS HELICOPTERS DEUTSCHLAND GmbH	BO 105 A BO 105 C BO 105 D Series BO 105 LS A-1 BO 105 LS A-3 BO 105 S		BO 105 series (RR Corp 250)
	EC 135 P1 EC 135 P2 EC 635 P2+ EC 135 P3 EC 635 P2+ EC 635 P3		Eurocopter EC 135 (PWC PW206)
	EC 135 T1 EC 135 T2 EC 135 T2+ EC 135 T3 EC 635 T1 EC 635 T2+ EC 635 T3		Eurocopter EC 135 (Turbomeca Arrius 2B)
	MBB-BK 117 A Series MBB-BK 117 B Series		Eurocopter MBB-BK 117 A/B (Honeywell LTS 101)
	MBB-BK 117 C1		Eurocopter MBB-BK 117 C1 (Turbomeca Arriel 1)
	MBB-BK 117 C2	EC145	Eurocopter MBB-BK 117 C2 (Turbomeca Arriel 1)
	MBB-BK 117 D2	EC145 T2 H145	Eurocopter MBB-BK 117 D2 (Turbomeca Arriel 2)
KAMAN AEROSPACE CORPORATION	K-1200		Kaman K-1200 (Honeywell T5317)
KAMOV	Ka-32A11BC		Kamov Ka 32 (Klimov)
MD HELICOPTERS, Inc.	MD900		MD Helicopters MD900 (PWC PW206/207)
PZL-ŚWIDNIK	W-3A W-3AS		PZL-Swidnik W-3A/W-3AS (Rzeszow PZL-10W)
AGUSTA	AS61N AS61NI		Agusta AS61N/Sikorsky S-61N (GE CT58)
SIKORSKY AIRCRAFT	S-61N S-61NM		



SIKORSKY AIRCRAFT	S-58 BT to JT		Sikorsky S-58 (PWC PT6T)
	S-76A		Sikorsky S-76A (RR Corp 250)
	S-76A	S-76A+	Sikorsky S-76 (Turbomeca Arriel 1)
	S-76A	S-76A++	Sikorsky S-76 (Turbomeca Arriel 1)
	S-76B	S-76B	Sikorsky S-76B (PWC PT6)
	S-76C		Sikorsky S-76C (Turbomeca Arriel 1)
	S-76C	S-76C+	Sikorsky S-76C (Turbomeca Arriel 2)
	S-76C	S-76C++	Sikorsky S-76C (Turbomeca Arriel 2)
	S-92A		Sikorsky S-92A (GE CT7-8)

STCs in HELICOPTERS GROUP 1
GROUP 1 HELICOPTERS

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
Heli – Air Inc.	Bell 222		Bell 222 (RR Corp 250)

SUB-GROUP 2a: SINGLE TURBO-PROPELLER ENGINE AEROPLANES
(Other than those in Group 1)

TC Holder	CAR 66 Type Rating Endorsement
AERO VODOCHODY	Aero Ae-270 (PWC PT6)
AIR TRACTOR	Air Tractor AT-302 (Lycoming LTP-101) Air Tractor AT-400/500/600 Series (PWC PT6)
ALENIA AERMACCHI	Aermacchi SF260 (RR Corp 250)
ALLIED AG CAT Productions	Grumman G-164 (PWC PT6)
CESSNA AIRCRAFT Company	Cessna (Soloy) 206/207 (RR Corp 250) Cessna 208 Series (PWC PT6) Cessna 210 (RR Corp 250)
EADS PZL "WARSZAWA-OKECIE"	EADS PZL PZL-106 BT (Walter M601) EADS PZL PZL-106 BTU (PWC PT6)
EXTRA Flugzeugproduktions - und Vertriebs-GmbH	Extra EA-400-500 (RR Corp 250)
GROB Aircraft AG	Grob G 120TP (RR Corp 250)
MAULE AEROSPACE TECHNOLOGY	Maule MX-7 (RR Corp 250)
PACIFIC AEROSPACE Corporation	PAC 750XL (PWC PT6)
PILATUS AIRCRAFT	Pilatus PC-6 Series (Turbomeca Astazou) Pilatus PC-6 (PWC PT6) Pilatus PC-6 Series (Honeywell TPE 331)
THRUSH AIRCRAFT	Ayres S2R Series (PWC PT6)
VIKING AIR (Bombardier) (De Havilland)	De Havilland DHC-2 (PWC PT6)
ZLIN AIRCRAFT	Zlin Z-37 T Series (Walter M601)



STCs in AEROPLANES GROUP 2a
SUBGROUP 2a: SINGLE TURBO-PROPELLOER ENGINE AEROPLANES
(Other than those in Group 1)

TC Holder	CAR 66 Type Rating Endorsement
AERO TWIN, Inc	Cessna 208/208B (Honeywell TP3310)
JETPROPE, LLC	Piper PA-46 Pressurised (PWC PT6)
SOLOY, LLC	Cessna 206 (RR Corp 250)
SOLOY, LLC	Cessna 207 (RR Corp 250)
WEST PACIFIC AIR, LLC	Beech 36TC (PWC PT6)

SUB-GROUP 2b: SINGLE TURBINE ENGINE HELICOPTERS
(Other than those in Group 1)

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
AGUSTA	A119 AW119 MkII	Koala Koala	Agusta A119/ Agusta AW119MkII (PWC PT6)
BELL HELICOPTER CANADA	407		Bell 407 (RR Corp 250)
AGUSTA	AB 206A AB 206B		Agusta AB206 / Bell 206 (RR Corp 250)
BELL HELICOPTER TEXTRON CANADA LIMITED	206 Series from A to L		
		Jet Ranger X	Bell 505 (Safran Arrius 2R)
THE ENSTROM HELICOPTER CORPORATION	480/480B		Enstrom 480 (RR Corp 250)
AIRBUS HELICOPTERS	AS 350 B AS 350 B1 AS 350 B2 AS 350 BA AS 350 BB	Écureuil	Eurocopter AS 350 (Turbomeca Arriel 1)
	AS 350 B3		Eurocopter AS 350 (Turbomeca Arriel 2)
	AS 350 D		Eurocopter AS 350 (Lycoming LTS 101)
	EC 120 B	Colibri	Eurocopter EC 120 (Turbomeca Arrius 2F)
	EC 130 B4 EC 130 T2		Eurocopter EC 130 (Turbomeca Arriel 2)
	SA 315 B	Lama	Eurocopter SA 315B



			(Turbomeca Artouste)
	SA 3180 SA 318 B SA 318 C	Alouette- Astazou	Eurocopter SA 318 (Turbomeca Astazou)
	SA 319 B	Alouette III	Eurocopter SA 319 (Turbomeca Astazou XIV)
	SA 341 G	Gazelle	Eurocopter SA 341 (Turbomeca Astazou)
	SA 342 J	Gazelle	Eurocopter SA 342 J (Turbomeca Astazou XIV)
	SE 316 SA 316 B SA 316 C	Alouette III	Eurocopter SA 316 B/SA 316 C (Turbomeca Artouste)
MD HELICOPTERS INC. (MDHI)	369 H series 369 D, E and FFNH-500D		MD Helicopters 369 Series/SEI NH-500D (RR Corp 250)
Macaer Aviation Group	NH-500D		
MD HELICOPTERS INC. (MDHI)	500N 600N		MD Helicopters 500N/600N AMD500N (RR Corp 250)
Mecaer Aviation Group	AMD-500N		
PZL-ŚWIDNIK	SW-4		PZL SW-4 (RR Corp 250)
ROBINSON HELICOPTER COMPANY	R66		Robinson R66 (RR Corp 250)
SCHWEIZER AIRCRAFT CORPORATION	269D		Schweizer 269D (RR Corp 250)

SUB-GROUP 2c: SINGLE PISTON-ENGINE HELICOPTERS
(Other than those in Group 1)

TC Holder	Model	Commercial Designation	CAR 66 Type Rating Endorsement
ANTARES INTERNATIONAL	SH-4		Silvercraft SH-4 (Franklin)
BRANTLY INTERNATIONAL, INC.	B-2		Brantly B2 (Lycoming)
HELICOPTÈRES GUIMBAL	G2	Cabri	Cabri G2 (Lycoming)
THE ENSTROM HELICOPTER CORPORATION	F-28 series 280 series		Enstrom F-28/280 (Lycoming) Enstrom F-28/280 (Lycoming)



Mecaer Aviation Group	NH 300C	Model 300C	Schweizer/Breda Nardi 269/300 (Lycoming)
SCHWEIZER AIRCRAFT CORPORATION	269A 269B 269C 269C-1	Model 300C Model 300C Model 300C Model 300C	
ROBINSON HELICOPTER COMPANY	R22 R22 ALPHA R22 BETA R22 MARINER R44 R44 II		Robinson R22/R44 Series (Lycoming)
SIKORSKY AIRCRAFT	S-58 A to J		Sikorsky S-58 (Wright Cyclone)

GROUP 3: PISTON-ENGINE AEROPLANES
(Other than those in Group 1)

TC Holder	CAR 66 Type Rating Endorsement	Type of Structure	MTOM	
			2T and BELOW	ABOVE 2T
AD Holdings Inc.	Thorp T-211 (Continental)	Metal	X	
	Thorp T-211 (Jabiru)	Metal	X	
AERO Sp.z.o.o	Aero AT-3 (Rotax)	Metal	X	
AERODIF (Dyn'aviation)	CAP 10 (Lycoming)	Wood	X	
	CAP 20/21 (Lycoming)	Wood	X	
	CAP 230 Series (Lycoming)	Composite/Wood	X	
AEROSTAR AIRCRAFT Corporation	Piper PA-60/61 Series (Lycoming)	Metal		X
	Piper PA-60/61 Pressurised (Lycoming)	Metal/Pressurised		X
AIR TRACTOR	Air Tractor AT-250/300 (PW R985)	Metal		X
	Air Tractor AT-301/401/501 (PW R1340)	Metal		X
	Air Tractor AT-401 (PZL-3S)	Metal		X
Air Transport Group Holdings Inc.	Lake C/LA Series (Lycoming)	Metal	X	
AIRCRAFT Design and Certification	(WD) D4 Fascination (Rotax)	Composite	X	
	Lightwing AC4 (Rotax)	Composite	X	
AIRCRAFT INDUSTRIES	Let L 200 (LOM)	Metal	X	
	Let Z-37 Series (LOM)	Metal tubing Fabric	X	
ALENIA AERMACCHI	Aermacchi F260 Series (Lycoming)	Metal	X	
	SIAI-Marchetti S.205 (Franklin)	Metal	X	
	SIAI-Marchetti S.205/S.208 (Lycoming)	Metal	X	
ALEXANDRIA Aircraft LLC	Bellanca 14-19 Series (Continental)	Wood/Metal tubing Fabric	X	
	Bellanca 17-30 Series (Continental)	Wood/Metal tubing Fabric	X	
	Bellanca 17-31 Series (Lycoming)	Wood/Metal tubing Fabric	X	
	Grumman G	Metal	X	



ALLIED AG CAT Productions	Grumman G	Metal	X	
	Grumman G	Metal	X	
ALPHA AVIATION	Robin HR 200/ R 2000 series (Lycoming)	Metal	X	
AMERICAN CHAMPION Aircraft Corp.	Champion 7 (Superior)	Wood/Metal tubing Fabric	X	
	Champion 7 (Lycoming)	Wood/Metal tubing Fabric	X	
	Champion 7 Series (Continental)	Wood/Metal tubing Fabric	X	
	Champion 8 (Lycoming)	Wood/Metal tubing Fabric	X	
AQUILA Aviation by Excellence AG	Aquila AT01 (Rotax)	Composite	X	
AUGUSTAIR	VARGA 2150/2180 (Lycoming)	Metal	X	
BEECHCRAFT Corporation	Beech 19 Series (Lycoming)	Metal	X	
	Beech 23 Series (Lycoming)	Metal	X	
	Beech 24 Series (Lycoming)	Metal	X	
	Beech 33 Series (Continental)	Metal	X	
	Beech 35 Series (Continental)	Metal	X	
	Beech 36 Series (Continental)	Metal	X	
	Beech 50 Series (Lycoming)	Metal		X
	Beech 55 Series (Continental)	Metal		X
	Beech 56 Series (Lycoming)	Metal		X
	Beech 58 Series (Continental)	Metal		X
	Beech 58P Series (Continental)	Metal/Pressurised		X
	Beech 58TC Series (Continental)	Metal		X
	Beech 60 Series (Lycoming)	Metal		X
	Beech 65-80 Series (Lycoming)	Metal		X
	Beech 76 Series (Lycoming)	Metal	X	
	Beech 77 Series (Lycoming)	Metal	X	
	Beech 95 Series (Lycoming)	Metal	X	
	Beech 95 Series (Continental)	Metal		X
	Beech A23 Series (Continental)	Metal	X	
BERIEV	Beriev Be-103 (Continental)	Metal		X
B-N GROUP Ltd. (Britten- Norman)	Britten-Norman BN.2A Mark III (Lycoming)	Metal		X
	Britten-Norman BN2A Series (Lycoming)	Metal		X
	Britten-Norman BN2B Series (Lycoming)	Metal		X
CEAPR	Robin ATL / ATL S (JPX 4T60)	Wood/Composite	X	
	Robin ATL L (Limbach L2000)	Wood/Composite	X	
	Robin DR 220 series (Continental)	Wood	X	
	Robin DR 221 series (Lycoming)	Wood	X	
	Robin DR 250 series (Lycoming)	Wood	X	
	Robin DR 300 series (Lycoming)	Wood	X	
	Robin DR 400 series (Lycoming)	Wood	X	
	Robin DR 400 Series (Technify)	Wood	X	
	Robin DR 400RP (Porsche)	Wood	X	
	Robin HR 100 series (Continental)	Metal	X	
	Robin HR 100 series (Lycoming)	Metal	X	
	Robin R 1180 series (Lycoming)	Metal	X	
	Robin R 3000 series (Lycoming)	Metal	X	



CESSNA AIRCRAFT Company	Cessna 175 Series (Continental)	Metal	X	
	Cessna 177 Series (Lycoming)	Metal	X	
	Cessna 180 Series (Continental)	Metal	X	
	Cessna 185 Series (Continental)	Metal	X	
	Cessna 188 (Continental)	Metal	X	
	Cessna 206 Series (Continental)	Metal	X	
	Cessna 206 Series (Lycoming)	Metal	X	
	Cessna 207 Series (Continental)	Metal	X	
	Cessna 210 Series (Continental)	Metal	X	
	Cessna P210 (Continental)	Metal/Pressurised	X	
	Cessna 310/320 Series (Continental)	Metal		X
	Cessna 321 (Continental)	Metal	X	
	Cessna 335 (Continental)	Metal/Pressurised		X
	Cessna 336 (Continental)	Metal	X	X
	Cessna 340 (Continental)	Metal		X
	Cessna T303 (Continental)	Metal	X	
	Cessna/Reims-Cessna 150/F150 Series (Continental)	Metal	X	
	Cessna/Reims-Cessna 152/F152 Series (Lycoming)	Metal	X	
	Cessna/Reims-Cessna 172/F172 Series (Continental)	Metal	X	
	Cessna/Reims-Cessna 172/F172 Series (Lycoming)	Metal	X	
	Cessna/Reims-Cessna 182/F182 Series (Continental)	Metal	X	
	Cessna/Reims-Cessna 182/F182 Series (Lycoming)	Metal	X	
	Cessna/Reims-Cessna 182/F182 Series (SMA)	Metal	X	
	Cessna/Reims-Cessna 337 Series (Continental) (not pressurised)	Metal		X
	Cessna/Reims-Cessna 337 Series (Continental) (pressurised)	Metal/Pressurised		X
	Cessna C300/C350/C400 (Continental)	Composite	X	
CIRRUS Design Corporation	Cirrus SR20/SR22/SR22T Series (Continental)	Composite		
COMMANDER PREMIER AIRCRAFT CO.	Commander 112 (Lycoming)	Metal	X	
	Commander 114 (Lycoming)	Metal	X	
Czech Sport Aircraft a.s.	Czech Sport PS-28 (Rotax)	Metal	X	
DE HAVILLAND Support	Beagle B.121 series 1 (Continental)	Metal	X	
	Beagle B.121 series 2/3 (Lycoming)	Metal	X	



DECOURT (Aircraft with SAS)	Decourt DMS 884 (Franklin)	Wood	X	
DIAMOND AIRCRAFT Industries	Diamond DA20 (Continental)	Composite	X	
	Diamond DA20/DV20 (Rotax)	Composite	X	
	Diamond DA40 (Austro Engine)	Composite	X	
	Diamond DA40 (Lycoming)	Composite	X	
	Diamond DA40 D (Technify)	Composite	X	
	Diamond DA42 Series (Austro Engine)	Composite	X	
	Diamond DA42 Series (Technify)	Composite	X	
	Diamond DA62 (Austro Engine)	Composite	X	
DYNAC AEROSPACE Corporation	Aerocommander 100 (Lycoming)	Metal	X	
EADS Deutschland Military Air Syst.	Bölkow BO 208 (Continental)	Metal	X	
	Bölkow BO 209 (Lycoming)	Metal	X	
	Bölkow BO 207 (Lycoming)	Wood	X	
	SIAT 223 (Lycoming)	Metal	X	

EADS PZL "WARSZAWA-OKECIE"	PZL-104 Wilga (Lycoming)	Metal	X	
	PZL-104 Wilga Series (PZL)	Metal	X	
	PZL-104A Wilga (Ivchenko)	Metal	X	
	PZL-110 Koliber (Franklin)	Metal	X	
	PZL – Koliber 150 series (Lycoming)	Metal	X	
	PZL – Koliber 160 (Lycoming)	Metal	X	
EADS PZL "WARSZAWA-OKECIE" (Aircraft with SAS)	PZL-106 Wilga (PZL)	Metal		X
EIS GmbH	RS 180 (Lycoming)	Wood	X	
EVEKTOR	Evektor EV-97 (Rotax)	Metal	X	
	Sportstar RTC (Rotax)	Metal	X	
EXTRA Flugzeugproduktions- und Vertriebs-GmbH	Extra EA-200/300 Series (Lycoming)	Composite	X	
	Extra EA-400 (Continental)	Composite/Pressurised	X	
FFA ALTENRHEIN	AS202 Series (Lycoming)	Metal	X	
FFT GYROFLUG (Aircraft with SAS)	SC01 Series (Lycoming)	Composite	X	
Flight Design GmbH	CTLS-ELA (Rotax)	Composite	X	
FLS AEROSPACE	Club Sprint/Sprint 160 (Lycoming)	Metal	X	
	OA7 Optica Series (Lycoming)	Metal	X	
Fournier, René	RF 47 (Limbach)	Wood	X	
	RF 6B (Continental)	Wood	X	
	RF 6B (Lycoming)	Wood	X	
FUJI Heavy Industries	Fuji FA-200 Series (Lycoming)	Metal	X	
GA8 Airvan Pty Ltd	Gippsland GA8 (Lycoming)	Metal	X	



GARDAN (Aircraft with SAS)	Gardan GY 80 (Lycoming)	Metal	X	
GENERAL AVIA Costruzioni Aeronautiche (Aircraft with SAS)	General Avia F.22 (Lycoming)	Metal	X	
	General Avia F20 Series (Lycoming)	Metal		X
Bernd Hager/Anatoli Stobbe GbR	Ruschmeyer R90-230RG (Lycoming)	Composite	X	
GROB Aircraft AG	Grob G115/120 Series (Lycoming)	Composite	X	
Hoffmann GmbH & Co. KG	H 40 (Lycoming)	Composite	X	
Magnaghi Aeronautica S.p.A INIZIATIVE INDUSTRIALI ITALIANE	III Sky Arrow 650/710 (Rotax)	Composite	X	
INSTYTUT LOTNICTWA	Instytut Lotnictwa I-23 Manager (Lycoming)	Composite	X	
INTERCEPTOR AIRCRAFT Corp.	Aerocommander 200 (Continental)	Metal	X	
ISSOIRE AVIATION	Issoire APM 20/30 (Rotax)	Composite	X	
	Issoire APM 40 (Continental)	Composite	X	
LAVIA ARGENTINA S.A. (LAVIASA)	Piper PA-25 Series (Lycoming)	Metal tubing fabric	X	
LIBERTY AEROSPACE Incorporated	Liberty XL-2 (Continental)	Composite	X	
MAULE AEROSPACE TECHNOLOGY	Maule M4 (Continental)	Metal tubing fabric	X	
	Maule M4 (Franklin)	Metal tubing fabric	X	
	Maule M4 (Lycoming)	Metal tubing fabric	X	
	Maule M5 (Continental)	Metal tubing fabric	X	
	Maule M5 (Franklin)	Metal tubing fabric	X	
	Maule M5 (Lycoming)	Metal tubing fabric	X	
	Maule M6 (Lycoming)	Metal tubing fabric	X	
	Maule M7 Series (Lycoming)	Metal tubing fabric	X	
	Maule MX-7 (Lycoming)	Metal tubing fabric	X	
MOONEY AIRPLANE Company	Mooney M18L (Continental)	Metal/Wood	X	
	Mooney M20 (Continental)	Metal	X	
	Mooney M20/M20A (Lycoming)	Metal/Wood	X	
	Mooney M20B to M20S/M22 (Lycoming)	Metal	X	
NIPPER	Nipper T-66 (Stark)	Wood/Metal tubing Fabric	X	
OMA SUD SPA Sky Technologies	SKYCAR (Lycoming)	Metal	X	
PIAGGIO Aero Industries	Piaggio P166 (Lycoming)	Metal		X
PILATUS AIRCRAFT	Pilatus PC-6 Series (Lycoming)	Metal		X
PIPER AIRCRAFT	Piper PA-23 Aztec (Lycoming)	Metal	X	
	Piper PA-24 Series (Lycoming)	Metal	X	



	Piper PA-28 Series (Continental)	Metal	X	
	Piper PA-28 Series (Lycoming)	Metal	X	
	Piper PA-28 Series (Thielert)	Metal	X	
	Piper PA-30 Series (Lycoming)	Metal	X	
	Piper PA-31 Series (Lycoming)	Metal	X	
	Piper PA-31P (Lycoming)	Metal/Pressurised		X
	Piper PA-32 Series (Lycoming)	Metal		X
	Piper PA-34 Series (Continental)	Metal	X	
	Piper PA-34 Series (Lycoming)	Metal	X	
	Piper PA-36 Series (Continental)	Metal	X	
	Piper PA-36 Series (Lycoming)	Metal	X	
	Piper PA-38 Series (Lycoming)	Metal	X	
	Piper PA-39/40 Series (Lycoming)	Metal	X	
	Piper PA-44 Series (Lycoming)	Metal	X	
	Piper PA-46 Series Pressurised (Continental)	Metal/Pressurised	X	
	Piper PA-46 Pressurised (Lycoming)	Metal/Pressurised	X	
	Piper PA-46 Series (Lycoming)	Metal	X	
Polskie Zakłady Lotnicze Sp. z o. o.	PZL M 18 (PZL)	Metal		X
	PZL M 26 (Lycoming)	Metal	X	
Polskie Zakłady Lotnicze Sp. z o. o. (Aircraft with SAS)	PZL-M20 (PZL)	Metal		X
REVO, Inc	REVO C/LA-4 Series (Lycoming)	Metal	X	
RUAG AEROSPACE Services GmbH	Do 28 Series (Lycoming)	Metal		X
S.C.Constructii Aeronautice S.A	IAR-46 (Rotax)	Metal	X	
SCHEIBE Flugzeugbau	SF 23 Series (Continental)	Wood/Metal tubing Fabric	X	
SCHEIBE Flugzeugbau (Aircraft with SAS)	SF 23 Series (Lycoming)	Wood/Metal tubing Fabric	X	
SEASTAR CORP	TSC Series (Lycoming)	Composite	X	
SKY INTERNATIONAL	Aviat Husky A (Lycoming)	Metal	X	
	Pitts S-1 Series (Lycoming)	Wood/Metal tubing Fabric	X	
	Pitts S-2 Series (Lycoming)	Wood/Metal tubing Fabric	X	
Skyfox Aviation Ltd	CA25 Series (Rotax)	Wood/Metal tubing Fabric	X	
SLINGSBY Aviation	Slingsby T67A (Lycoming)	Wood/Metal tubing Fabric	X	
	Slingsby T67A/T67B/T67C/T67M Series (Lycoming)	Composite	X	
SOCATA (Aircraft with SAS)	SOCATA ST10 (Lycoming)	Metal	X	
SOCATA	Grumman GA-7 (Lycoming)	Metal	X	
	SOCATA MS 881 (Potez)	Metal	X	
	SOCATA MS 894/894/PZL Koliber (Franklin)	Metal	X	
	SOCATA Rallye Series (Continental)	Metal	X	



	SOCATA Rallye Series (Lycoming)	Metal	X	
	SOCATA TB Series (Lycoming)	Metal	X	
Sportavia Putzer (Aircraft with SAS)	Sportavia Putzer RS180 (Lycoming)	Wood/Composite	X	
STOL AIRCRAFT Corporation	Republic UC-1 (Lycoming)	Metal	X	
STEMME AG	Stemme ASP S15 (Rotax)	Composite	X	
SUKHOI	Sukhoi Su-29/31 (MGA)	Composite	X	
SUKHOI (Aircraft with SAS)	Sukhoi SU-29 (Vedeneyev)	Composite	X	
	Sukhoi SU-31 (Vedeneyev)	Composite	X	
Symphony Aircraft Industries inc.	Symphony OMF-100-160 (Lycoming)	Metal	X	
TAYLORCRAFT 2000	Taylorcraft 19 Series (Continental)	Wood/Metal tubing Fabric	X	
	Taylorcraft F21/F22 Series (Lycoming)	Wood/Metal tubing Fabric	X	
TECNAM Costruzioni Aeronautiche	Tecnam P2006T (Rotax)	Metal	X	
	Tecnam P92 (Rotax)	Metal	X	
	Tecnam P96/P2002/P2004 (Rotax)	Metal	X	
	Tecnam P2008 (Rotax)	Composite/Metal	X	
	Tecnam P2010 (Lycoming)	Composite/Metal	X	
THRUSH Aircraft	Ayres S2R (PW R-985)	Metal tubing Fabric	X	
TRUE FLIGHT Holdings	Grumman/American AA-1 Series (Lycoming)	Metal	X	
	Grumman/American AA-5 Series (Lycoming)	Metal	X	
TWIN COMMANDER AIRCRAFT Corporation	Commander 500 Series/680 Series (Lycoming)	Metal		X
	Commander 680P (Lycoming)	Metal/Pressurised		X
	Commander 685 (Continental)	Metal/Pressurised		X
	Rockwell 700 (Lycoming)	Metal/Pressurised		X
	Commander 720 (Lycoming)	Metal/Pressurised		X
VULCAIR	Partenavia P.64 (Lycoming)	Metal	X	
	Partenavia P.66 (Lycoming)	Metal	X	
	Vulcanair P.68 Series (Lycoming)	Metal	X	
WACO Aircraft Company	Waco YMF (Jacobs)	Wood/Metal tubing Fabric	X	
WACO Classic Aircraft Corp	Waco 2T Series (Lycoming)	Wood/Metal tubing Fabric	X	
WASSMER (Aircraft with SAS)	CERVA CE43 (Lycoming)	Metal	X	
	CERVA CE44 (Continental)	Metal	X	
	WA4/21 Series (Lycoming)	Wood/Metal tubing Fabric	X	
	WA40 Series (Lycoming)	Wood/Metal tubing Fabric	X	
	WA41 (Lycoming)	Wood/Metal tubing Fabric	X	
XtremeAir GmbH	XtremeAir XA42 (Lycoming)	Composite	X	
YAKOVLEV (Aircraft with SAS)	Yakovlev YAK-18T (Vedeneyev)	Metal	X	
ZAKLADY LOTNICZE	EM-11 (Lycoming)	Composite	X	



ZENAIR LTD	Zenair CH2000 (Lycoming)	Metal	X	
ZLIN AIRCRAFT (MORAVAN AVIATION)	Zlin Z-143 L (Lycoming)	Metal	X	
	Zlin Z-242 L (Lycoming)	Metal	X	
	Zlin Z-26 Series (Walter Minor/AVIA)	Metal	X	
	Zlin Z-42 Series (LOM)	Metal	X	
	Zlin Z-43 Series (LOM)	Metal	X	
	Zlin Z-50 Series (LOM)	Metal	X	
	Zlin Z-50L Series (Lycoming)	Metal	X	
	Zlin Z-526 L (Lycoming)	Metal	X	

STCs in AEROPLANES GROUP 3
PISTON-ENGINE AEROPLANES (Other than those in Group 1)

STC Holder	CAR 66 Type Rating Endorsement	Type of Structure	MTOM	
			2T and BELOW	ABOVE 2T
BARBARA AND ROBERT WILLIAMS	Cessna 150 Series (Lycoming)	Metal	X	
HOFFMAN GmbH & Co. KG	Cessna 150/A150/F150/FA150 (Rotax)	Metal	X	
LTB SAMMET GmbH	Cessna 150 (Rotax)	Metal	X	
PORSCHE AG	Cessna 182Q/F182Q (Porsche)	Metal	X	
SMA ENGINES INC.	Cessna 182Q/182R (SMA)	Metal	X	
SPERL TECHNIK & ENTWICKLUNGEN	Cessna 150/A150/F150/FA150 (Rotax)	Metal	X	
TECHNIGY MOTORS GmbH	Robin DR 400 (Technify)	Wood	X	
	Cessna 172/F172 (Technify)	Metal	X	
	Piper PA-28-140/150/151/160/161/180/181 (Technify)	Metal	X	
	Cirrus SR22 (Technify)	Composite	X	
	Cirrus 206 (Technify)	Metal	X	



APPENDIX II to AMC to CAR 66

AIRCRAFT TYPE PRACTICAL EXPERIENCE AND ON-JOB-EXPERIENCE– LIST OF TASKS

Time limits/Maintenance checks

100 hour check (general aviation aircraft).

“B” or “C” check (transport category aircraft).

Assist carrying out a scheduled maintenance check i.a.w. AMM.

Review aircraft maintenance log for correct completion.

Review records for compliance with Airworthiness Directives.

Review records for compliance with component life limits.

Procedure for inspection following heavy landing.

Procedure for inspection following lightning strike.

Dimensions/Areas

Locate components(s) by zone station number.

Perform symmetry check.

Lifting and Shoring

Assist in:

Jack aircraft nose or tail wheel.

Jack complete aircraft.

Sling or trestle major component.

Levelling/Weighing

Level aircraft.

Weigh aircraft.

Prepare weight and balance amendment.

Check aircraft against equipment list.

Towing and Taxiing

Prepare for aircraft towing.

Tow aircraft.

Be part of aircraft towing team.

Parking and Mooring

Tie down aircraft.

Park, secure and cover aircraft.

Position aircraft dock.

Secure rotor blades.

Placards and Marking

Check aircraft for correct placards.

Check aircraft for correct markings.



Servicing

Refuel aircraft. Defuel aircraft.
Carry out tank to tank fuel transfer.
Check/adjust tire pressures.
Check/replenish oil level.
Check/replenish hydraulic fluid level.
Check/replenish accumulator pressure.
Charge pneumatic system.
Grease aircraft.
Connect ground power.
Service toilet/potable water system.
Perform preflight/daily check.

Vibration and Noise Analysis

Analyse helicopter vibration problem.
Analyse noise spectrum.
Analyse engine vibration.

Air Conditioning

Replace combustion heater.
Replace flow control valve.
Replace outflow valve.
Replace safety valve.
Replace vapour cycle unit.
Replace air cycle unit.
Replace cabin blower.
Replace heat exchanger.
Replace pressurisation controller. Clean outflow valves.
Deactivate/reactivate cargo isolation valve.
Deactivate/reactivate avionics ventilation components.
Check operation of air conditioning/heating system.
Check operation of pressurisation system.
Troubleshoot faulty system.

Auto flight

Install servos.
Rig bridle cables.
Replace controller.
Replace amplifier.
Replacement of the auto flight system LRUs for fly-by-wire aircraft.
Check operation of auto-pilot.
Check operation of auto-throttle/auto-thrust.
Check operation of yaw damper.
Check and adjust servo clutch.
Perform autopilot gain adjustments.



Perform mach trim functional check.
Troubleshoot faulty system.
Check autoland system.
Check flight management systems.
Check stability augmentation system.

Communications

Replace VHF com unit.
Replace HF com unit.
Replace existing antenna.
Replace static discharge wicks.
Check operation of radios.
Perform antenna VSWR check.
Perform Selcal operational check.
Perform operational check of passenger address system.
Functionally check audio integrating system.
Repair coaxial cable.
Troubleshoot faulty system.

Electrical Power

Charge lead/acid battery.
Charge Ni-Cad battery.
Check battery capacity.
Deep-cycle Ni-Cad battery.
Replace integrated drive/generator/alternator.
Replace switches.
Replace circuit breakers.
Adjust voltage regulator.
Change voltage regulator.
Amend electrical load analysis report.
Repair/replace electrical feeder cable.
Perform functional check of integrated drive/generator/alternator.
Perform functional check of voltage regulator.
Perform functional check of emergency generation system.

Equipment/Furnishings

Replace carpets.
Replace crew seats.
Replace passenger seats.
Check inertia reels.
Check seats/belts for security.
Check emergency equipment.
Check ELT for compliance with regulations.
Repair toilet waste container.
Remove and install ceiling and sidewall panels.
Repair upholstery.
Change cabin configuration.
Replace cargo loading system actuator.



Test cargo loading system.
Replace escape slides/ropes.

Fire protection

Check fire bottle contents.
Check/test operation of fire/smoke detection and warning system.
Check cabin fire extinguisher contents.
Check lavatory smoke detector system.
Check cargo panel sealing.
Install new fire bottle.
Replace fire bottle squib.
Troubleshoot faulty system.
Inspect engine fire wire detection systems.

Flight Controls

Inspect primary flight controls and related components i.a.w. AMM.
Extending/retracting flaps & slats.
Replace horizontal stabiliser. Replace spoiler/lift damper.
Replace elevator.
Deactivation/reactivation of aileron servo control.
Replace aileron.
Replace rudder.
Replace trim tabs.
Install control cable and fittings.
Replace slats.
Replace flaps.
Replace powered flying control unit.
Replace flat actuator.
Rig primary flight controls.
Adjust trim tab.
Adjust control cable tension.
Check control range and direction of movement.
Check for correct assembly and locking.
Troubleshoot faulty system.
Functional test of primary flight controls.
Functional test of flap system.
Operational test of the side stick assembly.
Operational test of the THS.
THS system wear check.

Fuel

Water drain system (operation).
Replace booster pump.
Replace fuel selector.
Replace fuel tank cells.
Replace/test fuel control valves.
Replace magnetic fuel level indicators.
Replace water drain valve.



Check/calculate fuel contents manually.
Check filters.
Flow check system.
Check calibration of fuel quantity gauges.
Check operation feed/selectors.
Check operation of fuel dump/jettison system.
Fuel transfer between tanks.
Pressure defuel.
Pressure refuel (manual control).
Deactivation/reactivation of the fuel valves (transfer defuel, X-feed, refuel).
Troubleshoot faulty system.

Hydraulics

Replace engine-driven pump.
Check/replace case drain filter.
Replace standby pump.
Replace hydraulic motor pump/generator.
Replace accumulator.
Check operation of shut off valve.
Check filters/clog indicators.
Check indicating systems.
Perform functional checks.
Pressurisation/depressurisation of the hydraulic system.
Power Transfer Unit (PTU) operation.
Replacement of PTU.
Troubleshoot faulty system.

Ice and rain protection

Replace pump.
Replace timer.
Inspect repair propeller deice boot.
Test propeller de-icing system.
Inspect/test wing leading edge de-icer boot.
Replace anti-ice/deice valve.
Install wiper motor.
Check operation of systems.
Operational test of the pitot-probe ice protection.
Operational test of the TAT ice protection.
Operational test of the wing ice protection system.
Assistance to the operational test of the engine air-intake ice protection (with engines operating).
Troubleshoot faulty system.

Indicating/recording systems

Replace flight data recorder.



Replace cockpit voice recorder.
Replace clock.
Replace master caution unit.
Replace FDR.
Perform FDR data retrieval.
Troubleshoot faulty system.
Implement ESDS procedures.
Inspect for HIRF requirements.
Start/stop EIS procedure.
Bite test of the CFDIU.
Ground scanning of the central warning system.

Landing Gear

Build up wheel.
Replace main wheel.
Replace nose wheel.
Replace steering actuator.
Replace truck tilt actuator.
Replace uplock/downlock assembly.
Replace shimmy damper.
Rig nose wheel steering.
Functional test of the nose wheel steering system.
Replace shock strut seals.
Servicing of shock strut.
Replace brake unit.
Replace brake control valve.
Bleed brakes.
Replace brake fan.
Test anti skid unit.
Test gear retraction.
Change bungees.
Adjust micro switches/sensors.
Charge struts with oil and air.
Troubleshoot faulty system.
Test auto-brake system.
Replace rotorcraft skids.
Replace rotorcraft skid shoes.
Pack and check floats.
Flotation equipment.
Check/test emergency blowdown (emergency landing gear extension).
Operational test of the landing gear doors.

Lights

Repair/replace rotating beacon.
Repair/replace landing lights.
Repair/replace navigation lights.



Repair/replace interior lights.
Replace ice inspection lights.
Repair/replace logo lights.
Repair/replace emergency lighting system.
Perform emergency lighting system checks.
Troubleshoot faulty system.

Navigation

Calibrate magnetic direction indicator.
Replace airspeed indicator.
Replace altimeter.
Replace air data computer.
Replace VOR unit.
Replace ADI.
Replace HSI.
Check pitot static system for leaks.
Check operation of directional gyro.
Functional check weather radar.
Functional check doppler.
Functional check TCAS.
Functional check DME.
Functional check ATC Transponder.
Functional check flight director system.
Functional check inertial nav system.
Complete quadrantal error correction of ADF system.
Update flight management system database.
Check calibration of pitot static instruments.
Check calibration of pressure altitude reporting system.
Troubleshoot faulty system.
Check marker systems.
Compass replacement direct/indirect.
Check Satcom.
Check GPS.
Test AVM.

Oxygen

Inspect on-board oxygen equipment.
Purge and recharge oxygen system.
Replace regulator.
Replace oxygen generator.
Test crew oxygen system.
Perform auto oxygen system deployment check.
Troubleshoot faulty system.

Pneumatic systems

Replace filter.
Replace air shut off valve.
Replace pressure regulating valve.
Replace compressor.
Recharge dessicator.



Adjust regulator.
Check for leaks.
Troubleshoot faulty system.

Vacuum systems

Inspect the vacuum system i.a.w. AMM.
Replace vacuum pump. Check/replace filters.
Adjust regulator.
Troubleshoot faulty system.

Water/Waste

Replace water pump.
Replace tap.
Replace toilet pump.
Perform water heater functional check.
Troubleshoot faulty system.
Inspect waste bin flap closure.

Central Maintenance System

Retrieve data from CMU.
Replace CMU.
Perform Bite check.
Troubleshoot faulty system.

Airborne Auxiliary power

Install APU.
Inspect hot section.
Troubleshoot faulty system.

Structures

Assessment of damage.
Sheet metal repair.
Fibre glass repair.
Wooden repair.
Fabric repair.
Recover fabric control surface.
Treat corrosion.
Apply protective treatment.

Doors

Inspect passenger door i.a.w. AMM.
Rig/adjust locking mechanism.
Adjust air stair system.
Check operation of emergency exits.
Test door warning system.
Troubleshoot faulty system.
Remove and install passenger door i.a.w. AMM. Remove and install emergency exit i.a.w. AMM.
Inspect cargo door i.a.w. AMM.

Windows



Replace windshield.
Replace direct vision window.
Replace cabin window.
Repair transparency.

Wings

Skin repair.
Recover fabric wing.
Replace tip.
Replace rib.
Replace integral fuel tank panel.
Check incidence/rig.

Propeller

Assemble prop after transportation.
Replace propeller.
Replace governor. Adjust governor.
Perform static functional checks.
Check operation during ground run.
Check track.
Check setting of micro switches.
Assessment of blade damage i.a.w. AMM.
Dynamically balance prop.
Troubleshoot faulty system.

Main Rotors

Install rotor assembly.
Replace blades.
Replace damper assembly.
Check track.
Check static balance.
Check dynamic balance.
Troubleshoot.

Rotor Drive

Replace mast.
Replace drive coupling.
Replace clutch/freewheel unit.
Replace drive belt.
Install main gearbox.
Overhaul main gearbox.
Check gearbox chip detectors.

Tail Rotors

Install rotor assembly.
Replace blades.
Troubleshoot.

Tail Rotor Drive

Replace bevel gearbox.



Replace universal joints.
Overhaul bevel gearbox.
Install drive assembly.
Check chip detectors.
Check/install bearings and hangers.
Check/service/assemble flexible couplings.
Check alignment of drive shafts.
Install and rig drive shafts.

Rotorcraft flight controls

Install swash plate.
Install mixing box.
Adjust pitch links.
Rig collective system.
Rig cyclic system.
Rig anti-torque system.
Check controls for assembly and locking.
Check controls for operation and sense.
Check controls for operation and sense.
Troubleshoot faulty system.

Power Plant

Build up ECU.
Replace engine.
Repair cooling baffles.
Repair cowling.
Adjust cowl flaps.
Repair faulty wiring.
Troubleshoot.
Assist in dry motoring check.
Assist in wet motoring check.
Assist in engine start (manual mode).

Piston Engines

Remove/install reduction gear.
Check crankshaft run-out.
Check tappet clearance.
Check compression.
Extract broken stud.
Install helicoil.
Perform ground run.
Establish/check reference RPM.
Troubleshoot.

Turbine Engines

Replace module.
Replace fan blade.
Hot section inspection/boroscope check.
Carry out engine/compressor wash.
Carry out engine dry cycle.



Engine ground run.
Establish reference power.
Trend monitoring/gas path analysis.
Troubleshoot.

Fuel and control, piston

Replace engine driven pump.
Adjust AMC.
Adjust ABC.
Install carburettor/injector.
Adjust carburettor/injector.
Clean injector nozzles.
Replace primer line.
Check carburettor float setting.
Troubleshoot faulty system.

Fuel and control, turbine

Replace FCU.
Replace Engine Electronic Control Unit (FADEC).
Replace Fuel Metering Unit (FADEC).
Replace engine driven pump.
Clean/test fuel nozzles.
Clean/replace filters.
Adjust FCU.
Troubleshoot faulty system.
Functional test of FADEC.

Ignition systems, piston

Change magneto.
Change ignition vibrator
Change plugs.
Test plugs.
Check H.T. leads.
Install new leads.
Check timing.
Check system bonding.
Troubleshoot faulty system.

Ignition systems, turbine

Perform functional test of the ignition system.
Check glow plugs/ignitors.
Check H.T. leads.
Check ignition unit.
Replace ignition unit.
Troubleshoot faulty system.

Engine Controls

Rig thrust lever.
Rig RPM control.
Rig mixture HP cock lever.



Rig power lever.
Check control sync (multi-eng).
Check controls for correct assembly and locking.
Check controls for range and direction of movement.
Adjust pedestal micro-switches.
Troubleshoot faulty system.

Engine Indicating

Replace engine instruments(s).
Replace oil temperature bulb.
Replace thermocouples.
Check calibration.
Troubleshoot faulty system.

Exhaust, piston

Replace exhaust gasket.
Inspect welded repair.
Pressure check cabin heater muff.
Troubleshoot faulty system.

Exhaust, turbine

Change jet pipe.
Change shroud assembly.
Install trimmers.
Inspect/replace thrust reverser.
Replace thrust reverser component.
Deactivate/reactivate thrust reverser.
Operational test of the thrust reverser system.

Oil

Change oil.
Check filter(s).
Adjust pressure relief valve.
Replace oil tank.
Replace oil pump.
Replace oil cooler.
Replace firewall shut off valve.
Perform oil dilution test.
Troubleshoot faulty system.

Starting

Replace starter.
Replace start relay.
Replace start control valve.
Check cranking speed.
Troubleshoot faulty system.

Turbines, piston engines

Replace PRT.
Replace turbo-blower.



Replace heat shields.
Replace waste gate.
Adjust density controller.

Engine water injection

Replace water/methanol pump.
Flow check water/methanol system.
Adjust water/methanol control unit.
Check fluid for quality.
Troubleshoot faulty system.

Accessory gear boxes

Replace gearbox.
Replace drive shaft.
Inspect magnetic chip detector.

APU

Removal/installation of the APU.
Removal/installation of the inlet guide-vane actuator.
Operational test of the APU emergency shut-down tes

SPECIFIC TASK FOR HOT AIR BALLOONS

TASKS	Hot Air Balloon
General Activities:	
Functionality test of aircraft	X
Placard check or replace	X
Documentation annual inspection, repair, AD's, equipment	X
Classification repair	X
Weighing:	
Weighing and weighing report	X
Servicing:	
Lubrication of controls when applicable	
Cleaning envelope, basket, burner	X
Inspections:	
Eight annual inspections of different types	X
Five annual inspections of different types	
Three annual inspections of different types	
Two annual inspections of different types	
Strength test of envelope fabric	X



Flight Control Systems – Removal, Inspection, Re-installation:	
Control surface cable	
Trim system	
Safeguarding of pins, screws, castellated nut	
Stick and pedals	
Hydro/mechanical control systems	
Ballonet control systems	
Electrical control systems	
Valves (gas valve, turning vent, parachute or rip panel)	X
Control and shroud lines and pulleys	X
Elevator – stabilizer (including balancing if applicable)	
Rudder (including balancing if applicable)	
Drag rope	
Electrical System:	
Removal – installation of electrical wires	
Removal – installation of electrical components	
Servicing of batteries	X
Communication System – Transponder:	
Removal – installation COM	X
Removal – installation NAV	
Removal – installation XPDR	X
Installation of antenna	X
Replacement of antenna cable	X

Cabin – Equipment:	
Pitot/static systems – tubes removal – installation – replacement	
Flight instruments removal – installation – replacement	X
Installation of an approved system	X
Magnetic compass installation – compensation	
Fire extinguisher	X
Ballast – Replacement of:	
Water ballast (when applicable)	
Valves – inspection and rigging of valves	
Envelopes:	
Inspection and repair of envelope panels/gores/seams	X
Inspection and repair of load tapes and attachment points	X
Inspection and repair of deflation system	X
Inspection and repair of net	
Inspection and repair of mooring line	
Electrostatic conductivity test (if type is approved for hydrogen)	
Ballonet inspection and repair	
Inspection and fabrication of a suspension cable or rope	X
Inspection and fabrication of a catena	
Load Ring/Frame:	
Crack detection (welded and machined parts)	X
Heater System:	
Removal, inspection and re-installation	X
Inspection and cleaning of vaporizer and filter	X
Inspection and replacement of hoses	X



Inspection and replacement of pilot flame ignition unit	X
Sealing of fittings	X
Pressure and leak test	X
Disassembly and assembly of fuel cell	X
10 year inspection of fuel cell	X
Basket/Gondola:	
Removal, inspection and re-installation (as applicable)	X
Inspection and fabrication of suspension cable or rope	X
Removal - installation of padding	X
Removal - installation of belts – safety harness	X
Removal – installation of essential elements of the cabin	X
Inspection and fabrication of a basket wire	X
Inspection of operational equipment and its fixation points	X
Crack detection and repair (welded parts and frames)	X
Landing Gear:	
Removal – inspection and re-installation of wheels	
Removal – inspection and re-installation of brakes	
Removal – inspection and re-installation of shock absorber	
Fuel – Engine – Propeller – Engine Instrument Systems:	
Refer to tasks in blocks for aeroplanes	

Wood Structure:	
Structure repair	X
Protective clothing	X
Composite Structure:	
Laminate repair	
Sandwich structure repair	
Metal Structure:	
Crack detection (welding and machined parts)	X
Riveting jobs	
Bonding of structures	
Anti-corrosion treatment	
Repair of fairings	



APPENDIX III to AMC to CAR 66

EVALUATION OF THE COMPETENCE ASSESSMENT AND ASSESSORS

This Appendix applies to the competence assessment performed by the designated assessors (and their qualifications).

1. What does “competence” mean and areas of focus for assessment

The assessment should aim at measuring the competence by evaluating three major factors associated to the learning objectives:

- Knowledge;
- Skills;
- Attitude.

Generally, knowledge is evaluated by examination. The purpose of this document is not to describe the examination process: this material mainly addresses the evaluation of “skills” and “attitude” after training containing practical elements. Nevertheless, the trainee needs to demonstrate sufficient knowledge to perform the required tasks.

“Attitude” is indivisible from the “skill” as this greatly contributes to the safe performance of the tasks.

The evaluation of the competence should be based on the learning objectives of the training, in particular:

- the (observable) desired performance. This covers what the trainee is expected to be able to do and how the trainee is expected to behave at the end of the training;
- the (measurable) performance standard that must be attained to confirm the trainee’s level of competence in the form of tolerances, constraints, limits, performance rates or qualitative statements; and
- the conditions under which the trainee will demonstrate competence. Conditions consist of the training methods, the environmental, situational and regulatory factors.

The assessment should focus on the competencies relevant to the aircraft type and its maintenance including, but not limited to:

- Environmental awareness (act safely, apply safety precautions and prevent dangerous situations);
- Systems integration (demonstrate understanding of aircraft systems interaction – identify, describe, explain, plan, execute);
- Knowledge and understanding of areas requiring special emphasis or novelty (areas peculiar to the aircraft type, domains not covered by CAR 66 Appendix I, practical training elements that cannot be imparted through simulation devices, etc.);
- Using reports and indications (the ability to read and interpret);
- Aircraft documentation finding and handling (identify the appropriate aircraft documentation, navigate, execute and obey the prescribed maintenance procedures);



- Perform maintenance actions (demonstrate safe handling of aircraft, engines, components and tools);
- Aircraft final/close-up and report (apply close up, initiate appropriate actions/follow-up/ records of testing, establish and sign maintenance records/logbooks).

2. How to assess

As far as feasible, the objectives of the assessment should be associated with the learning objectives and the passing level; it means that observable criteria should be set to measure the performance and should remain as objective as possible.

The general characteristics of effective assessment are: objective, flexible, acceptable, comprehensive, constructive, organised and thoughtful. At the conclusion, the trainee should have no doubt about what he/she did well, what he/she did poorly and how he/she can improve.

The following is a non-exhaustive list of questions that may be posed to assist the assessment:

- What are the success factors for the job?
- What are typical characteristics of a correct behavior for the task?
- What criteria should be observed?
- What level of expertise is expected?
- Is there any standard available?
- What is the pass mark? For example:
 - “Go-no go” situation;
 - How to allocate points? Minimum amount to succeed;
 - “Must know or execute” versus “Good to know or execute” versus “Don’t expect the candidate to be an expert”.
- Minimum or maximum time to achieve? Use time effectively and efficiently.
- What if the trainee fails? How many times is the trainee allowed to fail?
- When and how should the trainee be prepared for the assessment?
- What proportion of judgment by the instructor out of collaboration with the trainee is needed during the evaluation stage?

The assessment may be:

- Diagnostic (prior to a course), formative (reorientate the course on areas where there is a need to reinforce) or summative (partial or final evaluation);
- Performed task-by-task, as a group of tasks or as a final assessment.

One method might be an initial assessment to be performed by the trainee himself/herself, then discussing areas where the perceptions of the trainee’s performance by the assessors differ in order to:

- Develop the self-assessment habits;
- Make the assessment more acceptable and understandable to both parties.



A “box-ticking” exercise would be pointless. Experience has shown that assessment sheets have largely evolved over time into assessment of groups of “skills” because in practice such things eventually detracted from the training and assessment that it was intended to serve: evaluate at a point of time, encourage and orientate the training needs, improve safety and ultimately qualify people for their duties.

In addition, many other aspects should be appropriately considered during the assessment process such as stress and environmental conditions, difficulty of the test, history of evaluation (such as tangible progresses or sudden and unexpected poor performance made by the trainee), amount of time necessary to build competence, etc.

All these reasons place more emphasis on the assessor and highlight the function of the organisation’s approval.



APPENDIX 1 TO GM 66.50(C) - LIMITATIONS

1. Detailed in the following table is a list of current limitations applicable to the holder of a GCAA CAR 66 licence. The table contains information on the basis for these limitations, the implications to the scope of the certifying engineer's responsibilities and details of how they may be removed.
2. For those wanting to remove limitations and hold a non-restricted CAR 66 licence, it will be necessary for the applicant to sit the appropriate examination, and where necessary, demonstrate appropriate experience relevant to the knowledge required to remove the limitation. The process for removal of limitations given below only refers to the specific limitation stated and does not address the removal of a combination of limitations.
3. Licence holders must apply for the removal of all limitations from the basic category in a single application.
4. The addition of another category (B1-2, B2 etc) to a CAR 66 licence will require the applicant to remove the limitations applied to their existing licence prior to the addition being granted. However, the existing licence may be extended with an additional type rating without the need to lift the limitations. Any new type added would have the same limitations added that apply to the basic licence categories.
5. Where a limitation is shown against the basic licence category, the limitation also applies to the type rating.

Limitation No		Reason/applicability	Implications	Requirements for removal of limitation
1.	Excluding electrical power generation & distribution system.	Applied to both B1 and B2 licence holders who did not already hold GCAA 'X' Electrical, or held no Certification privileges on aircraft below 5700kg.	No privileges to certify electrical work including removal/replacement/testing of any electrical component such as pressure transducers, heat sensing etc.	For Basic; Part exams in modules 3 (3.9 – 3.18), 7 (7.7), 11 (11.5, 11.6 and 11.14) plus full module 4. Plus Experience. (90 days minimum) For Type; Training on all mechanical/electrical systems to level 3 for B1. Training on all avionics electrical systems for B2. Plus experience (90 days minimum).
2.	Excluding instrument systems, INS/IRS and flight director systems.	Applied to B2 licence holders where GCAA "X" Instruments was not already held.	No privileges to certify instrument systems or flight directors in autopilot systems. This is in addition to limitations 3 & 4.	Limitation 2 not issued in isolation. Examination requirements to remove limitation are incorporated with other associated limitations.
3.	Excluding autopilot systems on Aeroplanes.	Applied to B2 licence where GCAA "X" Autopilot Aeroplanes was not already held.	No privileges to certify autopilot systems on Aeroplanes.	Limitation 3 not issued in isolation. Examination requirements to remove limitation are incorporated with other associated limitations.
4.	Excluding autopilot systems on helicopters.	Applied to B2 licence only where GCAA "X" autopilot rotorcraft was not already held.	No privileges to certify autopilot systems on Rotorcraft.	Examination in Part Module 13 (13.1, 13.3) required. No experience requirement.
5.	Excluding automatic landing and auto-throttle systems on aeroplanes.	Applied to B2 licence only where GCAA Combined category was not already held.	No privileges to certify auto-land and auto-throttle systems.	Examination in Part Module 13 (13.3,) 13.20, 13.21 and 13.22 for basic, and the appropriate systems for type rating. Plus experience (90 days minimum).

6.	Excluding radio Comm/Nav and radar systems.	Applied to a B2 licence where GCAA Radio Comm/Nav and Radio Radar were not already held.	No privilege to certify Comm/Nav/Radio/Radar Systems.	Examination in Part Module 13 (13.4, 13.6 13.8, 13.20, 13.21 and 13.22,) for basic, and the appropriate systems for type rating. Plus experience (180 days minimum).
7.	Excluding radio radar system.	Applied to a B2 licence where GCAA Radio Radar was not already held.	No privileges to certify Primary or Secondary Radar systems.	Examination in Part Module 13 (13.4, 13.20, 13.21 and 13.22) for basic, and the appropriate systems for type rating. Plus experience. (90 days minimum).
8.	NOT IN USE			
9.	Excluding avionics LRUs.	Applied to a B1 licence where an avionic extension authorisation was not already held.	No privilege to certify Avionics Systems.	Examination in full Module 5. For type rating, training in the avionics disciplines of the appropriate type course. Plus experience (10 days minimum).
10.	Excluding airframe.	Applied to B1 licence where GCAA 'Aeroplanes' or 'Rotorcraft' licence was not already held.	No privilege to certify Airframe Structure or Mechanical systems.	For Basic: Examination in Module 11A for B1.1 Module 11B for B1.2 Plus experience. (180 days minimum) For type rating; training in the airframe and systems elements of appropriate type. For a group rating oral examination on the aircraft groups or sub groups.
11.	Excluding engine.	Applied to B1 licence where GCAA 'Engine' licence was not already held.	No privileges to certify engine or engine/airframe interface.	For Basic; Examination in Module 15 and 17 for B1.1 Module 16 and 17 for B1.2 Plus experience. (180 days minimum) For type rating; training in the engine and airframe/engine interface or for non-complex types, oral examination.

12.	Excluding all pressurised Aeroplanes.	Applied to B1.2 licence where GCAA 'Airframe' licence excluded pressurised aeroplane structures.	No privileges to certify pressurised aeroplanes structures within any type-rating group.	Full module 11A for Category B1. 1 Full Module 11B for Category B1.2 Plus experience. (180 days minimum) For type rating; for non-complex types, oral examination.
13.	NOT IN USE			
14.	Excluding pressurised aeroplanes above 5700kg MTOM.	Applied to B1 licence where GCAA Aeroplanes 2 licence was not previously held.	No privileges to certify the structure or mechanical systems on aeroplanes with MTOA of >5700kg.	Examination in Part Module 11A (11.2, 11.3 and 11.4). Plus appropriate experience (180 days minimum).
15.	Excluding supercharged piston engines in aeroplanes.	Applied to B1.2 licence where GCAA engine licence excluded supercharged engines and variable pitch propellers.	No privileges to certify supercharged / turbocharged piston engines or Variable pitch propellers.	Examination in Part Module 16 (16.7) plus appropriate experience (90 days minimum).
16.	Excluding navigational and Electronic instrument systems, FDR, GPWS and vibration monitoring systems.	Applied to B2 licence where GCAA 'X' Instrument licence was not already held.	No privileges to certify electronic instrument systems, FDR. GPWS or vibration monitoring equipment.	Examination in Part Module 13 (13.4, 13.6 and 13.8, 13.20, 13.21 and 13.22) plus appropriate experience (90 days minimum) for basic licence and completion of appropriate type training for type rating.
17.	Excluding radio-coupled autopilot systems in aeroplanes.	Applied to B2 licence where GCAA 'X' Autopilot Aeroplanes was not already held.	No privilege to certify radio-coupled autopilot systems on aeroplanes.	Examination in Part Module 13 (13.3, 13.20, 13.21 and 13.22) plus appropriate experience (30 days minimum) For type rating; training in the radio-coupled autopilot systems appropriate to type.

18.	Excluding radio coupled autopilot systems in helicopters.	Applied to B2 licence where GCAA 'X' Autopilot Helicopters was not already held.	No privilege to certify radio-coupled autopilot systems on rotorcraft.	Examination in Part Module 13 (13.3) and appropriate experience (30 days minimum) For type rating, training in the radio coupled autopilot systems appropriate to type.
19.	Excluding all tasks with the exception of compass compensation and adjustment only.	To be deleted	To be deleted	To be deleted
20.	Excluding propeller-turbine engines.	Applied to Category B1.1 licence where a GCAA engine licence excluded 'Turbo propeller engines'.	No privilege to certify propeller, propeller controls or engine/propeller interface.	Examination in full Module 17. For type rating completion of appropriate type training.
21.	Excluding all tasks with the exception of minor scheduled line maintenance up to and including daily inspections.	Applied to any Category A licence where no licence had been previously held.	No privilege to certify rectification of defects, fault diagnosis.	Examination in all of the modules associated with Category A licence.
22.	Excluding all tasks with the exception of cabin maintenance tasks.	Applied to any Category A licence where no licence had been previously held.	No privileges to certify rectification of defects, fault diagnosis, except for cabin maintenance.	Examination in all of the modules associated with Category A licence.
23.	Excluding all tasks with the exception of DC electrical components in mechanical systems.	Applied to category B1 licence where no GCAA 'X' Electrical licence was already held.	No privileges to certify avionic /electrical systems.	Examination in Part Module 3 (3.9 – 3.18), 7 (7.7) and 11A or 11B (11.5, 11.6 and 11.14), full Modules 4 and 5, plus appropriate experience. For type rating completion of appropriate type training.
24.	Excluding all systems with the exception of LRUs within In Flight Entertainment (IFE) systems.	Applied to a Category A licence where no GCAA licence was already held.	No privileges to certify rectification of defects, fault diagnosis, except for LRUs associated with IFE.	Examination in all of the modules associated with Category A licence.

25.	Excluding AC electrical systems on aircraft above 5700kg MTOM, with the exception of component Changes that do not require specialist test equipment to prove serviceability.	Applied to Category B1 licence where no GCAA 'X' Electrical held.	No privileges to certify AC electrical systems on aircraft >5700kg.	Examination in full Module 4, Part Modules 3 (3.9 – 3.18), 7(7.7) and 11 (11.5, 11.6 and 11.14) plus appropriate experience (90 days minimum) For type rating completion of the electrical element of all mechanical systems to level III.
26.	Excluding avionic LRU replacement and BITE checks on aircraft above 5700kg MTOM.	Applied to Category B1 licence holders where no GCAA 'Avionic' licence held except where limited avionic system authorisation under AWN 3 had been issued.	No privileges to certify avionic systems on aircraft > 5700kg.	Examination in Module 5 plus experience (10 days minimum) For type rating completion of appropriate type training.
27.	Excluding antenna and antenna Feeder Systems relating to radio and radar systems.	Applied to B2 licence holders where no GCAA licence held.	No certification privileges for antenna systems associated with Radio/Radar.	No conversion examinations. Specific company scheme applies.
28.	Excluding maintenance tasks on wooden structures and fabric coverings.	Applied to CAR 66 category B1 licences where no GCAA licence held for wood and fabric aircraft.	No privilege to certify wood and fabric structured aircraft.	Examination in Part Module 6 (6.3.2 and 6.3.3). For type rating; for non-complex types, oral examination.
29.	Excluding compass compensation and adjustment.	Applied to Category B1/B2 licence where no GCAA 'X' compass held.	No privilege to certify compass compensation and adjustment.	Examination in Part Module 13 (13.8).