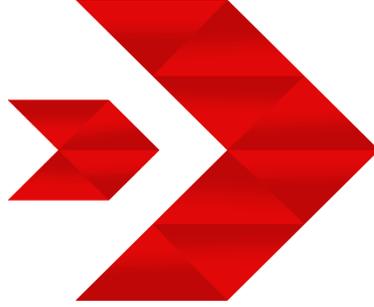


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		<i>Part GEN-AIR (General Requirements for Airworthiness)</i>



الطيران المدني
Civil Aviation
الإدارة العامة للطيران المدني - دولة الكويت
Directorate General of Civil Aviation - State of Kuwait

Kuwait Civil Aviation Safety Regulations

KCASR 8 - AIRWORTHINESS OF AIRCRAFT AND CONTINUOUS AIRWORTHINESS

PART GEN-AIR (GENERAL REQUIREMENTS FOR AIRWORTHINESS)

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Control of this Document

DC.1 Introduction

DC.1.1 Pursuant to Law No (30) of the year 1960 and subsequent Ministerial Decisions No (3) of the year 1986, No (18) of the year 1990, and No (3) of the year 1996, based upon that Law, the President of the Directorate General of Civil Aviation is empowered to adopt and amend Kuwait Civil Aviation Safety Regulations. In accordance herewith, the following Regulation is hereby established for compliance by all persons concerned. This regulation shall be known as KCASR 8 - Part GEN-AIR General Requirements for Airworthiness and any reference to this title shall mean referring to these regulations governing the basic requirements to be met for civil aviation in the State of Kuwait.

DC.2 Authority for this Regulation

DC.2.1 This KCASR 8 - Part GEN-AIR General Requirements for Airworthiness is issued on the authority of the President of the Directorate General of Civil Aviation.

DC.3 Applicability

DC.3.1 This KCASR 8 - Part GEN-AIR General Requirements for Airworthiness is applicable to the aviation industry of the State of Kuwait.

DC.4 Scope

DC.4.1 KCASR 8 Part GEN-AIR - General Requirements for Airworthiness contains the basic requirements to be met for civil aviation in the State of Kuwait, and shows compliance with ICAO Standards and Recommended Practices (SARPs), reflected in the 19 Annexes to the Chicago Convention. The regulations in KCASR 8 are separated into the following parts with cross references between parts where applicable.

- Part 21 Certification of Aircraft, Parts and Appliances
- Part M: Continuing Airworthiness Requirements
- Part 145: Maintenance Organisations Approvals
- **Part GEN-AIR (General Requirements for Airworthiness)**

DC.5 Definitions

DC.5.1 Terms not defined shall have the meaning given to them in the relevant legal instruments or international legal instruments in which they appear, especially as they appear in the Convention and its Annexes.

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ICAO Compliance Statement to General Requirements-AIR

- (a) As a contracting state to ICAO (the Chicago Convention) Kuwait DGCA has to ensure that it acts consistently with the obligations placed on the State of Kuwait under the Convention on International Civil Aviation (Chicago Convention) of December 1944.
- (b) This document is published in support of Kuwait DGCA's discretionary powers contained in the Civil Aviation Act 1969 and Civil Aviation (Safety) Regulations 2014 and includes requirements based on certain International Standards and Recommended Practices (SARPs) contained in Annexes to the Chicago Convention.
- (c) It is the policy of Kuwait DGCA to have reference to this document when exercising the discretionary powers referred to above and, in particular, it will exercise those powers to ensure the effective implementation of any such requirements based on SARPs.

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Continuing Airworthiness (CAW)

CAW-001 Personnel Certification for Non-Destructive Testing of Aircraft, Engines, Components and Materials

1. General

- 1.1 This General Requirement **prescribes** Kuwait DGCA's requirements for the training and qualification of Non-Destructive Testing (NDT) personnel involved in the manufacture and maintenance of aircraft or aircraft components.

2. Definitions

The following definitions are given that relate to terms used within this general requirement. All other definitions are given in the Kuwait DGCA's definition document.

Aerospace Sector: A particular section of industry or technology where specialised NDT practices are used requiring specific aerospace product related knowledge, skill, equipment or training.

Authorisation (of NDT personnel/Personnel Approval): The authority of persons to perform NDT on behalf of an employer based on a written statement issued by the approved organisation on the recommendation of the nominated Level 3 attesting to the individual's competence as specified within the certificate.

Authorisation (of Certifying Staff): The authority of NDT personnel to certify the completion of tasks in accordance with approved design data via a Kuwait AIR Form 1, issued by the approved organisation (see KCASR 8 – Part 145, 145.A.35). All AIR Form 1 certifying staff shall be referenced in the MOE, or cross referenced to a recognised register/database for certifying staff, with sample signatures/stamp number.

Authorisation (of NDT procedures): The act of signifying approval of NDT procedures by a Level 3 authorised in the method.

National Aerospace NDT Board (NANDTB): An independent organisation representing a nation's aerospace industry chartered by the participating prime organisations and recognised by the national regulatory authorities to provide or support NDT qualification services and examinations in accordance with a standard acceptable to the NAA.

NDT Instruction: A written description of the precise steps to be followed in testing to an established standard, code, specification or NDT procedure.

NDT Method: One of the disciplines of non-destructive testing (e.g. ultrasonic, radiography, etc) within which different techniques may exist.

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NDT Procedure: A written description of all essential parameters and precautions to be observed when applying an NDT technique to a specific test, following an established standard, code or specification.

NDT Technique: A category within an NDT method, e.g. ultrasonic immersion or ultrasonic testing of composites. The employer or approved body may define specific techniques within a method.

Qualification: The proven ability of NDT personnel to meet the requirements of a given specification in terms of physical requirements, training, knowledge and experience necessary to perform the applicable NDT method.

Qualification Examination: An examination administered by an independent certifying body, e.g. PCN, or by a body authorised within the employer's compliant written practice, which demonstrates the general, specific and practical knowledge of the candidate.

Type Certificate: For the purposes of this generic requirement, type certificate includes type acceptance certificate, type certificate, supplementary type certificates, FAA Technical Standard Orders (TSO's) or European Technical Standard Orders (ETSO) authorisations.

Written Practice: The procedure that describes an employer's requirements and methodology for controlling and administering the NDT personnel qualification and authorisation/approval process.

3. Requirement for the Qualification of NDT Personnel

- 3.1 All approved organisations involved in any aspect of NDT shall develop and maintain procedures for the qualification and authorisation of their NDT personnel in accordance with a standard acceptable to the Kuwait DGCA. The organisation's procedures and written practice shall be approved by the nominated Level 3. The procedures and written practice should normally be published as a separate document and cross referenced in the appropriate exposition, manual or quality management system as applicable.
- 3.2 With effect from the publication date of this general requirement, training and examination of all NDT personnel working in the State of Kuwait based organisations must be under the control of a body acceptable to the Kuwait DGCA.
- 3.3 NDT Personnel Certification does not relieve an organisation of its responsibility to authorise staff to perform and certify work. Such authorisations are to be granted in accordance with the organisation's quality management system and procedures and be subject to audit.
- 3.4 In all cases the organisation's procedures for the training, examination and certification of NDT personnel should be subject to independent audit and review.

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4. Nominated NDT Level 3 Personnel

- 4.1 Approved organisations (KCASR 8 - Part 145) shall nominate in writing, using an AIR Form 4 supported with evidence of independent qualification, an individual responsible to the Accountable Manager, for the technical supervision of NDT. This individual will hold NDT qualification at NDT Level 3 in the aerospace sector and will be referred to as the nominated Level 3. This position shall be identified within the organisation's exposition, and any change in this position advised to Kuwait DGCA.
- 4.2 Such an individual must also demonstrate evidence of specific knowledge and experience appropriate to the organisation's scope of work and individual role requirement.
- 4.3 Where the nominated Level 3 is not qualified in all NDT methods used by the organisation, then additional personnel necessary to provide coverage shall be named in the exposition or quality manual and shall hold NDT Level 3 certification issued under those schemes acceptable to the Kuwait DGCA.
- 4.4 Kuwait DGCA may accept person's external to the organisation as the nominated Level 3, provided written agreement exists between the individual and the organisation setting out the individual's responsibilities within the organisation. Kuwait DGCA will also need to be satisfied that an externally contracted Level 3 can commit to provide sufficient man-hours to cover the technical supervision of NDT.
- Note:** Where an individual is employed by another organisation, the agreement should include the consent of the external organisation contracting out the services of the particular Level 3 person.
- 4.5 As a nominated individual, the nominated Level 3 must be provided with the necessary co-operation (access to facilities, company procedures, training records, audits and inspection reports, etc.) to allow that person to carry out their function under the approval.
- 4.6 The terms of reference for the nominated Level 3 to discharge his/her responsibilities shall include:
- (a) Identify any additional NDT qualified Level 3 personnel necessary for coverage when the nominated Level 3 is not qualified in all NDT methods used by the organisation;
 - (b) Identify any additional Level 3 personnel necessary to provide adequate day-to-day coverage depending on the size and facilities of the organisation;
 - (c) Approve the organisation's NDT procedures and written practice for the training and qualification of NDT personnel as meeting this requirement and standards acceptable to the Kuwait DGCA as appropriate;

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- (d) Review the organisation’s written practice every 12 months to ensure that any changes in the regulations, applicable standards and the organisation itself are reflected;
- (e) Ensure that NDT procedures are reviewed every 12 months;
- (f) Ensure that technical audits (both system and product) are carried out or supported by appropriately qualified personnel every 12 months in order to ensure compliance with the organisation’s written practices/procedures and this requirement and to ensure that the acceptable standard of inspection is achieved. These audits shall form part of the approved organisation’s internal quality management system.

5. Inspections and Certification of Inspections

- 5.1 NDT inspections shall be carried out by personnel approved in accordance with the organisation’s written practice or procedures. Where NDT procedures and part specific instructions are specified by the organisation responsible for the design and/or manufacture of the aircraft, material, structure or component, then these must be used except where change is permitted and authorised as defined in Section 6 of this general requirement.
- 5.2 Where non-mandatory inspections are to be undertaken, for which the responsible design/manufacturing organisation has not specified part specific NDT procedures, then the NDT method, technique, procedure and instruction shall be prepared in accordance with Section 6 of this requirement and approved by a Level 3 holder qualified in the applicable method.
- 5.3 Normally, certification of inspections will be made by authorised persons who hold NDT Level 2 or Level 3 NDT qualification. However, where an inspection task is determined by the nominated Level 3 to have clearly defined acceptability and rejection criteria requiring no interpretation, then certification may be carried out by an authorised NDT Level 1 as detailed within the written practice.
- 5.4 Where a Level 3 is required to carry out and certify an NDT inspection he/she must either hold a current Level 2 NDT qualification in the relevant method(s), or, alternately be able to provide evidence that they have successfully completed an appropriate Level 2 practical examination and have maintained continuity in the application of practical testing as defined in the referenced standards and detailed in the written practice before the issuance of an authorisation.
- 5.5 The term certification is used to denote ‘operating authorisation/approval’ and does not automatically permit an individual who meets the requirements acceptable to Kuwait DGCA to certify an AIR Form 1. An organisation must authorise a suitably qualified person before that person can certify NDT inspections.

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6. NDT Techniques and Instructions and their Approval

- 6.1 NDT techniques, procedures and instructions, published and specified by the type certificate holder in NDT manuals, service bulletins, approved repair drawings, etc. constitute airworthiness data.
- 6.2 Where the continued airworthiness data published by the type certificate holder permits changes (e.g. selection of equipment model, probe type, etc.) then such changes must be authorised in writing by a Level 3 qualified in the appropriate method.
- 6.3 Any other change to the type certificate holder's airworthiness data requires the written agreement of the type certificate holder responsible for the design of the product/structure before such a change is implemented.
- 6.4 NDT Instructions prepared by a Level 2 holder shall be approved by a Level 3 holder qualified in the applicable method. Co-ordination between the Level 3 holder and organisation responsible for the type design must be maintained to ensure that the selected NDT inspection provides an appropriate level of defect sensitivity and probability of detection to the intended application.
- 6.5 The procedure for the control of all NDT techniques, procedures and instructions, including their preparation and authorisation shall be detailed in the organisation's exposition.

7. Suppliers and Sub-Contractors

- 7.1 For a KCASR 8 - Part 145 organisation performing maintenance on any aircraft or component for which it is approved, where NDT inspections are required, they may on occasions be granted the privilege within their scope of work to utilise sub-contractors working under the quality system of the KCASR 8 - Part 145 organisation. Where sub-contracting includes NDT processes, the exposition and written practice shall define how the organisation ensures that the training and authorisation of the sub-contractors NDT personnel is controlled and satisfies KCASR 8 - Part 145.A.30(f). See KCASR 8 - Part 145.A.75 (b) and the associated AMC and guidance material.

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CAW-002 Airworthiness Flight Test Requirements

1 Definitions

For the purpose of this general requirement the following definitions shall apply:

- 1.1 “Flight tests” means the flying of an aircraft, without any passenger or cargo on board, for the purpose of ensuring that:
- (a) the aircraft handling characteristics have not deteriorated with time;
 - (b) the aircraft performance remains in accordance with the limitations mentioned in the approved type certificate data sheet;
 - (c) aircraft and its equipment function properly.
- 1.2 “Approved” means approved by the President of the Directorate General of Civil Aviation.

2 Regulatory Requirements

- 2.1 All State of Kuwait registered aircraft operated and maintained by holders of Kuwait DGCA approved air operator and maintenance organisation certificates need not meet the requirements regarding the periodic airworthiness flight tests in accordance with KCASR 8 - Part 21, Subpart P and KCASR 8 - Part M, provided the following is fulfilled:
- (a) Aircraft is approved for commercial air transport and have a certified maximum take-off weight over 5700 kg.
 - (b) Aircraft is operated and maintained by a common air operator and a common maintenance organisation.
 - (c) Aircraft have produced consistently satisfactory results in previous airworthiness flight tests for an acceptable period of time.
 - (d) For newly operated aircraft, the acceptable period of time can be agreed upon by Kuwait DGCA, but in all cases the period is not less than two years from the date of operation of that aircraft by Kuwait DGCA approved air operator certificate holder.
- 2.2 Each aircraft type will be subjected to airworthiness flight tests in accordance with KCASR 8 Part 21 Subpart P (Permit to Fly), and KCASR 8 Part M, at the end of first and second years of operation and if data from such tests are sufficient to confirm compliance with the contents of the approved test schedule, it may then be exempted from any further airworthiness flight test requirements. However if the data in respect of a particular aircraft/type do not confirm compliance then that aircraft/type will be subjected to further airworthiness flight tests at the end of subsequent year(s), until it is proven satisfactory to Kuwait DGCA.

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- 2.3 The Air operator or approved maintenance organisation must make an application for a Permit to Fly in accordance with KCASR 8 Part 21, Subpart P.
- 2.4 The air operator or the approved maintenance organisation must have a functional flight performance division within their operation/engineering organisation acceptable to Kuwait DGCA.
- 2.5 When applicable, the air operator and/or the approved maintenance organisation must have a reliability control programme applicable to all its types of aircraft supervised by a reliability control committee acceptable to Kuwait DGCA.
- The reliability control committee shall produce monthly reports regarding data collection, recording and reporting data analysis and corrective action implementation, all of which must be addressed to Kuwait DGCA on a monthly basis.
- 2.6 Flight testing may be required at the following circumstances:
- (a) Subsequent to maintenance, repair or modification which affect the operational or flight characteristics of the aircraft.
 - (b) For the purpose of evaluation in respect of fuel consumption, engine power and performance of radio, radar, navigational equipment or instruments whenever these are doubted and cannot be satisfactorily checked on ground.
 - (c) Subsequent to an engine change when it is stated by the approved maintenance manual for a particular type of aircraft or in accordance with the technical advice of the type certificate holder.
 - (d) To satisfactorily determine the cause of a defect so as to assess the maintenance required to rectify the defect.
- 2.7 Notwithstanding the circumstances mentioned above, Kuwait DGCA may require any aircraft or any type series of an aircraft to undergo such flight testing and at such frequency as considered necessary.

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Chapter 24 Electrical Power

24-001 Electrical Generation Systems – Aircraft below 5700 kg MTWA

1. Introduction

- 1.1 The purpose of this general requirement is to publish requirements for a clear and unmistakable warning of loss of generated electrical power so as to avoid a serious depletion of the available battery capacity, and preserve or provide sufficient electrical energy to operate essential services for an adequate period of time in the event of such a loss occurring.

2. Requirement

- 2.1 For all multi-engined aircraft below 5700 kg MTWA compliance with paragraphs 2.2, to 2.6 inclusive of this general requirement, or with a Kuwait DGCA approved alternative providing an equivalent level of safety, is required.
- (a) Where it can be shown that an aircraft is fitted with such limited electrical and radio equipment, or is certificated to operate under such limited conditions (e.g. VMC day only) that the loss of generated electrical power would not significantly prejudice safe flight, the Kuwait DGCA will, on application, waive the requirement of this general requirement where it is satisfied that compliance would not be justified in the circumstances of a particular case.
- 2.2 Clear visual warning shall be provided, within the pilot's normal line of sight, to give indication of either:
- (a) reduction of the generating system voltage to a level where the battery commences to support any part of the main electrical load of the aircraft; or
- (b) loss of the output of each engine driven generator at the main distribution point or bus-bars.
- 2.3 The battery capacity shall be such that in the event of a complete loss of generated electrical power, adequate power will be available for a period of not less than 30 minutes following the failure, to support those services essential to the continued safe flight and landing of the aircraft. This includes an assumed period of not less than 10 minutes from operation of the warning specified in paragraph 2.2 for completion of the appropriate drills. This delay period may be reduced to not less than five minutes if the warning system is provided with "attention getting" characteristics (e.g. a flashing light). For the purpose of calculations it shall be assumed that the electrical load conditions at the time of failure are those appropriate to normal cruising flight at night.
- 2.4 Where all gyroscopic attitude reference instruments, i.e. bank and pitch indicator(s) and turn and slip indicator(s), are dependent on electrical power for their operation, at least one of these Instruments shall continue to operate without crew action for the prescribed 30 minute period.

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Note 1: *For certain aircraft types a turn and slip indicator may not be acceptable as the sole remaining attitude reference instrument.*

Note 2: *Certain aircraft are equipped with both electrically operated and air driven attitude reference instruments. In such cases the air driven instrument(s) will be accepted as providing the emergency attitude information provided that the requirements of paragraph. 2.5 are met.*

- 2.5 The instrument(s) with which the requirement of 2.4 will be met shall be clearly designated; and
- (a) shall be so located on the instrument panel that it will be visible to, and usable by the pilot from his normal position; and
 - (b) shall be provided with means of indicating that the power supply to the instrument is operating correctly.
- 2.6 Precise drills covering crew action in the event of electrical generation system failures and malfunctions shall be included in the appropriate aircraft manual(s), together with a statement of the battery endurance under specified load conditions.

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24-002 Electrical Generation Systems – Bus-Bar Low Voltage Warning Single-Engined Aircraft with a Kuwait Certificate of Airworthiness

1. Introduction

- 1.1 General requirement 24-001 is intended for twin engine aircraft with more reliance on electrical systems. However systems which were once fitted only in the more complicated twin-engined general aviation aircraft, have now been developed and fitted to single-engined aircraft. Thus, greater reliance is being placed on the integrity of the electrical power supplies for such aircraft.
- 1.2 As a result of the above, this general requirement has been produced and requires certain single-engined aircraft to be equipped with low voltage warning devices to give indication to the pilot of when the aircraft's battery commences to support all or part of the electrical load of the aircraft.
- 1.3 This general requirement extends and clarifies the need for a clear and unmistakable warning of the loss of generated electrical power (to the main bus-bar) as detailed in paragraph 2.1.(a). This will be by the introduction, where necessary, of retrospective modifications.

2. Requirements

- 2.1 For all single-engined aircraft with a Kuwait Certificate of Airworthiness equipped with an engine driven electrical generating system, compliance with paragraphs 2.2 and 2.3, or with an approved alternative, providing an equivalent level of airworthiness, is required not later than 31 December 2015, or next annual check whichever is the latest.
- (a) Where an aircraft is equipped to operate under day VMC conditions only and the loss of the generated electrical power could not prejudice safe flight and landing, the requirements of this general requirement are considered to be satisfied without the provision of a specific warning.
- 2.2 A clear and unmistakable red visual warning shall be provided, within the pilot's normal scan of vision, to give indication of the reduction of the voltage at the aircraft bus-bar to a level where the battery commences to support all or part of the electrical load of the aircraft.
- 2.3 Guidance shall be given in the appropriate aircraft manual(s) on any actions to be taken by the pilot should the warning operate.

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24-003 Emergency Power Supply for Electrically Operated Gyroscopic Bank and Pitch Indicators (Artificial Horizons)

1. Introduction

- 1.1 The purpose of this general requirement is to require the retrospective modification of certain classes of aircraft to ensure that continuity of horizon information is maintained to enable the crew to maintain safe flight in the continuation of presentation to the pilot of reliable aircraft attitude Information.
- 1.2 Aircraft types fitted with air driven gyroscopic bank and pitch indicators are exempted from the requirements of this general requirement.

2. Requirement

- 2.1 Compliance with paragraphs 2.2 and 2.3 of this general requirement, or with a Kuwait DGCA approved alternative providing an equivalent level of safety is required as a condition for the issue of a Certificate of Airworthiness for aircraft within the following classifications:
- (a) aircraft operated for the purpose of commercial air transport for the carriage of more than 19 persons over the age of three years.
 - (b) aircraft with an MTWA in excess of 15000 kg.
 - (c) newly constructed aircraft with an MTWA in excess of 5700 kg.
- 2.2 Where it cannot be shown that in the event of a total failure of the main electrical generating system an adequate supply will be available automatically to a suitable bank and pitch indicator for a minimum period of 30 minutes, assuming that no special crew action is taken for 10 minutes, then a separate emergency supply, independent of the aircraft electrical generating system, which will automatically supply such an instrument and its associated lighting for a minimum period of 30 minutes, shall be provided.
- (a) Where the emergency supply is provided by a separate battery it is permissible for this battery to be (trickle) charged from the main electrical generating system, provided that the installation is such that the battery cannot discharge back into the main system.
- 2.3. The instrument supplied in accordance with 2.2 shall be:
- (a) the third instrument (standby horizon) where this is provided, or failing such provision.
 - (b) the bank and pitch indicator fitted to the captain's flight instrument panel.
- 2.4 Where the third instrument is fitted it shall:
- (a) operate independently of any other attitude indicating system.

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- (b) be so located on the instrument panel that it will be visible to, and usable by, both pilots from their normal positions.
- (c) be compatible in presentation with the main attitude indicating system.
- (d) be fitted with a failure warning device.

Alternatively, a means of indicating that the power supply to the instrument is operating correctly shall be provided.

2.5 Where the instrument on the captain's flight instrument panel is utilised:

- (a) The circuitry to the instrument shall be modified, as necessary, so that transfer to the emergency source of supply is automatically affected in the event of failure of the main supply.
- (b) The requirements of paragraph 2.4(d) shall be met.

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24-004 Electrical Power Supplies for Aircraft Radio Systems

1. Introduction

This general requirement draws attention to the dangers of operation of aircraft in which the entire radio installation is supplied in a single electrical feeder circuit, the loss of which could significantly affect the safety of the aircraft.

2. Requirements

The electrical feeder arrangements shall be such that:

- 2.1 Where more than one radio system is installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of all radio systems.

Note 1: *It is strongly recommended that such a failure should only result in the loss of one radio systems.*

Note 2: *The reference to radio system includes any associated audio system.*

- 2.2 Where duplicate radio systems, or radio systems which can duplicate a function, are installed, no likely single failure (e.g. a fuse or a relay) will result in the loss of both systems.

3. Compliance

- 3.1 Aircraft operated for the purposes of commercial air transport of passengers or cargo must comply with the requirements of paragraph 2.

- 3.2 Multi-engined aircraft used for any purpose must comply with the requirements of paragraph 2.

- 3.3 The Kuwait DGCA will consider applications for a waiver to this general requirement in respect of multi-engined aircraft that is not used for the purposes of commercial air transport, when it can be satisfied that the aircraft is fitted with such limited radio equipment, or is restricted to operations under such limited conditions, that the loss of the electrical supply to all radio equipment would not significantly affect the safety of the aircraft during its permitted normal operation.

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Chapter 25 Equipment/Furnishings

25-001 Flame Resistant Furnishing Materials

1. Introduction

- 1.1 The Kuwait DGGA requirements for compartment design safety precautions are satisfied by demonstrated compliance with the aircraft certification standards accepted via the issuance of a State of Kuwait type acceptance certificate in accordance with KCASR 8, Part 21, Subpart B for a new aircraft type.
- 1.2 Materials used for carrying out repairs or modifications to aircraft cabin furnishings are also required to have flame resistant properties, which are either at least equal to those of the materials and their specifications as required by the state of design and used in the original design or approved Supplemental Type Certificate (STC).

2. Requirements for Initial Acceptance of Materials

Wherever possible, only inherently flame resistant materials shall be used. However, materials which meet the requirements by the use of a flame retardant process, applied either during or after manufacture, may also be used provided that (since all materials may at some time be dry-cleaned or washed) the material is shown to be flame resistant when tested both before and after being subjected to three representative cleaning processes.

3. Requirements for Maintenance of Fire Resistance

- 3.1 Continuance of the flame resistance properties of furnishing materials may depend upon their use in service and the methods used in their cleaning. Experience has shown that:
- (a) The proprietary flame retardant processes often applied to furnishing materials during or after manufacture, in order to provide the necessary flame resistant properties, may be destroyed or seriously impaired where the incorrect dry cleaning, laundering or proprietary finishing processes which enhance durability and minimise soiling, are used.
 - (b) The application of one flame retardant process on top of another, of a different type may have the effect of inhibiting the properties of both processes.
 - (c) During service, seat covers become contaminated with perspiration which leaves a deposit of body salts, etc. These deposits may accumulate, impairing the flame resistance properties of the materials.
 - (d) Disinfectants, etc., are often sprayed from aerosol containers in aircraft cabins. The accumulation of these agents may also affect the long term flame resistant properties of the furnishing materials.
- 3.2 Operators and maintenance organisations are reminded, therefore, that they must have adequate control over the cleaning of aircraft furnishing materials. For this, they need to have a knowledge of the material type, the recommended cleaning or proprietary finishing processing method, the effects of time in service on the flame resistance properties, the flame retardant processes applied, if any, and the method of re-application of such a process, where this is necessary. It is not acceptable to place reliance on unsubstantiated claims concerning the continuance of flame resistant properties of a material after durability or additional flame retarded processes have been applied. Where such processes have been applied, there is a need to prove the continued acceptability of a particular material or process in service, and, thus, further flame resistance test must be conducted accordance with requirements identified in paragraphs 1.1 and 1.2 of this general requirement.

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25-002 Galley Equipment

1. Applicability

This general requirement for airworthiness is applicable to all galley equipment installed or carried for use on an aircraft. For the purpose of this general requirement “galley equipment” includes service carts, catering trolleys and their means of restraint in the passenger area; galley inserts including ovens, water boilers, coffee makers, refrigerators, etc., and control panels dedicated to individual equipment.

2. Introduction

- 2.1 It has become increasingly apparent that some designers and installers of galley equipment installed or carried in aircraft have not recognised the need to satisfy the relevant requirements of the State of Design and that as a result in certain instances safety has been prejudiced.

Note: For the purpose of this general requirement, the “relevant requirements” are the aircraft certification standards associated with the type certification basis accepted by Kuwait DGCA for the issue of the Certificate of Airworthiness for the aircraft in which the galley equipment is installed.

- 2.2. All equipment installed or carried in an aircraft shall be installed or stowed and kept stowed and so maintained and adjusted as not to be a source of danger in itself or to impair the airworthiness of the aircraft or the proper functioning of any equipment or services necessary for the safety of the aircraft.
- 2.3. This general requirement is issued to rectify the situation in paragraph 2.1 and to emphasise that these requirements constitute the basis for certification of galley equipment, not only when they form part of the aircraft type design but also when they are fitted in an aircraft already issued with a Certificate of Airworthiness or when such equipment fitted to an aircraft is modified. It also defines the procedures which apply to the certification of galley equipment.

3. Compliance

With effect from 1 April 2016 all equipment used in all galley installations is required to satisfy the requirements stated herein.

4. Procedure

- 4.1 Trolleys and items of galley equipment which require electrical power are, unless otherwise specifically agreed by Kuwait DGCA, classified as “Controlled Items” of equipment as and approved in accordance with KCASR 8 Part 21, Subpart K.

Note: For the purposes of this general requirement, “controlled items” defines equipment the installation or failure of which could adversely affect the airworthiness and safe operation of an aircraft.

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- 4.2 Catering boxes and equipment not requiring electrical power are classified as “Uncontrolled Items”. It is therefore necessary for an appropriately approved KCASR 8, Part M, CAMO organisation to accept responsibility for the suitability and quality of such equipment.

Note: For the purposes of this general requirement “Uncontrolled Items” defines items which in themselves are not inherently unsafe and, when installed, cannot adversely affect the airworthiness and safe operation of the aircraft and so installed that, in the event of their failure or malfunction, the items will not endanger the aircraft or its occupants.

- 4.3 Catering trolleys, designed for use in specific galleys on particular aircraft types, are considered as an extension of the aircraft structure via the galleys and are, therefore, required to be certificated as modifications in accordance with KCASR 8 Part 21, Subpart D.

5. Applicable Requirements

- 5.1 The design of galley inserts shall comply with the requirements of the state of design or an equivalent standard acceptable to Kuwait DGCA which provides an equivalent level of safety. Additionally, the state of design requirements for all electrical equipment in respect of electrical and magnetic interference, shall apply.
- 5.2 The design of all galley equipment shall minimise the risk of personal injury to the user as required by the relevant state of design requirements. In particular, vessels containing heated liquids over 45 degrees C shall have closely fitting integral lids. The use of open hot-plates and open cooking utensils as frying pans is not permitted.
- 5.3 Galley equipment and its installation shall have adequate strength to comply with the emergency alighting, flight and ground cases of the relevant state of design requirements.
- 5.4 Doors, including their hinges and catches, or catering boxes, etc., must be of strength compatible with the placard contents weight, unless use of the box is restricted to stowage in completely enclosed galleys, or similar compartments. This also applies to the doors of catering trolleys, but in their case the total structure of the trolley must also be shown to be in compliance with the strength requirements, taking into account the means of retention of the trolley in the aircraft.
- 5.5 The design of the trolley should be such that the loads imposed on the aircraft floor do not exceed any floor loading limitations.
- 5.6 (a) It is strongly recommended that duplicated catches are provided for means of retention for items which are habitually operated during flight, to allow for failure of one of the catches.

Note: In respect of galley equipment which is located in the vicinity of flight attendant seats, an additional restraint device (dual latching or equivalent) may be required depending on the state of design requirements.

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- (b) Where retention of a unit into its stowage compartment is by turn catch, operating the catch should not release more than one unit.
- 5.7 Where catering trolleys have the facility for the collection of waste, they shall be designed and constructed to provide a standard of fire containment acceptable to Kuwait DGCA. Demonstrated compliance with the state of design requirements as applicable will be accepted by Kuwait DGCA in accordance with KCASR 8 Part 21 Subpart D as meeting the fire containment requirement.
- 5.8 Where the basis of type certification of the aircraft requires the provision of means of trolley restraint in the passenger cabin capable of withstanding the loads associated with the flight cases, the trolleys shall be provided with attachment means compatible with the anchorage points provided in the aircraft. Such a method of restraint should be engineered so that it can be used by one person and so that its use will be likely to occur by virtue of its simplicity of operation.
- 5.9 The trolleys must also embody a brake system if they are to be removed from stowage in flight in the absence of evidence justifying an equivalent minimum breaking force then the braking mechanism must be qualified by loading the trolley to its maximum loaded weight and ensuring that the breaking mechanism holds the trolley on an incline plane of 7.5 degrees.
- 5.10 Trolleys shall carry the following placard instructions:
- (a) that they must be stored and secured during taxi, take-off, turbulent weather and landing;
 - (b) that the gross weight of the unit, or the combined gross weight of the unit and any other galley insert when stowed together, must not exceed the placard maximum content weight of the compartment where stowed; and
 - (c) that when removed from their stowage they must not be left unattended.
- 5.11 The installation of all galley equipment shall be such that the size, weight, and means of restraint are compatible with the stowage facility provided, and that under design loads the item will not deform in such a manner so as to free itself from the means of restraint.
- 5.12 Account must be taken of the individual and total electrical power demand of galley equipment and an electrical load analysis must be included in the design documentation.

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25-003 Improved Flammability Test Standards for Cabin Interior Materials

1. Applicability

This general requirement is applicable to all State of Kuwait registered aeroplanes over 5700 kg MTWA, certificated for commercial air transport to carry 20 or more passengers and of a type for which a type certificate was issued (in any ICAO contracting states) on or after 1 January 1958.

2. Compliance

2.1 With effect from 20 August, 1988, but prior to 20 August, 1990, all aeroplanes defined in paragraph 1 of this general requirement, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 3.1 of this general requirement.

2.2 With effect from 20 August, 1990, all aeroplanes defined in paragraph 1 of this general requirement, which are either newly manufactured or are the subject of a substantially complete cabin interior renewal, shall comply with the requirements of paragraph 4.2 of this general requirement.

(a) Kuwait DGCA may be prepared to grant a dispensation for specific components of the cabin interior which do not meet the applicable flammability and smoke emission requirements, provided that special circumstances exist which makes compliance impractical. Such dispensations will be limited to aircraft which are newly manufactured or the subject of a substantially complete cabin interior renewal before 20 August 1991.

(b) A request for such a dispensation must include full details of the steps being taken to achieve compliance, acceptable reasons for such non-compliance and a thorough and accurate analysis of each component.

3. Requirements

3.1 Cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than under seat stowage compartments and compartments for stowing small items such as magazines and maps), shall satisfy the test standards of the requirements the state of design except that the total heat release over the first two minutes of sample exposure shall not exceed 100 kilowatt-minutes per square meter, and the peak heat release rate shall not exceed 100 kilowatts per square metre.

3.2 Cabin interior ceiling and wall panels (other than lighting lenses), partitions, and the outer surfaces of galleys, large cabinets and stowage compartments (other than under seat stowage compartments and compartments for stowing small items such as magazines and maps), shall satisfy the test standards of the requirements of the state of design.

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25-004 Minimum Space for Seated Passengers

1. Applicability

- 1.1 This general requirement is applicable to all Kuwait registered aeroplanes over 5700 Kg MTWA, operated for the purposes of commercial air transport and configured to carry 20 or more passengers.
- 1.2 The seats shall meet the applicable requirements of the state of design and shall be approved by the Kuwait DGCA in accordance with KCASR 8 Part 21, Subpart B at type acceptance or for KCASR 8 Part 21, Subpart D for interior modifications.

2. Compliance

- 2.1 With effect from the date of issue of this general requirement, all aeroplanes defined in paragraph 1 above and which are being subject to the provision of a new (not previously Kuwait DGCA approved) or amended seating configuration, shall comply with this general requirement.
- 2.2 With effect from 3 years after date of issue of this GEN-AIR 25-004 all aeroplanes defined in paragraph 1 above shall comply with the requirements of this general requirement.

3. Requirements

- 3.1 The minimum distance between the back support cushion of a seat and the back of the seat or other fixed structure in front, shall be 26 inches. (Figure 1, Dimension A).
- 3.2 The minimum distance between a seat and the seat or other fixed structure in front, shall be 7 inches. (Figure 1, Dimension B).
- 3.3 The minimum vertically projected distance between seat rows or between a seat and any fixed structure forward of the seat, shall be 3 inches. (Figure 1, Dimension C).

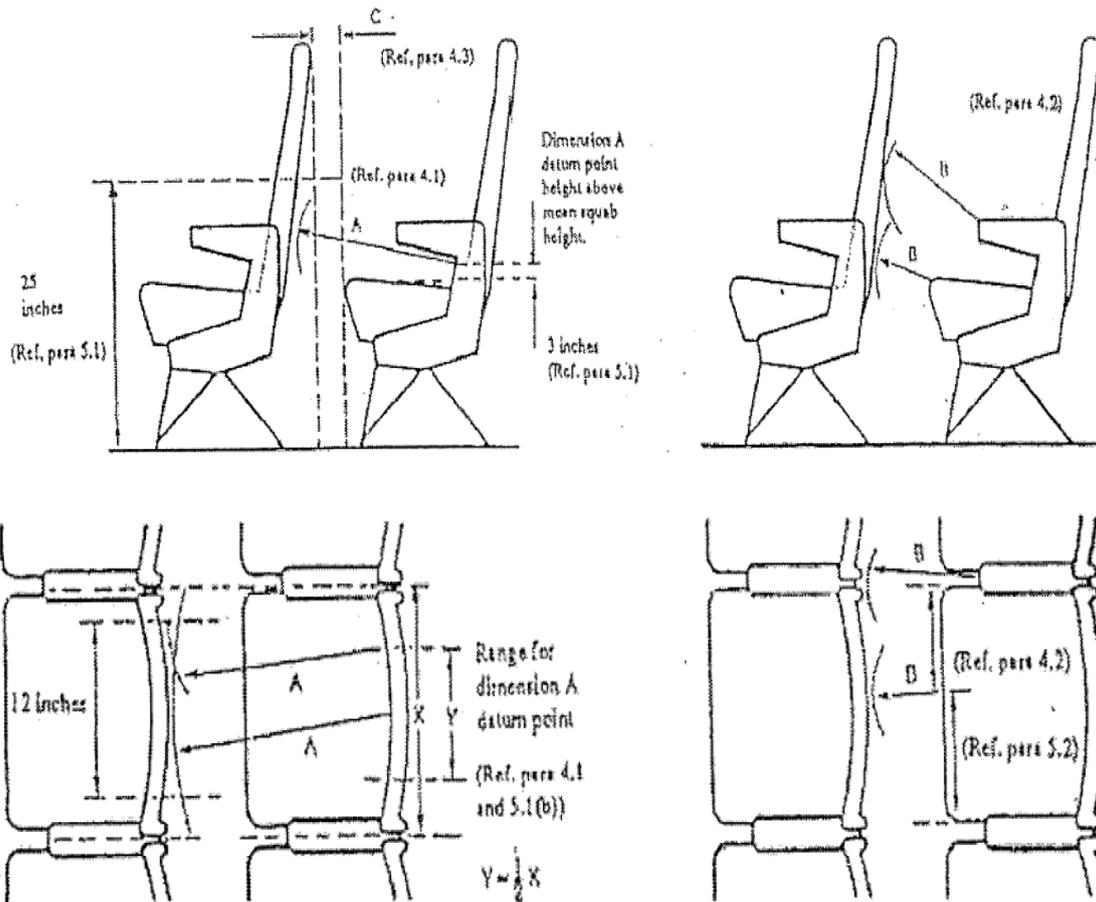


Figure 1 - Minimum Dimension Required by Paragraphs 3.1, 3.2 and 3.3

3.4 No alleviation to these requirements will be granted on the basis of deformable soft furnishings.

3.5 All modifications to seats, their installation or any modification to adjacent fixed structures, necessary to achieve compliance with the requirements of this general requirement shall be the subject of approval in accordance with KCASR 8 Part 21 Subpart D.

4. Additional Requirements

4.1 The measurements required for the demonstrations compliance with the requirement given in paragraph 3.1 above are as follow:

- (a) From a datum point in the centre of the seat back at a height of 3 inches above the mean uncompressed seat squab height to the seat or other fixed structure in front made in both vertical and horizontal arcs up to a limiting height of 25 inches above the carpeted floor level, over the full seat place width 'X' (See Figure 1).

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- (b) From any point on the seat back within the centre one half 'Y' of the seat place width at a height of 3 inches above the mean uncompressed seat squab height to the seat or other fixed structure within the central 12 inch region in front made in vertical and horizontal arcs up to a limiting height of 25 inches above the carpeted floor level.
- 4.2 The full width of the forward edges of the seat squab cushion and the seat arm rests shall be used as the datum points for the measurement of the minimum distance required by paragraph 3.2 above. From these points the measurement of the distance shall be made in both horizontal and vertical unlimited arcs.
- 4.3 The vertically projected distance required by paragraph 3.3 above shall be measured between the forward edge of the seat squab cushion and the most forward extremity of the armrests and the most aft of the seat or fixed structure in front.
- 4.4 Where a magazine rack is provided for the normal stowage of the cabin safety leaflet, sick bag and in-flight reading material provided by the operator, such normally provided materials shall be in place during the measurements. Similarly any fold down or other type of meal table attached to either seat or fixed structure should be in its normal stowed (take- off and landing) position for all measurements.
- 4.5 All measurements shall be made with the seats in the upright (take-off and landing) position, and the armrests shall be down.

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25-005 Helicopter Emergency Escape Facilities

1 Applicability

1.1 This general requirement is applicable to those Kuwait registered helicopters required to carry the equipment specified in the KCASR 6, Part CAT and being operated:

- (a) for the carriage of passengers or cargo to or from vessels or installations used in connection with oil or gas exploration or exploitation; or
- (b) for the transfer of personnel to or from vessels or lighthouses.

Additionally, this generic requirement also applies to helicopters being operated:

- (c) over the sea or tidal estuaries in association with pollution monitoring; and
- (d) in a dedicated offshore Search and Rescue role.

1.2 It is issued to enhance safety and survivability to crew and passengers from a ditched helicopter.

2 Compliance

Compliance is required prior to operating any State of Kuwait registered helicopter defined in paragraph 1 above.

3 Requirements

3.1 All life raft installations shall comply with the requirements of the state of design accepted by Kuwait DGCA which require life raft installations to be suitable for use in all sea conditions in which helicopter ditching, flotation and trim are required to be evaluated.

3.2 All emergency exits, including crew emergency exits, shall be marked and illuminated to comply with state of design requirements, which requires exit markings to remain adequate if the helicopter capsizes after ditching and the cabin becomes submerged.

3.3 All non-jettisonable doors of ditching emergency exits shall comply with state of design requirements, which requires such doors to have means of securing them in the open position so they do not interfere with occupants egress in all sea conditions up to the maximum required to be evaluated for ditching and flotation.

3.4 All openings in passenger compartments agreed by the Kuwait DGCA as suitable for the purpose of underwater escape shall be equipped so as to be openable in an emergency.

3.5 All openings such as windows of a suitable size shall be designed to open from inside the helicopter.

4 Liferaft Requirements

4.1 Helicopter liferafts shall be designed to have a high level of damage tolerance. This can be provided in part by design of the liferaft, but action is also necessary to minimise the chances of liferaft damage while the liferaft is on the water adjacent to the helicopter, due to projections on the exterior of a helicopter.

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Chapter 26 Fire Protection

26-001 Fire Precautions - Aircraft Toilets

1. Applicability

This general requirement is applicable to all aircraft over 5700 kg operating for the purposes of commercial air transport.

The intent of the requirement is to reduce the probability of persons smoking in toilet compartments and minimising the potential fire hazard caused by persistent smokers.

2. Requirements

2.1 Inspection

(a) At intervals not exceeding 72 hours elapsed time, or at such other intervals as may be agreed with Kuwait DGCA on the basis of available data, the following inspection shall be performed:

(i) All receptacles shall be inspected to ascertain that all entry flaps or doors still operate, fit, seal and latch correctly, ashtrays are fitted, notices installed and receptacle stowage compartment is clean with all debris removed.

(ii) Any defects revealed by the inspection of a) are corrected.

(b) This inspection shall be included in the Maintenance Programme/Schedules using the normal procedure.

2.2 Prohibition of Smoking in Toilet Compartments:

(a) Smoking shall not be permitted in toilet compartments.

(b) No Smoking placards and ashtrays are required both inside and outside these compartments.

(c) The No Smoking placards shall be displayed so as to be prominent to, and the ashtrays shall be obviously and conveniently placed for, those about to enter and those within these compartments.

2.3 Re-assessment

(a) Except where agreement has been obtained from Kuwait DGCA that compliance would not be justified in the circumstances of a particular case, the design of all receptacles provided in the toilet compartments of aircraft over 5700 kg, operated for the purposes of commercial air transport, shall be re-assessed against this general requirement, and proposals shall be made, by the operators of such aircraft to Kuwait DGCA for the incorporation of modifications necessary to show compliance, including a date (to be agreed by Kuwait DGCA). The operator should consult the aircraft manufacturer regarding such modifications and obtain Kuwait DGCA approval in accordance with KCASR 8 Part 21, Subpart D.

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Chapter 32 Landing Gear

32-001 Tyre Bursts in Flight – Inflation Media

1. Applicability

- 1.1 This general requirement is applicable to all Kuwait registered aeroplanes with a Maximum Take-off Weight Authorised (MTWA) exceeding 5700 kg and fitted with retractable landing gears.
- 1.2 The intent of this general requirement is to ensure continued compliance for the protection of equipment from the effect of tyre burst as required by the requirements state of design.

2. Compliance

- 2.1 With effect from 1 October 1988, all braked wheels on aeroplanes defined in paragraph 1 will be required to have tyres inflated with Nitrogen, or other suitable inert gas, and maintained such as to limit the Oxygen content of the compressed gases to not greater than 5% by volume.
- 2.2 To ensure compliance with this requirement suitable inflation and servicing procedures must be adopted in consultation with the airframe constructor. At airfields where suitable inert gases are not normally available it is acceptable to use air for inflation or servicing provided that a suitable entry is made in the technical log and that the tyre is re-inflated or serviced in accordance with-the agreed procedure at the earliest opportunity or within 25 flight hours, whichever is the sooner.
- 2.3 Tyre and wheel assemblies should be maintained such that greases, solvents, powders and rubber dust are excluded as far as practicable from within the inflation volume.

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Chapter 51 Standard Practices and Structures - General

51-001 Painting of Aircraft

1. Applicability

This general requirement is applicable to all State of Kuwait registered aircraft issued with a Certificate of Airworthiness.

2. Introduction

Experience has shown that a greater degree of control has to be exercised over the painting of aircraft exteriors. The term painting in this context embraces the associated processes of stripping and such terms as refinishing and refurbishing.

3. Compliance

- 3.1 All aircraft defined in paragraph 1 which are to have their external finish substantially altered, shall comply with this requirement.
- 3.2 The owner, operator or the KCASR 8, Part 145 Approved Maintenance Organisation must assess the proposed task for its airworthiness implication, taking into account the aircraft manufacturers published requirements and precautions in addition to any additional information Kuwait DGCA may publish, and make a decision as to the need for a Certificate of Release to Service (CRS). Owners and operators should consult their Approved Maintenance Organisation prior to making such a decision.
- 3.3 When a CRS is judged to be necessary, the signatory to the CRS will take responsibility for the whole process and should, therefore, assess the extent of the work to establish the need to:
- (a) Carry out on-site supervision including stage inspections.
 - (b) Brief the work force to avoid any airworthiness hazard, particularly where significant problems could be concealed by subsequent work processes.
 - (c) Ensure that any task carried out is adequately defined by documented process specification containing sufficient information to control the procedure.
 - (d) Ensure that all necessary guidance material, including the aircraft manufacturers' published data and the paint manufacturers' instructions are provided.
 - (e) Anticipate potential problems resulting from partial restoration which could mean additional paint weight in significant areas and the need for balancing of control surfaces.
 - (f) Make provision to rectify any corrosion detected following paint removal.

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- (g) Ensure the restoration of corrosion inhibiting compounds where washing or use of solvents or other paint removal techniques may have removed them in areas adjacent to those being repainted.
- (h) Determine the basic weight and corresponding centre of gravity position.

Note: *It may benefit the owner to anticipate any scheduled structural inspections including non-destructive inspections, which could be better accomplished following the paint removal.*

4. Requirement

When the need for a CRS has been judged necessary under paragraph 3 of this requirement, for an aircraft which has been externally painted or had some significant change to its finish, such as paint removal and subsequent polishing, then a CRS must be issued upon completion of the process.

5. Certification of Release to Service

- 5.1 Kuwait DGCA will not grant specific approval for painting of aircraft. Therefore, specialist painting organisations will not be entitled to issue any certification in respect of the airworthiness status of an aircraft following painting, unless the organisation holds an appropriate Kuwait DGCA organisation approval.
- 5.2 A licensed aircraft engineer holding the relevant Category B1 Licence for the class of aircraft, with any type rating in the appropriate subcategory of KCASR 1, Part 66, has authority to issue a CRS for the satisfactory completion of the external finish.

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Chapter 52 Doors

52-001 Cargo Containment

1. Applicability

This general requirement is applicable to the approval of containers used in aircraft for the transportation of cargo in which the securing of the cargo to the aircraft structure is dependent upon the strength of the container. It includes containers used for the transportation of livestock e.g. pens and horseboxes.

2. Requirements

2.1 Containers, whether built into the aircraft or as self-contained units intended for transfer from one aircraft to another, shall with effect from the date of issue of this general requirement, together with their means of installation into aircraft, comply with the appropriate strength requirements of either:

- (a) the flight, ground and emergency alighting loads; or
- (b) the flight and ground loads, depending on their intended location in the aircraft.
The containers and their means of installation into aircraft shall have been approved in accordance with procedures acceptable to Kuwait DGCA.

Note 1: For the purposes of this general requirement, the “appropriate strength requirements” are the prescribed requirements associated with the type certification basis accepted by Kuwait DGCA for the issue of the Certificate of Airworthiness for the aircraft in which the containers will be installed.

2.2 Operators shall make adequate provision for care and maintenance of containers under their control and shall, where appropriate, formulate and adopt procedures for ensuring that containers to be used on their aircraft are of an approved type and in an acceptable condition. These procedures will be examined by Kuwait DGCA as part of the routine assessment of operators’ maintenance procedures.

2.3 The operator’s loading manual or similar document shall include adequate instructions for the assembly, installation and maintenance of containers and their installations.

52-002 Access to and Opening of Type III and Type IV Emergency exits

1. Applicability

- 1.1 This general requirement is applicable to all State of Kuwait registered aeroplanes over 5700 kg MTWA, operating for the purposes of commercial air transport and configured to carry 20 or more passengers and equipped with Type III emergency exits and/or Type IV emergency exits or their equivalent. Exits considered being equivalent to Type IV exits are referred to as Type IV exits in this general requirement.
- 1.2 For the purpose of this general requirement, exits which are smaller in size than Type III emergency exits (including elliptical exits) shall be deemed to be Type IV emergency exits, even though they are not formally classified as such.

2. Compliance

- 2.1 All aeroplanes defined in paragraph 1 with Type III or Type IV emergency exits shall comply with the requirements of this general requirement.
- 2.2 With effects from the date of issue of this general requirement all aeroplanes defined in paragraph 1 which are subject to the provision of a new or amended seating configuration shall comply with the requirements of section 3.

3. Requirements

- 3.1 To facilitate rapid opening and disposal, each Type III and Type IV emergency exit, in addition to meeting the current requirements of the state of design shall have access space meeting the requirements specified in either paragraph (a) or (b) for Type III exits or either paragraph (c) or (d) for Type IV exits, where conventional seating arrangements are installed, and in addition paragraph (e) when face to face seating is installed.

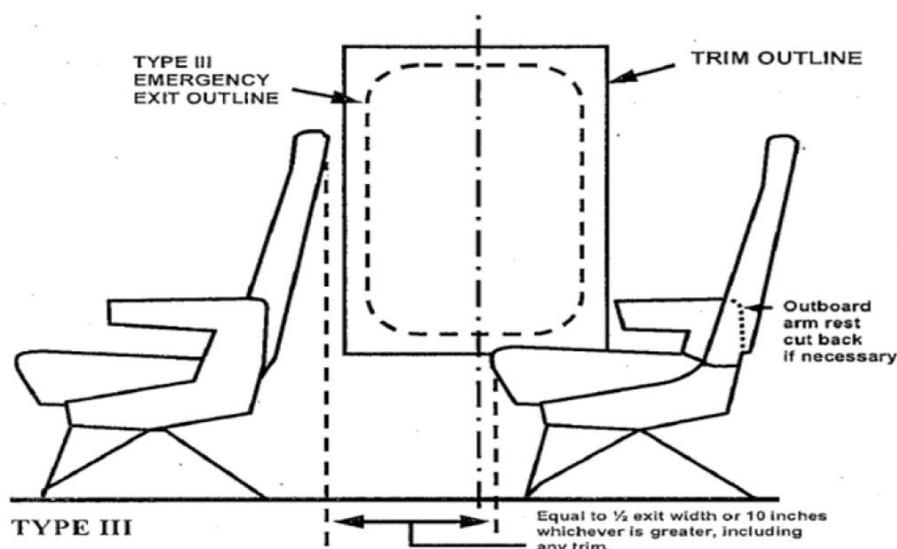


Figure 1 - Minimum Access Space Required By Paragraph 3.1(a)

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- (a) Where all forward facing or all aft facing seats are arranged such that there is a single access route between seat rows from the aisle to a Type III exit, the access shall be of sufficient width and be located fore and aft so that no part of any seat which is beneath the exit extends beyond the exit centre line and the access width between seat rows vertically projected, shall not be less than half the exit hatch width including any trim, or 10 inches, whichever is the greater (see Figure 1).

Note: *The outboard arm rest must not protrude across the exit aperture nor impede the removal of the exit hatch.*

- (b) Seats may only be located beyond the centre line of a Type III exit provided there is a space immediately adjacent to the exit which projects inboard from the exit a distance no less than the width of a passenger seat and the seats are so arranged as to provide two access routes between seat rows from the cabin aisle to the exit.

Note: *Where more than one access route from the cabin aisle to a Type III exit is provided, the minimum access width referred to in paragraph 3.1.(a) need not apply.*

- (c) Where all forward facing or all aft facing seats are arranged such that there is a single route from the aisle to a Type IV emergency exit then the projected exit aperture shall not be obstructed from the exit inboard for a distance equal to one passenger seat to the aisle (see Figure 2 of this general requirement).

Note 1: *Some incursion into the projection area of the emergency exit hatch, including its trim, may be acceptable so long as it can be shown that the incursion does not impair the rapid removal of the exit hatch.*

Note 2: *The outward arm rest must not protrude across the exit aperture nor impede the removal of the exit hatch.*

- (d) Seats may only be located in line with a Type IV exit such that the seat back is within the projected exit aperture provided there is a space immediately adjacent to the exit. Such a space shall project inboard from the exit a distance no less than the width of a passenger seat and be so arranged as to provide two access routes between seat rows from the cabin aisle to the exit.

- (e) Where face-to-face seating is provided adjacent to the emergency exit, the minimum permitted distance between any parts of the seat rows shall be 16 inches vertically projected and the minimum permitted distance between the plane of the seat backs on either side of the access route shall be 52 inches measured on the mid-lines of each seat place at a height of 3 inches above the seat cushions (See Figure 3).

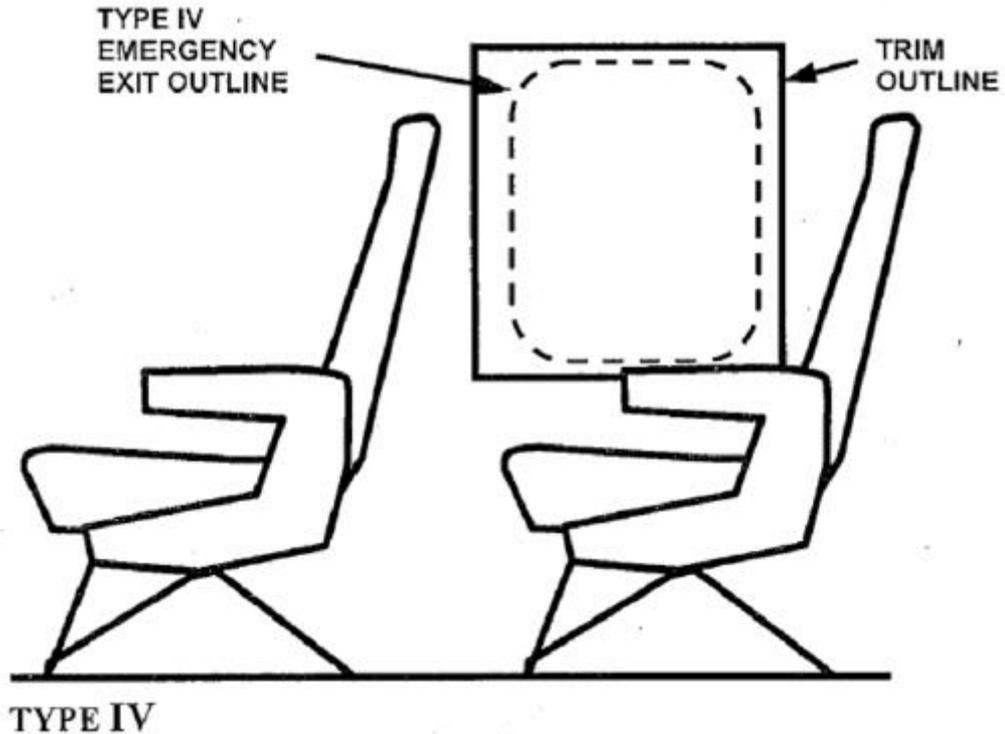


Figure 2 - Minimum Access Required By Paragraph 3.1(c)

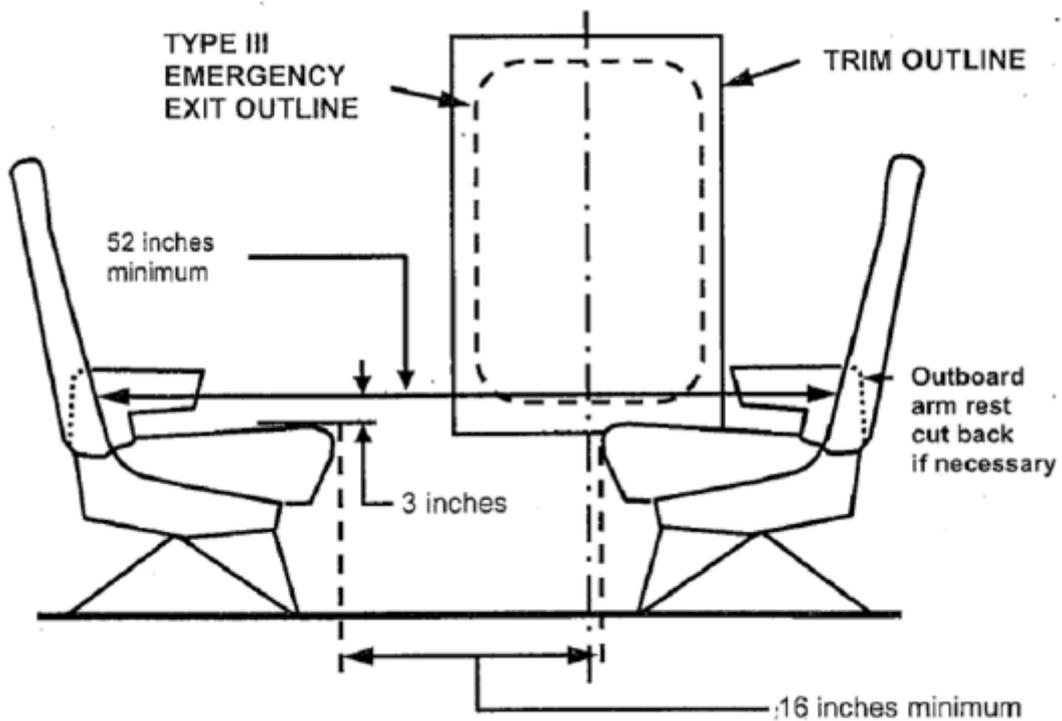


Figure 3 - Minimum Access Required By Paragraph 3.1(e)

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- 3.2 Instruction Placards, clearly indicating the method of opening and disposal of each Type III and Type IV emergency exit, (additional to existing opening instructions at the exit), shall be located in a prominent position in front of, and clearly visible to, the occupant of each seat which forms the access route from the cabin aisle to the exit.
- 3.3 The seat back of each seat which forms the boundary of the access route to each Type III and Type IV emergency exit shall be restricted in its movement (break forward and recline, where fitted) so as to maintain the minimum access to the exit required by paragraph 3.1, and ensure that the seat back is in an essentially upright position, without overlapping the projected opening of the exit.
- (a) the seat back shall be capable of maintaining the essentially upright position under loads of up to 150 lbf (pounds force) which should be applied horizontally, in each direction of travel, at the structurally most critical point. The seat back, when under load, should remain upright within 20 degrees rearward and 10 degrees forward relative to a plane normal to the cabin floor, and any permanent deformation should not significantly impede access to the exit.
 - (b) permanent deformation should be kept to a minimum particularly where access.
 - (c) dimensions are close to the minima specified in this requirement. The seat manufacturer or organisation responsible for any necessary seat modifications should declare such deformation data to enable an assessment to be made of its significance in the specific seating layout.
- Note:** *The seat backs of aisle seats need not be maintained in the essentially upright position where this would facilitate improved access to the escape routes, provided that the minimum access to the exit required by paragraph 3.1 is maintained.*
- 3.4 The interior surface of each exit hatch shall be free of any significant projection that might inhibit or otherwise delay the exit opening. The past practice of mounting stub armrests on the exit shall be discontinued.
- 3.5 The seat pan and lower back rest suspension of all seats bounding the access route(s) from the cabin aisle to the emergency exit shall be free from any gaps that might entrap a foot or other part of a person standing or kneeling on the seat.

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Chapter 61 Propellers

61-001 Maintenance Requirements for variable pitch propellers installed on aircraft holding a Kuwait Certificate of Airworthiness, and Appendix I to 61-001

1 Applicability

- 1.1 The requirements of this general requirement are applicable to variable pitch propellers, variable pitch propellers which have been locked and to ground adjustable propellers. For modular propellers the calendar periods referred to in this general requirement shall apply to propeller hubs and blades individually.
- 1.2 Any overriding mandatory requirements in respect of particular propeller issued either by the airworthiness authority of the state of design or manufacture of a propeller, or by Kuwait DGCA will take precedence over this general requirement. For the purposes of compliance with an AD which specifies requirement as a function of overhaul, the bare blade inspection required by paragraph 3.2 (b) shall be deemed as overhaul.

2 Compliance

- 2.1 Any overriding mandatory requirements in respect of particular propellers issued either by the airworthiness authority of the state of design of a propeller, will take precedence over this general requirement. For the purposes of compliance with an AD which specifies requirements as a function of overhaul, the bare blade inspection required by paragraph 3.2(b) shall be deemed as an overhaul.
- 2.2 Propellers with no manufacturer recommended calendar overhaul limitation.
- (a) For propellers where no calendar overhaul interval is recommended by the manufacturer paragraphs 2.2 (a) (i) and (ii) must be complied with;
- (i) At 3 years since new or overhaul or the inspection defined in paragraph 3.2 (b) of this general requirement, complete the hub/blade inspection specified in paragraph 3.2 (a).
- (ii) At 6 years since new or overhaul or the inspection defined in paragraph 3.2 (b) of this general requirement, overhaul the propeller in accordance with the manufacturer's instructions.
- (b) On reaching the manufacturer's recommended flight hour TBO period the propeller must be overhauled.
- (c) For propellers with composite blades, in the absence of any manufacturer's overhaul periods in terms of calendar time, the composite blades should be subject to overhaul at a period not exceeding 6 years in accordance with the manufacturer's instructions.

The 3 year inspection of paragraph 3.2 (a) need not be carried out.

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- 2.3 Propellers with a manufacturer recommended calendar overhaul limitation.
- (a) Propellers which are currently maintained in accordance with paragraphs 3.2.(a) (3 year inspection) and 3.2.(b) (6 year bare blade inspection) of this general requirement, may remain in service until the next scheduled inspection, in accordance with this general requirement, at which point the following will apply;
- (i) At 3 years since inspection defined in paragraph 3.2.(b) of this general requirement, the propeller must either be overhauled in accordance with the manufacturer’s instructions, or inspected in accordance with paragraph 3.2.(a) of this general requirement.
- (ii) On reaching 6 years since inspection defined in paragraph 3.2.(b) of this general requirement, the propeller must be overhauled in accordance with the manufacturer’s instructions. After this time the propeller shall continue to be overhauled in accordance with the manufacturer’s instructions at the manufacturer’s recommended period unless varied by the approved maintenance programme.
- 2.4 The periods of operation or elapsed calendar time prescribed in the Appendix I to this general requirement shall be calculated from the date of the initial installation of the propeller on an aircraft following manufacture or complete overhaul of the propeller and may be preceded by a period of storage of up to 2 years which has been carried out in accordance with the manufacturer’s recommendations. Periods of storage in excess of 2 years or subsequent to the initial installation shall be counted as if the propeller were installed. Where the specific manufacturer has provided information on this topic within their instructions then this should be followed.
- 2.5 The applicability and compliance requirements of this generic requirement are summarised in Tables 1 and 2 of the Appendix I to this generic requirement.

3 Propeller Inspections

- 3.1 The inspection of propellers required by Tables 1 or 2 of Appendix I shall be undertaken by an organisation approved by the Kuwait DGCA for the purpose.
- 3.2 The inspections and re-work shall be carried out in accordance with the manufacturer’s instructions and as a minimum shall include:
- (a) Hub/blade inspection.
- (i) Dismantling of the propeller sufficiently to gain access to the blade root bearing assemblies.
- (ii) Thorough cleaning of the blade root assemblies in accordance with the manufacturer’s instructions.
- (iii) Examination for pitting, fretting, corrosion, cracking and other damage of the hub, bearings, blade roots, and housing, together with replacement of any disturbed seals. All of the blade surfaces shall be examined for

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damage, delamination (where applicable), and the presence of corrosion, removing the paint finish as necessary.

In cases where de-icer boots or overshoes are installed on the blades, a detailed examination for corrosion around their edges shall be carried out, and, if any evidence is found, the boots/overshoes shall be removed to permit a full inspection of the masked areas. Any corrosion shall be removed and the blades re-protected.

In cases where de-icer boots/overshoes are removed, replacement parts shall be installed using the facilities prescribed and under conditions and procedures specified, in the relevant manufacturer's Overhaul Manual.

- (iv) Non Destructive Inspection of the hub and blade roots shall be carried out in accordance with the manufacturer's instructions except where it can be verified that Non Destructive Inspection of the hub and blade roots has been carried out in accordance with the manufacturer's instructions within the last 4 years.
 - (v) Checking the track of the propeller after refitting, then functioning throughout its operational range by means of an engine run to verify correct performance, and to establish that any vibration is within acceptance limits, in accordance with the manufacturer's instructions.
- (b) Bare blade inspection.
- In addition to the hub/blade inspection ref. 3.2(a);
- (i) Removal of all de-icing boots or overshoes and fairings.
 - (ii) Removal of all paint and erosion protection.
 - (iii) Removal of all blade root bushings and plugs.
 - (iv) Inspection of the complete blade surface for the presence of corrosion. Any corrosion shall be removed and the blades re-protected and prepared for the reinstallation of the blade fittings.
 - (v) All NDI required for overhaul of the propeller shall be carried out in accordance with the manufacturer's instructions.
 - (vi) Full dimensional inspection of all blades.

4 Record of Accomplishment

A comprehensive record of the inspection and work done in accordance with paragraph 3 of this general requirement shall be retained and an entry, making a reference to this record, shall be inserted in the propeller log book.

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Propellers shall be maintained in accordance with (a) of the appropriate following tables, unless no calendar overhaul period is published by the propeller manufacturer. In this case they shall be maintained in accordance with (b).

Table 1: Propellers fitted to Aircraft with MTOM of 5700 kg or above

(a)	Overhaul Period	Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Programme.
(b)	Overhaul Period	Operating hours as published by the propeller manufacturer or on condition where no calendar life has been published subject to (i) and (ii) below.
	(i) Hub/blade inspection period	Inspect at 3 years since new or overhaul or inspection (ii) below.
	(ii) Bare blade inspection period	Not to exceed 6 years since new, overhaul or last bare blade inspection.

Table 2: Propellers fitted to Aircraft with MTOM below 5700 kg

(a)	Overhaul Period	Whichever occurs first of operating hours or calendar period as published by the propeller manufacturer unless varied by the Approved Maintenance Programme.
(b)	Overhaul Period	Operating hours as published by the propeller manufacturer or on condition where no calendar life has been published subject to (i) and (ii) below.
	(i) Hub/blade inspection period	Inspect at 3 years since new or overhaul or inspection (ii) below (but may be phased to next annual check or Certificate of Airworthiness Renewal provided period does not exceed 4 years).
	(ii) Bare blade inspection period	Not to exceed 6 years since new, overhaul or last bare blade inspection.

Note. Hub/blade inspections and bare blade inspections are to be in accordance with the procedures of para 3 of this general requirement.

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Chapter 72 Engines

72-001 Light Aircraft Piston Engine Overhaul Periods

1. Introduction

- 1.1 KCASR 8, Part M, Subpart C, M.A.302 requires that aircraft registered in the State of Kuwait, for which a Certificate of Airworthiness (C of A) is in force, to be maintained in accordance with an approved Maintenance Programme.

The instructions for continuing airworthiness requirements relating to overhaul of light aircraft piston engines are normally defined as the engine manufacturers' recommended overhaul periods, where these have been promulgated under a system approved by the airworthiness authority responsible for the engine. The Kuwait DGCA policy in respect of extensions to the recommended overhaul periods (operating time and calendar time) for piston engines used in light aircraft is set out in this general requirement.

- 1.2 The DGCA will permit the extension of recommended overhaul periods as defined in 3.1.(a) and 3.1.(b) on the basis of the effect on airworthiness only. The economics of operation is not the responsibility of the Kuwait DGCA, although this may have been considered by the manufacturer in establishing the recommended overhaul periods. Aircraft owners/operators must make their own decisions on these other aspects. Unless satisfied that the engine remains in an airworthy condition, the owner/operator should have the engine overhauled.

2. Definition

For the purposes of this general requirement;

- (a) 'Light aircraft piston engine' in this context means either:
- (i) a piston engine installed in an aircraft, the Maximum Take Off Weight of which does not exceed 2730 kg; or
 - (ii) a piston engine of 400 hp (298 kW) or less.
- (b) For the purpose of this general requirement the term 'engine' includes the components and equipment necessary for satisfactory functioning and control. The propeller and its associated equipment are excluded except for those components that are part of the engine type design.

3. Compliance

Continuation in service shall be subject to compliance with paragraph 3.1, as qualified by paragraphs 3.1.(a) and 3.1.(b), as appropriate.

- 3.1 Unless otherwise stated, engines may be operated to the overhaul periods which have been recommended by the manufacturer and promulgated under a system approved by the airworthiness authority responsible for the engine. All such recommendations, whether stated in terms of operating time or calendar time, constitute a recommended overhaul period for the purposes of this general requirement, including recommendations by the manufacturer for reduced overhaul periods with particular types of operation or particular service bulletin/modification configurations.

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- (a) Under the provisions of this general requirement, engines that have reached the operating time or calendar time limitation of a recommended overhaul period may continue in service for a further period of operation not exceeding 20% of the recommended operating time or calendar time, whichever occurs first, subject to compliance with (i) to (vi).
- (i) Compliance being shown with the appropriate limitations specified in Appendix 1 paragraph 5, of this general requirement.
 - (ii) Compliance being shown with any applicable Airworthiness Directive (AD) which requires compliance at engine overhaul, unless otherwise agreed by Kuwait DGCA.
 - (iii) The engine must have been installed and operated in a State of Kuwait-registered aircraft, or in an aircraft whilst previously registered in another accepted ICAO Member State for a period of 200 hours immediately prior to completion of the engine manufacturer's recommended overhaul period expressed in hours, and 12 months prior to completion of the manufacturer's overhaul period expressed in terms of calendar time.
 - (iv) For engines on aircraft transferring to the State of Kuwait from operation on another ICAO Member State's register, where an engine manufacturer's recommended overhaul limit has already been exceeded, shall be subject to further assessment to determine the general requirements eligibility. Under such circumstances, engines will only qualify under this requirement where it can be demonstrated that the previous continued in service operation was in accordance with maintenance programme instructions issued by the competent authority of the exporting ICAO member state.
 - (v) The engine being inspected in accordance with paragraph 4 in order to assess its condition immediately prior to the increase, and subsequently at 100 hour or yearly intervals, whichever occurs first.
 - (vi) The data obtained during the inspections of paragraph 4 being entered in the engine log book.
- (b) Engines that have complied with paragraphs 3.1 and 3.1.(a), and have completed 120% of the recommended operating time or calendar time, whichever occurs first, may continue in service indefinitely, subject to compliance with (i) to (iv).
- (i) The engine being installed in an aircraft which is not used for the purposes of commercial air transport or aerial work (with the exception of aircraft utilised for the purposes of towing gliders/sailplanes which are owned).
 - (ii) Compliance being shown with the appropriate limitations specified in Appendix I paragraph 5, to this general requirement.
 - (iii) The engine being inspected in accordance with paragraph 4 in order to assess its condition before exceeding 120% of the recommended operating time or calendar time, whichever occurs first, and subsequently being inspected and re-assessed at 100 hour or yearly intervals, whichever occurs first.
 - (iv) The data obtained during the inspections of paragraph 4 being entered in the engine log book. A log book entry should also be made to restrict engine usage during this extension period to flying for the purposes of non-commercial flight only.

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- 3.2 In the event that the inspection referred to in paragraphs 3.1.(a) and 3.1.(b) results in rejection, a thorough engineering investigation must be carried out to establish the maintenance actions required to return the engine to an airworthy condition.
- 4** The inspections referred to in paragraphs 3.1.(a) and 3.1.(b) to assess the condition of engines shall be carried out by persons or organisations as follows:
- 4.1 Engines installed in aircraft that are used for the purposes of commercial air transport or aerial work by an KCASR 6, approved operator under an air operators certificate, shall, in order to comply with paragraph 3.1.(a), be inspected by a KCASR 8, Part-145 Maintenance Organisation appropriately approved for the purpose.
- 4.2 All other engines, in order to comply with paragraph 3.1.(a) and 3.1.(b), shall be inspected by an appropriately licensed aircraft maintenance engineer or KCASR 8, Part 145 Organisation.
- 5** In no case shall any mandatory requirements be exceeded, and the compliance with mandatory bulletins/modifications/inspections shall be completed at the specified times.
- If during the course of operating beyond the engine manufacturer's recommended overhaul limits in accordance with this general requirement the engine experiences a mechanical failure or inspection requirement necessitating full or significant partial engine strip to rectify, then the engine must at this stage be overhauled. Examples of these include propeller strike events and follow up inspections, and crankshaft/camshaft replacements for wear-related issues. Defects requiring replacement of individual cylinder and piston assemblies, and oil pump (where such work does not involve the removal/replacement of individual gears) are not included in the category of maintenance necessitating full overhaul.
- 6.** In the case of engines not incorporating all the service bulletins/modifications or parts that would enable it to qualify for any manufacturer's recommended overhaul period as defined in paragraph 3.1 of this general requirement, or in the case of engine types not included in the manufacturers' bulletins, a specific statement of acceptability in writing must be sought from the engine manufacturer, and if this is not obtainable, an application must be made to the Kuwait DGCA. The Kuwait DGCA need not be consulted in a case where the only question is that an engine manufacturer's documents restrict recommended overhaul periods to engines embodying only parts specified by the engine manufacturer.
- 7.** For clarity, the requirements of paragraph 3 are presented in tabular form in Appendix II to this general requirement.

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- 1 The concept of allowing engines to run beyond the manufacturer's recommended overhaul period depends upon it being possible to assess the condition of the engine by prescribed inspections carried out at defined intervals. It is not intended to provide a freedom to run until the engine fails.
- 2 Although it is possible to identify engine degradation in many areas of the engine, there are some potential failure modes (e.g. crankshaft cracking, counterweight wear) for which predictive checks would not be effective without engine disassembly.
- 3 For the above reasons, the overhaul period extensions defined in 3.1.(a) and 3.1.(b) of this general requirement may not be applied unless adequate in service reliability has been demonstrated, particularly in relation to failures which cannot be prevented by on-wing inspection. Those engine types that are not eligible to make use of the provisions of this general requirement are detailed in paragraph 4 of this appendix.

4. Limitations

The provisions of this general requirement are applicable to all light aircraft piston engines except where listed below:

- 4.1 Rolls-Royce (de Havilland) Gipsy Major Engines - Prior to running beyond 120% of the manufacturer's recommended overhaul period, engines other than Major 10 and earlier marks incorporating Modification 2385 (splined propeller attachment) must have the taper portion of the crankshaft "Sulfinuz" treated by Modification 2690 or appropriate alternative. In accordance with Rolls-Royce Technical News Sheet G15, engines must not exceed an overhaul period of 1000 hours unless Modification 2495 is embodied.
- 4.2 Rolls-Royce (de Havilland) Gipsy Engines - With effect from 1 January 2011, crankshafts fitted to engines on aircraft used for the purposes of commercial air transport or aerial work must be fully inspected in accordance with the relevant overhaul manual workshop instructions at intervals not exceeding 20 years, if operating hours limits requiring overhaul are not achieved within this period.
- 4.3 The following engine types have yet to accumulate sufficient service experience to demonstrate acceptable reliability when operating at the manufacturer's recommended overhaul period. The provisions of this general requirement are not applicable to:
 - (a) Societe de Motorisations Aeronautique - All types;
 - (b) Rotax - All types, except when installed in self-launching or self-sustaining sailplanes;
 - (c) Thielert Centurion Engines - All types;
 - (d) Mid-West Engines - All types.

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	Commercial Air Transport	Non Commercial
Within Recommended Overhaul Period	Manufacturer's recommended overhaul period, defined in operating time and calendar time (if applicable), provided the engine conforms to appropriate service bulletin/modification configuration and types of operation (otherwise see paragraph 6 of this General Requirement).	
Extensions not exceeding 20% of Recommended Overhaul Period (operating time and calendar time)	Acceptable subject to: Compliance with Appendix 1 paragraph 4 to this General Requirement. Compliance with all applicable ADs required to be incorporated at engine overhaul. Inspections in accordance with paragraph 3 of this General Requirement at completion of recommended overhaul period (operating time or calendar time) and then at 100 hour or yearly intervals, whichever occurs first. The engine must have been installed and operated in a Kuwait registered aircraft for a period of 200 hours prior to completion of the engine manufacturer's recommended overhaul period. (In some circumstances, aircraft imported from outside Kuwait which have not exceeded the manufacturer's recommended overhaul period but which have less than 200 hours remaining could be considered for extension with suitable technical justification to the Kuwait DGCA).	
Extensions in excess of 20% of Recommended Overhaul Period	No further extension (in exceptional circumstances, DGCA may consider applications for extension for a limited period to address an urgent operational need).	Engines may continue in service indefinitely subject to: a) Compliance with Appendix 1 to this GR. b) Further inspection in accordance with paragraph 4 of this General Req at 120% and then at 100 hour or yearly intervals, whichever occurs first.