

Revision 3

## Microlight Aircraft—Operating Rules

09 November 2012

### General

Civil Aviation Authority Advisory Circulars contain information about standards, practices, and procedures that the Director has found to be an **Acceptable Means of Compliance (AMC)** with the associated rule.

An AMC is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate Advisory Circular.

An Advisory Circular may also include **Guidance Material (GM)** to facilitate compliance with the rule requirements. Guidance material must not be regarded as an acceptable means of compliance.

### Purpose

This Advisory Circular provides acceptable means of compliance and guidance material for showing compliance with Civil Aviation Rule Part 103.

### Related Rules

This Advisory Circular (AC) relates specifically to Civil Aviation Rule Part 103.

### Change Notice

Revision 3 amends the specifications defining an aircraft that meets the “microlight aircraft” definition and adds AMC and GM information.

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## 1 General

The primary purpose for the revision to this AC is to revise the low momentum parameters referred to in the definition of a microlight aircraft. The low momentum parameters are revised to provide for an increase in allowable maximum all-up weight to:

- (1) 600 kilograms for an aircraft not equipped to land on water; and
- (2) 650 kilograms for an aircraft equipped to land on water.

The revised changes referred to in the first paragraph bring New Zealand into line with equivalent standards in other countries such as Australia, where imported microlight aircraft are manufactured. This AC was last revised in 2000 and did not contain all the relevant guidance material relating to the use of microlight aircraft. A revision of the low momentum parameters regarding the definition of a microlight aircraft has led to the review of existing guidance material. As a result, additional guidance material is provided in this AC to the rules under Part 103. These are set out in section 2 below.

The definition of a microlight aircraft is found in Rule Part 1 and is repeated below:-

**Microlight aircraft** means a basic low performance aircraft designed to carry not more than 2 persons which meets low momentum parameters that are acceptable to the Director:

The following specifications are considered as an acceptable means of compliance to meet the definition of a microlight aircraft:

any of the microlight specifications called up in the type design standards listed in Appendix 1 of this AC.

or

a 1 or 2 seat aircraft whose stall speed in the landing configuration at maximum gross weight does not exceed 45 Knots and whose maximum gross weight does not exceed:

For a 2 -place landplane 600 kg; or

For a 2 -place seaplane or amphibian 650 kg; or

For a single place landplane does not exceed 510 kg; or

For a single place seaplane or amphibian does not exceed 550 kg.

## 2 Rule Compliance

**Only rules requiring guidance or acceptable data are addressed in detail throughout this AC**

### **GM 103.5(a)(1) Pilot requirements**

A microlight pilot certificate referred to in this rule is issued by a holder of an aviation recreation organisation certificate under Part 149 (Part 149 Aviation Recreation Organisation). While not specifically provided for in Part 103, the performance of a biennial flight review is required under the operating procedures of the Part 149 organisation from which the pilot certificate was issued. Pilots should be aware of the need to have a biennial flight review prior to acting as pilot in command.

Pilots holding foreign microlight pilot certificates may apply to a Part 149 organisation to have their experience assessed and if satisfactory, recognised and a New Zealand microlight pilot certificate issued.

**NOTE**

*Microlight certificates are not recognised by ICAO and therefore cannot be used in foreign countries without assessment establishing equivalence and the issue of a microlight pilot certificate by that country.*

**GM 103.7(2)(ii) Flight instruction**

It should be noted that the requirement is to demonstrate competence in the piloting of a microlight aircraft to a microlight instructor. The purpose of the requirement to demonstrate competence to a microlight instructor is to ensure that the person holding an instructor rating under Part 61 is familiar with the unique handling characteristics of very low momentum aircraft.

**4. Subpart E – Operating Rules**

**GM 103.101 Registration**

This rule requires the applicant for a certificate of registration to provide evidence that the aircraft meets the definition of a microlight as defined in Part 1. This may be met by showing evidence that the aircraft meets a type design standard listed in rule 103.207(a)(1)(ii). It should be noted that it is the applicant's responsibility to provide this information. Insufficient information will delay registration as the details of the model and certification basis are required to be loaded into the CAA database to enable the registration certificate to be issued.

This is particularly important for a Class 1 microlight, where the CAA does not have any other involvement with the aircraft after registration. The CAA must have some definitive data to confirm eligibility. This may be provided from an authoritative source such as the manufacturer's published descriptive material or website. Another option would be evidence that the aircraft has been accepted as a microlight by another recognised national airworthiness authority in the form of a certificate of registration.

**GM 103.103 Aircraft flight manual**

A person operating a microlight aircraft is not required to operate the aircraft in accordance with operating limitations specified in the aircraft flight manual. This was appropriate for the low performance simple microlights that were typical when the rule was originally written.

Some microlights are now quite sophisticated aircraft with some having retractable landing gear, relatively complex systems and quite high performance. The manufacturer may produce a comprehensive flight manual for the aircraft. The CAA considers it appropriate that in those cases the pilot should use that document.

The Microlight Flight Permit contains as standard wording "*This Aircraft shall be operated in accordance with any limitations specified by the manufacturer*". Therefore it is expected that a pilot will use and comply with the limitations found in the manufacturer's flight manual and ensure all limitation placards and markings are installed.

**GM 103.105(a) Documents to be carried**

A person operating a microlight aircraft is not required to carry the flight manual. For a similar reason as specified in the guidance material for rule 103.103, it is strongly recommended that the manual/document the manufacturer provides with the aircraft is carried on board and is available in flight.

**GM 103.107 Placards**

The placards required here must be legible and that means it must be in contrasting colours and be able to be read by the pilot in the seated position. The data for the design or certificated gross weight (whichever is the lesser) and the maximum and minimum payload shall be extracted from the design specifications or flight manual provided by the manufacturer. Where additional equipment is added subsequent to the weight and balance calculations carried out by the manufacturer a new empty weight is to be established so the true payload can be determined. This payload is to be used to develop the placard required by rule 103.107(a)(2).

**5. Subpart F – Flight Rules****GM 103.151 Fuel requirements**

A pilot of a microlight aircraft is not required to operate with a 30 minute fuel reserve. While this was appropriate for the low performance simple microlights that were in evidence when the rule was originally written. Some types of modern microlight are capable of cross country flight with a significant endurance. For that type of aircraft it is recommended that the operator comply with the requirements of rule 91.305(a).

**GM 103.153 Minimum heights**

While rule 91.311 prohibits operating an aircraft at a height of less than 500 feet under VFR, this rule permits the operation of a microlight below 500 feet. Again this was due to the low performance and mass of the early basic microlight. The more modern high-performance microlight can readily climb to normal circuit height. It is strongly recommended that an operator of a high performance microlight should not operate below the minimum 500 feet.

**103.155 Flight criteria**

For the purpose of rule 103.155(b)(2)(i), an equivalent examination means an examination conducted by a Part 149 organisation authorised to conduct the examination under the scope of their certificate.

**103.159 Carriage of passengers**

Rule 103.159(4) prohibits a pilot from carrying a passenger in a microlight aircraft unless the requirements specified in the rule are met. One of the requirements is that the aircraft has a statement of airworthiness entered in the applicable maintenance record under rule 103.213. The maintenance record referred to in this rule is usually the aircraft airframe log book. Therefore the pilot must make sure to check that the statement of airworthiness is entered in the aircraft airframe log book before carrying any passenger.

**6. Subpart G – Airworthiness and Maintenance****103.205 Application for flight permit**

Note that by virtue of the definition of a class 2 microlight aircraft in Part 1, a class 1 helicopter would be included.

**103.207 Issue of flight permit**

This rule specifies the requirements for the issue of a microlight flight permit. An applicant is required to provide documented evidence relating to the 3 components:

1. Type design acceptance; and
2. Compliance with mandatory requirements; and
3. Assessment of individual aircraft condition.

Each aspect is described in more detail below:

**AMC 103.207(a)(1) (Type Design Acceptance)**

The rule requires a Class 2 microlight to have had some kind of type design acceptance. The 3 ways that this can be achieved are as follows:

- (1) If the microlight has been shown to meet a detailed airworthiness design standard of any one of the foreign civil aviation authorities referred to in the rule. The issue of a microlight type certificate or equivalent document is considered to be sufficient evidence of a microlight conforming to a type design standard required by the rule. It could also be demonstrated by the issue of a microlight flight permit by a foreign aviation authority which was known to have such type design requirements. You will note that an 'equivalent' document referred to here is one that is acceptable to the Director.
- (2) By providing evidence of a satisfactory airworthiness history of the aircraft type. This is the more common method for microlights, as many countries (like New Zealand) do not have any formal airworthiness certification requirements for microlights. The CAA would expect a formal statement to this effect from the aircraft manufacturer, although a less formal statement in the form of a news report from an authoritative source may be accepted.
- (3) If neither of the methods described in paragraphs (1) or (2) can be achieved, or in the case of a one-off design, the rule also provides for individual type acceptance by endurance test similar to that done for amateur-built aircraft. The flight test period would usually be a minimum period of 40 hours.

**AMC 103.207(a)(1)(ii)(D)**

This rule permits the Director to accept other design standards found to be an equivalent to the design standards listed in paragraphs A, B and C. Appendix 1 to this AC, entitled *Equivalent Design Standards*, contains standards that are considered acceptable to the Director.

**GM 103.207(a)(2) (Mandatory Requirements)**

The evidence required here will normally be assessed at the time of the aircraft inspection for the issue of the microlight flight permit. The applicant is to have available a set of completed New Zealand log books for the airframe, engine and propeller, which should include details of any previous service if the aircraft is imported second hand. (The original foreign log books should also be available to support this history.)

Rule 103.207(a)(2)(iii) requires a statement to be inserted into the log books showing that required inspections, replacement, overhauls and maintenance that are considered mandatory by the manufacturer of the aircraft, engine or components have been complied

with. This information may be found in the service manual, flight manual, service bulletins and letters.

### **GM 103.207(a)(3) (Individual Aircraft Condition Assessment)**

This rule refers to the inspection required prior to the issue of a microlight flight permit. At the present time this inspection can only be carried out by the CAA. (Prior to this inspection the CAA will expect an annual inspection to have been carried out as per rule 103.217(c)(1).) If the inspection is satisfactory a statement will be inserted into the airframe log book referencing this rule.

### **GM 103.207(b) Temporary flight permit**

This rule is used to allow a New Zealand designed and manufactured microlight that does not meet any of the foregoing standards to be flown for the purpose of proving the design. In these cases the microlight must be subject to the wing and undercarriage tests required in British Civil Airworthiness Requirements section "S". Copies of this document can be downloaded from the British CAA web site.

### **GM 103.207(c) Operating Limitations for temporary flight permit**

The temporary flight permit will have limitations specified on it and will terminate on a specific date which will not exceed 6 months. The limitations might address the following items:-

- The specific area where the flights can take place.
- The name of the pilot to conduct the test flights
- The configuration of the aircraft
- The kinds of tests that can be conducted

### **GM 103.209 Modification**

This rule requires the operator who modifies a microlight that has a flight permit and that modification may affect the airworthiness of the aircraft, to have the aircraft re-inspected to ensure it still fully complies with the requirements of rule 103.207.

Current Part 149 organisations have technical officers who can examine the modification and assess for compliance with rule 103.207. If the assessment is satisfactory, an entry should be made in the aircraft log book detailing the modification and attesting to the fact the aircraft still meets the requirements of rule 103.207. Note that the inspection required by rule 103.207(3) must be made by a person authorised by the Director.

This requirement is a limitation found on the microlight flight permit.

### **GM 103.211 Endurance Testing**

The following guidance material is provided in respect of aircraft specified in paragraphs (1) to (4) of the rule:

- (1) This refers to an aircraft built from plans and the builder has sourced the raw materials.
- (2) This refers to an aircraft built from plans but the raw materials are provided in a kit from a recognised supplier.

(3) These kits consist of pre made parts with all materials supplied and are assembled using assembly instructions.

(4) No construction required; just assembly of major components.

### **GM 103.213(1) Statement of airworthiness**

This rule requires the pilot who completes the endurance testing to make a statement in the maintenance records. Maintenance record in this context should be taken to mean the aircraft log books.

The details required by rule 103.213(1) are to include:

- list of the manoeuvres completed (stalling, steep turns,  $V_{ne}$  dive and aerobatic manoeuvres etc.):
- the range of speeds at which the manoeuvres were performed:
- weights at which the aircraft was flown:
- the C of G limits at which the aircraft was operated.

To assist with recording these details, the NZ Sport Aircraft Association has developed a test schedule which addresses all these points.

### **GM 103.217 Maintenance and inspection requirements**

This rule provides for maintenance and inspection requirements in respect of class 1 and class 2 microlight aircraft.

Rule 103.217(a)(1) requires the operator to maintain the microlight in an airworthy condition. Rule Part 1 definition of “airworthy condition” is reproduced as follows:

**Airworthy condition** means the condition of an aircraft, including its components, fuel, and other materials and substances essential to the manufacture and operation of the aircraft, that complies with all the requirements prescribed by the *Civil Aviation Rules* relating to design, manufacture, maintenance, modification, repair, and safety:

Rule 103.217(a)(2) requires the operator to ensure that every applicable airworthiness directive is complied with in accordance with Part 39. Incidentally, Part 103 uses the same wording as those used in Part 91; ‘applicable to certificated aircraft’. It has been common practice to only record the ‘microlight’ airworthiness directives in the aircraft log books however many of the general airworthiness directives (not type specific) are also applicable to microlight aircraft because of the equipment or components fitted.

Modern microlights are becoming very sophisticated in utilising glass cockpits, auto pilots, transponders, constant speed propellers and retracting landing gear so the general airworthiness directives should be reviewed to ensure components fitted are not the subject of an airworthiness directive. When the airworthiness directives are initially reviewed, they are also entered into the airworthiness directive section of the log book, then, when it comes time for the annual condition inspection (which will include a review of applicable airworthiness directives) the hard work has been done and the inspector’s job is quicker. The hard job is loading them initially; however maintenance and update of the listing is easy if the operator subscribes to the free CAA notification service.

Rule 103.217(a)(3) is clear . When a defect occurs during normal operations, the defect must be rectified. It cannot be deferred until the next inspection.

103.217(b) is also straight forward. Most modern microlights are provided with a manufacturer's service or maintenance manual. These manuals will spell out the required inspection intervals and what is required to be done at each of the intervals. If your aircraft was provided with such a document then it must be complied with.

Rule 103.217 (c) is self-explanatory. However it should be noted that the reference to paragraph (h) is no longer applicable as the exemption dates have long since passed.

Rules 103.217(d), (e) & (f) provide for the conducting and certifying of the annual condition inspection. Certification is required to be made on an inspection form. Current Part 149 organisations provide their respective inspectors with a pre-printed inspection sheet for recording the inspection, results and the certification. A person who holds a current aircraft maintenance engineer licence with appropriate aircraft and engine group ratings under Part 66 must produce their own inspection sheet. This sheet is to provide for the same level of detail as those provided by the Part 149 organisations.

The person who performs the annual condition inspection is required to permanently affix the inspection form to the aircraft close to the point of entry. The inspection form must contain the following and be of a material robust enough to ensure it remains readable until the next annual condition inspection:-

- Name and signature of inspector:
- Authorisation number or licence number of inspector:
- Registration of aircraft:
- Date next annual condition inspection is due.

The form should also include the name of the organisation that the inspector is authorised by (if applicable).

### **GM 103.219 Construction**

A person is not required to comply with Part 148 (Manufacturing) if constructing a microlight aircraft from any of the material specified in the rule. However when a person or organisation is assembling or manufacturing microlights to sell for pecuniary gain then the person or organisation may seek Part 148 certification.

### **GM 103.221 Instruments and equipment requirements**

The reference to type design in paragraph (a)(1)(i) refers to one of the type designs specified in rule 103.207(a)(1)(ii) and which may identify instruments and equipment required to be installed in order to meet the particular type design.

Rule 103.221(a)(1)(ii) refers to additional instruments and equipment a designer or manufacturer may require over and above the type design requirements specified in paragraph (i) above.

Rule 103.221(a)(2) - Notwithstanding the need to have a means of indicating airspeed, altitude and magnetic heading, if an engine manufacturer requires engine instrumentation such as RPM, oil pressure and temperature, cylinder head temperature or coolant

temperature and EGT then these are to be installed. If the aircraft is a helicopter then in addition a means of indicating rotor and engine RPM are to be installed.

**APPENDIX 1 Equivalent Design Standards**

The following design standards are considered acceptable to the Director as equivalent microlight type design standards under rule 103.207(a)(1)(ii)(D).

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CS-VLA	European Aviation Safety Agency (EASA)
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