

SINGLE-SEAT MICROLIGHTS

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1. Introduction

In the UK, unlike two-seat Microlights, single-seat Microlights do not require a Permit to Fly, and as such are unregulated with regard to the airworthiness of the aircraft.

This leaflet describes the legal aspects of operating a single-seat Microlight.

1.1. Single-seat Microlights

The deregulation of single-seat Microlights is included in the Air Navigation Order¹. Therefore this deregulation applies to all single-seat Microlights and it is not possible to regulate a single-seat Microlight for the purposes of airworthiness. All other aspects of the Air Navigation Order do still need to be complied with unless a CAA Exemption is issued.

It is the pilots responsibility to ensure that the aircraft meets the single-seat definition, and accepts responsibility for the airworthiness of the aeroplane.

1.2. Previously grounded types

Purchasers should be aware that some single-seat Microlight types have previously been 'grounded' by the CAA following a number of fatal accidents. These include the Southern Aero Sports Scorpion, Huntair Pathfinder Mk. II and the Midland Ultralights (Aviasud) Sirocco 377GB. These types continue to be dangerous unless suitably modified.

The CAA has the power to stop any aircraft flying if it considers the aircraft is unfit for flight² – even if its airworthiness is not regulated. The BMAA believes that this power was used to ground the Scorpion and Pathfinder Mk.II, and that therefore these types can still not be legally flown despite being deregulated.

2. Definition of a single-seat Microlight aeroplane

Legally, a single-seat Microlight aeroplane must:

- Be an aeroplane. This includes powered parachutes and self-launching motor gliders, but does not include gliders (including self-sustaining gliders), rotary-wing aircraft (helicopters and gyroplanes), or lighter-than-air machines (balloons and airships).
- Only have a single-seat, and must only be flown with one person – the pilot – on board.

¹ Article 33 of the Air Navigation Order 2016

² Article 257 of the Air Navigation Order 2016

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- Not take-off weighing more than the single-seat Microlight weight limit. This is 300 kg for a landplane, 315 kg for a landplane with an airframe mounted total recovery parachute system, and 330 kg for a seaplane or amphibian.
- Have a stall speed (or minimum flying speed) not exceeding 35 knots calibrated airspeed. This is equivalent to 40 mph or 65 kph.

2.1. Maximum take-off weight

Although there is a legal limit (of 300, 315 or 330 kg) for the maximum take-off weight of a single-seat Microlight, be aware that this is very much an upper limit.

The maximum take-off weight specified by the designer should be respected. If the designer's stated maximum take-off weight is exceeded, structural safety margins may be reduced below those intended by the designer, and the aircraft's handling may be adversely affected.

Some aeroplanes might require their maximum take-off weight to be reduced – below the Microlight upper limit and the designer's value – in order to meet the Microlight stall speed requirement.

2.2. Stall, or minimum flying speed

The stall speed is measured:

- At maximum take-off weight and worst case CG position (usually forward CG).
- In the landing configuration (i.e. with full flap).
- By decelerating the aeroplane slowly – at approximately 1 knot per second – until the aeroplane stalls, or the control hits the stop. Although a lower speed can usually be achieved with an accelerated stall entry, this is an invalid test technique.
- With the engine idling (or engine off if this results in a higher stall speed).

Note that the stall speed requirement is specified in terms of Calibrated Airspeed (CAS). It is not specified in terms of indicated airspeed (what the ASI indicates at the stall), or the manufacturer's claimed stall speed. Neither of these is necessarily reliable. The BMAA Technical Office can advise on how to properly calibrate an ASI system.

2.3. Grandfathered 390kg amateur-built single-seat Microlights

The UK Microlight definition includes 390kg amateur-built single-seat Microlights that were issued with a Permit to Fly prior to 1st January 2003. This clause was added when the UK single-seat Microlight weight limit was reduced to 300kg (from 390kg, a common weight limit with two-seaters) so as not to disadvantage existing single-seat Microlights. Qualifying aircraft can continue to fly at up to 390kg.

Note: a two-seat amateur-built Microlight issued with a Permit to Fly prior to 1st January 2003 (now modified to be a single-seat Microlight) cannot take advantage of this concession.

3. Miscellaneous legal requirements

Although the airworthiness of single-seat Microlights is not regulated, this does not mean that the operation of a single-seat Microlight is totally unregulated. Please be aware that this section is not intended to be an exhaustive list of all the legal aspects of operating a single-seat Microlight.

3.1. Registration marks and fireproof ID plate

Single-seat Microlights must be registered³. The requirement to display nationality and registration marks – on the airframe, and on a fireproof metal plate – are not affected by the aeroplane's regulatory status⁴.

3.2. Pilot's licence

The pilot of a single-seat Microlight must have an appropriate pilot's licence. The pilot licence requirements for single-seat Microlights are essentially the same as for two-seat Microlights.

3.3. Insurance

A single-seat Microlight must have the legal-minimum, third-party insurance.

³ Article 24 of the Air Navigation Order 2016

⁴ Article 32 and Schedule 4 Part C of the Air Navigation Order 2016

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3.4. Flight instruments

There is no legal-minimum, flight-instrument fit for a single-seat Microlight, so such a machine does not absolutely have to be fitted with an ASI or altimeter⁵.

3.5. Safety harness

Single-seat Microlights must be fitted with a safety harness (minimum 3 points) for the pilot⁶. Weight-shift control Microlights may be fitted with just a safety belt for the pilot⁷.

3.6. Radio equipment and licences

The only difference in the requirements for radio equipment for a single-seat Microlight compared to a regulated aeroplane is that the *installation* of the radio equipment is not approved. However the radio equipment itself must be approved⁸. Licence requirements for the equipment and pilot are not affected by the aeroplane's regulatory status.

3.7. Log books

Separate log books must be kept for the airframe, each engine, and each variable pitch propeller⁹.

3.8. Noise

For deregulated single-seat Microlights the CAA has issued a general exemption from the UK requirement for Microlights to hold a noise certificate¹⁰. Note that this exemption expires each year and has to be renewed by the CAA.

3.9. Weight schedule

There is no legal requirement for a deregulated single-seat Microlight to have a weight schedule¹¹. That said, an aeroplane's weight and balance must be known to a reasonable accuracy to ensure that the aeroplane is being flown legally and within its limits.

4. Importing or Designing a single seat Microlight

Provided an aircraft meets the UK definition of a single-seat microlight then it can be registered and flown in the UK without any other formal notification or checking. It is the pilot's responsibility to ensure that the aircraft meets the UK definition. For any imported aircraft it is incumbent on the owner/pilot to check that the manufacturer's figures are correct. Do be aware that manufacturer's figures can sometimes be wildly optimistic so both the empty weight and the stall speeds should be checked properly.

5. Modifying a regulated two-seat Microlight to turn it into a deregulated single-seat Microlight

It is possible to take a lightweight regulated two-seat Microlight and modify it to turn it into a deregulated single-seat Microlight.

5.1. Maximum take-off weight and project feasibility

The vast majority of two-seat Microlights have a maximum take-off weight that exceeds the legal maximum take-off weight for a single-seat Microlight. Therefore, to qualify as a single-seat Microlight, such aeroplanes must have their maximum take-off weight reduced. Such an aeroplane will only make a feasible single-seat Microlight if it has a low enough empty weight to carry the pilot and sufficient fuel without exceeding its maximum take-off weight.

Example: consider a Pegasus Quantum with a Rotax 582 that weighs 195kg without occupants and fuel. To qualify as a single-seat Microlight its maximum take-off weight has to be reduced from 409kg to 300kg. The owner weighs

⁵ Article 77 and Schedule 5 of the Air Navigation Order 2016

⁶ Article 77 and Schedule 5 of the Air Navigation Order 2016

⁷ BCAR Section S issue 6 paragraph S1307

⁸ Article 77 of the Air Navigation Order 2016

⁹ Article 226 of the Air Navigation Order 2016

¹⁰ Air Navigation (Environmental Standards for Non-EASA Aircraft) Order 2008

¹¹ Article 43 of the Air Navigation Order 2016

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85kg (including clothes, flying suit, helmet and headset), which leaves 20 kg (= 300 - 85 - 195) for fuel. The density of MOGAS is 0.72kg per litre, so the owner can take-off with, at most, 28 litres (= 20 / 0.72) of fuel on board.

5.2. Modifying a two-seater to turn it into a single-seater

For the airworthiness to be deregulated, a Microlight must 'be designed to carry one person only'¹². Therefore flying a two-seater solo does not turn it into a single-seater; the aeroplane must be modified to make the second seat unusable.

Although an 'obvious' way of making the second seat unusable is to remove it, be aware that the second seat might have an important secondary use such as forming part of the aeroplane's primary structure or preventing loose objects getting jammed in a control system. An alternative is to remove the occupant harness (as a harness is a legal requirement for all occupants). If the harness is to be left in the aircraft for the purposes of securing ballast or luggage then it should be modified such that it cannot be used for a passenger. Remember that when carrying ballast or luggage the maximum take-off weight must not exceed 300kg.

The BMAA advises that placards are updated to reflect the single occupancy (and any change in maximum take-off weight).

5.3. Aircraft Registration

The CAA's Aircraft Registration (aircraft.reg@caa.co.uk) department must be advised of the change to a single seater, and you will need to state what modifications have been made to the aircraft to convert it from a two seater to as single seater, and also advise what the new maximum take-off weight that the aircraft is to be operated at. Typically for any modified two seater the new maximum take-off weight is 300kg.

5.4. Converting a single-seater back to be a two-seater

The CAA will revoke the Permit to Fly for any two-seater converted into a single-seater. If the aeroplane is subsequently converted back into a two-seater it will require a new Permit to Fly.

A new Permit to Fly can only be obtained by first contacting the BMAA to discuss their requirements for obtaining a new Permit to Fly. For a supported type approved Microlight we might decide that the owner has to go to the type approval holder. Be advised that there is no guarantee that obtaining a new Permit to Fly will be possible.

To give yourself the best chance of obtaining a new Permit to Fly, the BMAA advises that you:

- Do not make changes to the aeroplane that cannot be reversed, or cannot be approved.
- Maintain the aircraft in accordance with the approved maintenance schedule(s), and use correct replacement parts¹³;
- Document all work carefully in the airframe and engine logbooks, and keep invoices for all replacement parts.

¹² Article 33 of the Air Navigation Order 2016

¹³ BMAA Technical Information Leaflet TIL 058 – Replacement Parts