
BRITISH MICROLIGHT AIRCRAFT ASSOCIATION

TECHNICAL INFORMATION LEAFLET

NO: 039

ISSUE: 2

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AMATEUR BUILD KITS – PROCESS GUIDE



1 Introduction

- 1.1 This TIL is designed to help builders and inspectors of ‘series’ amateur build kits navigate through the paperwork and processes associated with building the aircraft.
- 1.2 This TIL is intended as a guide only and the process may vary depending on precise circumstances and future improvements to the process.
- 1.3 The best way to avoid delays in the process is to read carefully the documentation supplied at each stage. Additional notes are provided with the Stage Inspection sheets.
- 1.4 A lot of useful information can be found in the type’s Homebuild Aircraft Data Sheet (HADS). It is well worth becoming familiar with the contents of the HADS at an early stage. HADS are updated regularly and are published on the BMAA’s website: www.bmaa.org.

2 BMAA ‘series’ amateur build aircraft procedure

- 2.1 The CAA will only issue Permits to Fly for amateur build aircraft if construction has been supervised by an approved organisation: the BMAA in this case. This supervision takes the form of a BMAA Inspector, who oversees the build, and the BMAA Technical Office, which oversees the whole process, approves any modifications, analyses the flight test results and deals with the official paperwork.
- 2.2 The build procedure is shown in flowchart form in figure 1. It breaks down into five distinct phases:
 1. Prior to commencement of build.
 2. Build.
 3. Build approval.
 4. Flight-testing.
 5. Final approval.

These phases are described in detail in the remainder of section 2.

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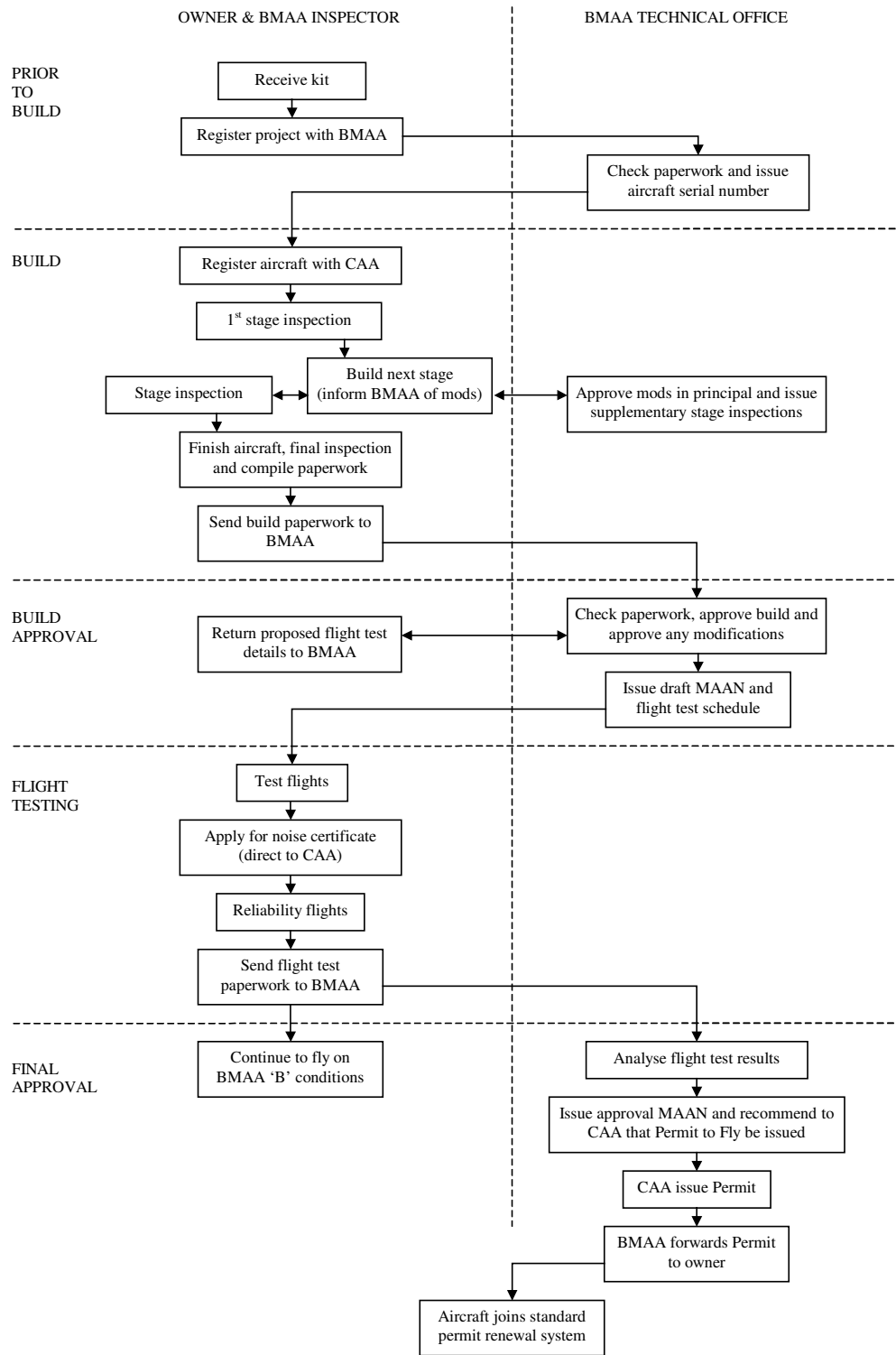


Figure 1: flowchart outlining BMAA 'series' amateur build aircraft procedure

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2.3 Prior to commencement of build

- 2.3.1 Prior to receiving the kit from the kit manufacturer/importer, the owner can line up a suitable BMAA Inspector. A list of inspectors is given in TIL008, although the inspectors listed therein are not automatically eligible to oversee amateur build projects and any nominated inspector must be approved for the purpose by the Chief Inspector.
- 2.3.2 When the owner receives the kit, they should also receive documentation including a BMAA approved Build Manual and Operators' Manual, and a Certificate of Conformity declaring the kit to be of a standard equivalent to that already approved by the BMAA.
- 2.3.3 The owner then completes a form BMAA/AW/022 (available from the BMAA office or from the website – www.bmaa.org) to register the project with the BMAA. This requires the signature of a nominated BMAA Inspector who will oversee the whole of the project. This is then sent to the BMAA, including a copy of the Certificate of Conformity for the kit and the appropriate registration fee (amount shown in latest edition of Microlight Flying).
- 2.3.4 On receipt at the BMAA, a file is created for the project and the nominated inspector checked as being suitable.
- 2.3.5 The BMAA allocates a 'homebuild' number, which also serves as the aircraft's serial number, e.g. "BMAA/HB/666", and sends the owner confirmation of the project registration along with the following:
- Stage inspection sheets for that aircraft type
 - A copy of the latest HADS for the type
 - A copy of TIL027 ("Instrumentation and Avionics")
 - A copy of form BMAA/AW/041 (non-Rotax engines only)
 - A list of others building the same type
 - CAA aircraft registration form
- 2.3.6 If a powerplant configuration (engine and propeller) has been decided upon the covering letter will indicate the aircraft's designation, e.g. "Sky Ranger 912(2). This designation together with the aircraft's serial number is sufficient for the owner to register the aircraft with the CAA using the form provided. If the powerplant configuration has not been finalised registration must be delayed.

2.4 Build

- 2.4.1 Once the project is registered with the BMAA, the owner can arrange for the inspector to complete Stage Inspection 1 (this is always the kit and workshop inspection).
- 2.4.2 The owner then proceeds with the project build as per the build manual with the inspector completing the Stage Inspections at the appropriate points in the build. The build must not proceed to the next stage until the inspector has signed the preceding stage off. The final inspection must be made to the latest edition of the HADS.

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- 2.4.3 The owner should notify the BMAA at the earliest opportunity (and before modifying the aircraft) if there are to be any changes in the build away from the build manual. If appropriate, the BMAA will issue supplemental stage inspection sheets for those changes, for the inspector to sign off.
- 2.4.4 Occasionally it is necessary to change inspector part way through a build. This is not a problem but the change must be approved by the Chief Inspector. The BMAA will require confirmation that the project has been properly handed over from one inspector to the other. To change inspector send in a completed project registration form (BMAA/AW/022) with a covering note explaining the situation.
- 2.4.5 Items such as radios, strobes, etc, that are not part of the standard kit must also be notified to the BMAA using the appropriate Standard Minor Modification forms or modification application forms as appropriate (although note that no further fee is required). You are advised to do this as early as possible.
- 2.4.6 A set of photographs of the aircraft must be supplied to the BMAA at the completion of the build. These help clarify the configuration of the aircraft and can answer a lot of trivial questions that the Technical Office would otherwise have to ask of the owner or inspector. The photographs required are specified in figure 2a (3-axis control aircraft) and figure 2b (weight shift control aircraft)
- 2.4.7 At the completion of the build, the owner sends the following completed documents to the BMAA:
- Completed Stage Inspections sheets, including any supplementary stage inspection sheets issued by the Technical Office
 - Completed engine installation sheet (either Skydrive installation sheet or BMAA/AW/041)
 - Certificate of Conformity for engine (or if taken from another aircraft, a copy of the last page of the engine logbook for that aircraft showing how many hours it has ran)
 - Certificate of Conformity for the propeller (or if taken from another aircraft, a copy of the last page of the engine logbook showing how many hours it has ran)
 - Weight and balance sheet (form BMAA/AW/028)
 - Details of any modifications not previously notified (including any Radios, GPS, strobes, etc).
 - Photographs of the aircraft as specified in figure 2a (3-axis control aircraft) and figure 2b (weight shift control aircraft). Photographs can be sent as prints or electronically (on CD, DVD or by email to cto@bmaa.org). Unfortunately CDs and DVDs cannot normally be returned.

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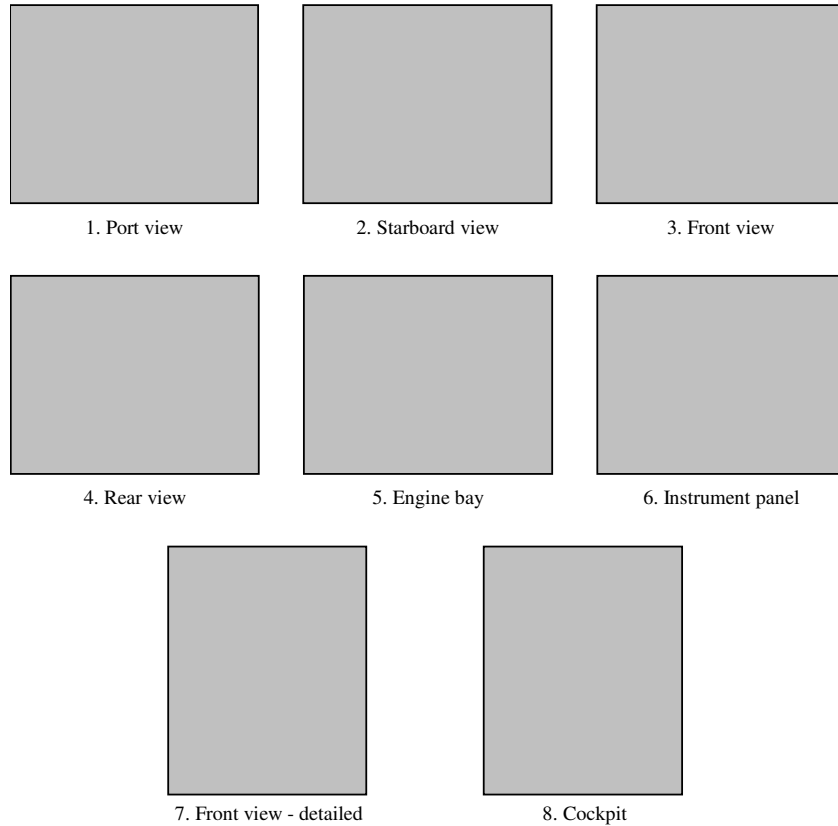


Figure 2a: photographs required for 3-axis control aircraft

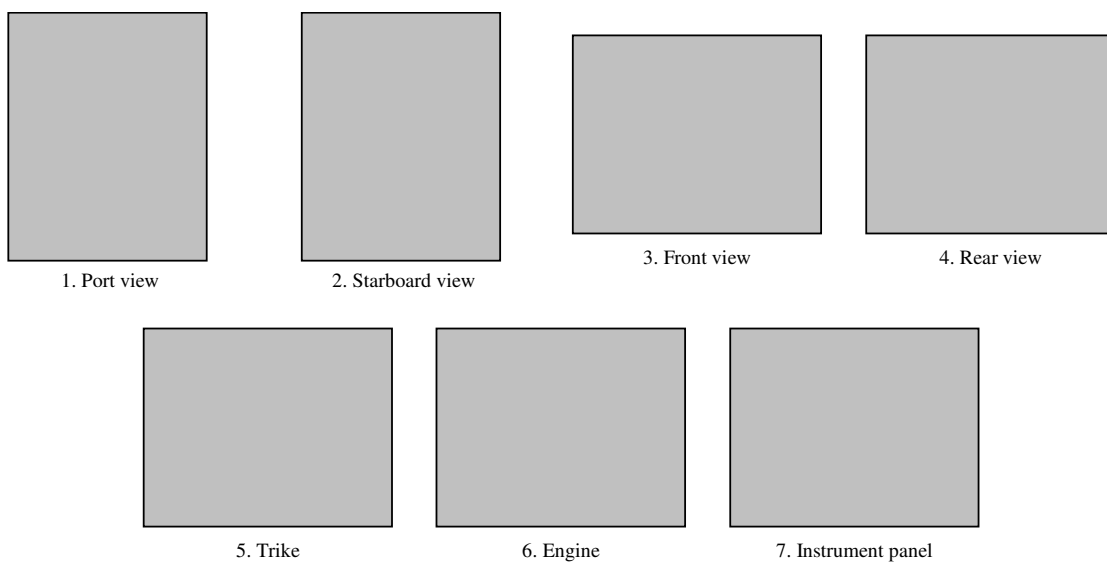


Figure 2b: photographs required for weight shift control aircraft

2.5 Build approval

- 2.5.1 On receipt of this documentation, the BMAA checks that all items are present and does a brief check to see that most things are in order. If necessary a request for missing items will be sent to the owner. The project is placed in a queue; the aim is for this queue to never exceed four weeks.
- 2.5.2 While the project works up the queue the BMAA will send the owner the following relating to the test flying phase:
- Covering letter describing what steps to take next, including an approximate indication of the present length of the queue.
 - Blank 'Certificate of Clearance for Flight Test Purposes', form BMAA/AW/029. This is sometimes called – although not entirely accurately – the 'Permit to Test'
 - Airfield proforma.
 - Flight test observer proforma.
 - List of test pilots.
- 2.5.3 The owner decides which test pilots, pilots, flight test observers, inspectors and airfields they want to use during the period of flight testing and up until the point when they receive the permit to fly (note that this could be around 2 months or more, so it is advisable to put plenty of airfields on the list). This information is then returned to the BMAA.
- 2.5.4 When the project reaches the front of the queue, the Technical Office staff use the information provided to put together the draft MAAN (Microlight Airworthiness Approval Note). If there is any missing or incorrect information, clarification will be sought from the owner or inspector. All such issues must be closed before the draft MAAN can be issued.
- 2.5.5 The following documents are then sent to the owner:
- The draft MAAN (including flight test schedule and ASI calibration sheet).
 - 'Certificate of Clearance for Flight Test Purposes' (BMAA/AW/029), which is normally approved by the Chief Technical Officer.
 - Blank application for first permit (CA3).
 - CAA 'Application for a Noise Certificate for a Microlight Aeroplane' form.
 - Covering letter describing what to do next.

2.6 Test flying

- 2.6.1 The owner and inspector must first carefully read the draft MAAN and then sign the form BMAA/AW/029 confirming that the aircraft is in the configuration described in the draft MAAN. It is strongly recommended that this is signed just before the first flight of the aircraft.
- 2.6.2 The aircraft may then be flown by the nominated test pilot at one of the airfields designated on the 'Certificate of Clearance for Flight Test Purposes' (BMAA/AW/029). The inspector is expected to be present for the first flight unless there are extenuating circumstances.

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- 2.6.3 The test pilot flies the aircraft according to the schedule supplied. Note that all flights made prior to the issue of a full permit should be signed for by the crew prior to each flight in the ‘Certificate of Clearance for Flight Test Purposes’.
- 2.6.4 Once the schedule is complete, the test pilot may then check out the owner(s) on the aircraft (provided that they are listed on the BMAA/AW/029).
- 2.6.5 The owner(s) or other nominated pilots may then fly off the remaining hours, as indicated in the draft MAAN (usually the remainder of 5 or 25 hours).
- 2.6.6 The owner must apply direct to the CAA for a noise certificate using the CAA’s ‘Application for a Noise Certificate for a Microlight Aeroplane’ form. If the powerplant configuration has already been approved then this is just a paperwork exercise and the application can be made before the test flight using the data for the variant on the HADS. If the powerplant configuration has not been approved, the application cannot be made until the test pilot has determined the final propeller pitch. In this case the CAA may require a noise test: they will contact the owner directly to arrange this.
- 2.6.7 When all of the testing is complete, including any ‘endurance’ hours, the owner submits the following to the BMAA:
- Flight test results, including ASI calibration
 - Copy of the completed form BMAA/AW/029
 - Copy of the airframe logbook
 - Completed form CA3 (application for first permit)
 - Current fee for first permit (amount shown in latest edition of Microlight Flying; same as annual permit renewal fee at time of writing)

2.7 Final approval

- 2.7.1 On receipt of the above at the BMAA the paperwork is checked to ensure that all items are present. This is then placed in a queue and a receipt sent to the owner indicating the approximate response (queue) time. Note that the aircraft may still be flown, but only under the conditions specified in the ‘Certificate of Clearance for Flight Test Purposes’ BMAA/AW/029 provided that it still remains valid. If a time extension, or additional personnel or airfields, are required the owner may send the original of the BMAA/AW/029 to the BMAA with the appropriate further information. This will be returned as soon as possible with the appropriate authorisations. Additional personnel or airfields can also be requested by email.
- 2.7.2 When the project reaches the front of the queue, the Technical Office staff analyse the flight test data to ensure that the aircraft is representative of the type and compliant with the type’s approval basis. If there are any queries or missing data a request for further information may be sent to the owner.
- 2.7.3 The BMAA then creates the final issue of the MAAN and recommends to the CAA that a permit to fly be issued.
- 2.7.4 The CAA then issues a permit to fly, which is sent to the BMAA. The CAA’s turnaround time is usually 5-10 working days, but can sometimes be longer than this.

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- 2.7.5 The BMAA takes a copy of the permit for the aircraft's file and forwards it to the owner, along with a certificate of validity for the permit.
- 2.7.6 The aircraft then enters the normal permit renewal cycle.

3 General points

- 3.1 If at any point the original inspector is unable to continue with the project a new project registration form (BMAA/AW/022) must be submitted as soon as possible to the BMAA with the details of the proposed new inspector.
- 3.2 Simple changes/additions to the basic build standard of the aircraft can be notified to the Technical Office at any time during the build up to the submission of the final build paperwork. However, it is recommended that these be submitted as early as possible. Complex changes/additions must be notified before completing the relevant stage inspection.
- 3.3 Remember, it is not permitted to pay someone to build a kit for you, or to build an aircraft to sell to someone else: amateur construction rules are intended for true amateur construction.
- 3.4 The rules governing amateur construction of aircraft can be found in CAP659 and the general operation of Permit to Fly aircraft in CAP733, both of which can be downloaded from the CAA website (www.caa.co.uk).
- 3.5 General BMAA airworthiness procedures are contained in TIL 064 "Guide to Airworthiness", distributed free to all new members of the Association and available to all on the BMAA's website (www.bmaa.org).
- 3.6 HADS for the type are also published on the BMAA's website.
- 3.7 Should you have any queries regarding this process, please contact the Technical Office. The best way to submit queries or suggestions is by emailing us at cto@bmaa.org. For trivial queries call 01869 336 006.

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