
**BRITISH MICROLIGHT AIRCRAFT ASSOCIATION
TECHNICAL INFORMATION LEAFLET**

No. 017

Issue 3

March 2018

FITTING A CAMERA TO A BMAA AIRCRAFT

Introduction

A popular activity amongst pilots is aerial photography, which is often done using a camera mounted to the aircraft and operated either by hand, or using some form of remote control in the cockpit.

However, cameras and associated mountings can become loose and cause damage, or if badly positioned affect the aircraft's aerodynamics or structural strength. Therefore it is vital that when fitting a camera to a microlight good design practice is followed and the installation is approved by the BMAA as a modification. Except in very unusual circumstances, the modification will be classed as **minor** and will be processed by the BMAA in only a few days.

2. Good Installation Design Practice

In order to prevent any hazard to the aircraft, the following principles must be adhered to.

- 2.1 The installation must not put the aircraft overweight, and in 3-axis aircraft must not move it outside of CG limits (generally only an issue if a camera is to be positioned near to the nose or tail).
- 2.2 All fasteners and panels must be securely locked so that they cannot become undone in flight.
- 2.3 The camera must be attached to the aircraft with some form of retaining lanyard (usually a back-up cord or cable) provided the camera cannot cause damage to the aircraft structure when supported only by the cable..
- 2.4 The installation must be able to withstand the crash load requirements of BCAR Section S, so that it cannot come adrift and cause damage or injury
- 2.5 There must be no interference with the flying controls.
- 2.6 There must be no interference with the flow over the flying surfaces. In general this means that cameras and brackets mustn't be in front of wing, tail or fin surfaces, or within 1 metre immediately before or after a propeller.
- 2.7 Structural integrity of the aircraft mustn't be compromised. This means no new holes should be drilled, and if cameras or brackets are fitted to airframe tubes, it should only be towards the ends - not at the middle. Also, mounting cameras at the end of slender components should not be attempted (so no hanging the camera from a pitot tube!).

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3. Specific Requirements.

- 3.1 Before fitting the camera a modification application, form AW002, must be supplied to the BMAA Technical Office for initial assessment of the installation, include photographs showing the proposed installation if appropriate. Provided all is satisfactory an inspection schedule and form BMAA/AW/035 will be sent to the owner.
- 3.2 The installation must then be inspected by a BMAA Inspector, who will complete the aircraft specific inspection schedule and form (BMAA/AW/035) to show that all of the inspection points below are met.
- 3.3 The inspector must weigh the proposed camera installation and check the last W&CG report (form BMAA/AW/028) for the aircraft, to confirm that the aircraft is not put overweight and enter the weight onto the current weight schedule. On 3-axis aircraft, they must also check if the camera is mounted outside of the CG range listed on TADS, that the aircraft will not be put outside of its CG limits.
- 3.4 The inspector must ensure that all screw or locking fasteners on the installation cannot come undone. This is normally done by securing all locks and screws with either cable ties or locking wire. Also, it must be confirmed that any “friction fit” or plastic clipped panels (such as many camera battery compartments) are taped over.
- 3.5 The inspector must check the integrity of the back-up cord or cable. Make sure that there is no risk of any metal components rubbing on other metal parts as this can very quickly cause damage. The back-up cord or cable must be reasonably taught and strong enough to take at least 10 times the weight of the installation without breaking; in case of a camera mounting failure, it must be short enough to prevent the camera hitting either the propeller(s), or the pilot and passenger. It must be attached securely to the aircraft and to the camera and mounts. The installation must be weighed. Then using lightweight scales or a spring balance, the inspector must push / pull the installed camera to 4½ times the weight upwards and downwards, 9 times the weight forwards, and 3 times the weight both to port and starboard. If external to the airflow then a representative drag load must also be applied. It must remain securely attached with no damage.
- 3.6 The inspector must check all parts, cables and controls, and ensure that they are firmly secured to the aircraft (cable ties work well, but be careful of over-tightening which can cause damage), and cannot touch or interfere with any flying controls.
- 3.7 The inspector must confirm that the camera, brackets and cables do not run anywhere on or in front of the leading edge of any aerodynamic surface, or within 1 metre before or after the propeller disc.

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3.8 The inspector must confirm that no new holes have been cut or drilled anywhere in the aircraft, that any attachments to airframe tubes are only at the ends, that all clamping onto metal is protected using a soft intermediate material, and that nothing is mounted at the end of any slender components (trike keel tubes don't count as slender, but pitot heads certainly do - If in doubt, consult the BMAA technical office.)

4. Obtaining Approval

4.1 The owner must apply to the BMAA using modification application form BMAA/AW/002, and also include drawings or photographs showing the camera temporarily installed. Normally this will result in the technical office sending a simple inspection schedule and form BMAA/AW/035 for completion by a BMAA inspector. These will need returning to the BMAA office with the appropriate fee.

4.2 The BMAA will return the modification approval as soon as possible.

4.3 The inspector must enter into the aircraft logbook that the allocated BMAA minor modification has been incorporated, and sign the flight release certificate, which will be sent with the minor modification approval.

4.4 The aircraft can then fly with the camera installation fitted.

4.5 The owner must retain the minor modification approval in the operators manual or airframe logbook, and make an entry into the logbook each time the camera installation is fitted or removed.

5. Safety and Legal Warnings

5.1 Some places (such as military bases) do not appreciate having their photograph taken. These are usually marked on flying maps with a "P" followed by an identifying number (e.g. P106 around the Harwell Nuclear Establishment). Don't get yourself into trouble.

5.2 It is at present illegal to carry out aerial work using a microlight in the UK; this includes aerial photography for profit. Aerial photography for your own interest is completely legal.

5.3 Never get so involved in the photography task that you stop paying attention to the flying task.

**FLY THE AEROPLANE FIRST, LOOKOUT SECOND, NAVIGATE
THIRD, TAKE PHOTOGRAPHS FOURTH.**

And finally, *Microlight Flying* magazine is always glad to receive contributions of good aerial photography by microlighters.