

# AIRCRAFT RADIO INSTALLATIONS

## 1. Introduction

For all aircraft on the British register, whether Permit to Fly or C of A, and including aeroplanes, microlights and gyroplanes, there are certain particular requirements that need to be met in relation to aircraft radios.

## 2. Flight Radio-Telephony Operator's License

All operators of radios in aircraft, whether of permanently installed equipment or portable 'hand-held', are required to possess a Flight Radio-Telephony Operator's Licence. Such licences are issued by the CAA on successful completion of an appropriate course. Courses are usually conducted as part of the PPL training syllabus and include some airtime as well as ground school instruction and exam. Licences are valid for the life of the PPL.

The fundamental purpose of the licence is to allow the CAA to ensure that radio transmissions in the aviation environment are made only by competent 'qualified' individuals. For further information we suggest you contact a local flying training organisation directly, or the CAA Flight Crew Licensing Department, Tel. 01293 573700.

## 3. Radio Licence

All owners of aircraft fitted with radio equipment must obtain a radio licence from the CAA, which must be renewed annually for as long as the aircraft remains in service. There is an annual fee, which varies depending on the extent of the equipment fitted. The application form DAP 1902 (ACT1 1001) and details of the fees can be downloaded from the CAA website at <http://www.caa.co.uk>, or copies of the form can be obtained from LAA Engineering on request.

## 4. Equipment Approval

All radio equipment including portable equipment installed in UK aircraft must be of a 'type' approved by the CAA or EASA or JAA. Usually the equipment manufacturer or importer will have dealt with this matter. Details of radio types that have been approved are provided on the CAA, EASA and JAA websites. The applicable CAA, EASA and JAA website addresses are listed on the CAA form DAP 1902 (ACT 1 1001) mentioned above. If in doubt about the status of new equipment, check with the supplier or contact the CAA, Tel. 01293 573134. Note that equipment obtained abroad, and even the latest products from well established manufacturers such as ICOM is sometimes found to be of a type that is not approved by CAA, EASA or JAA. Aircraft imported or found fitted with non-approved equipment will need to have that equipment removed.

## 5. Radio Installation Approval

Permanent radio 'installations' in LAA aircraft must be approved by the LAA. Note that radio equipment designed to be portable (hand-held radio, GPS etc) does not need installation approval.

The investigation of a radio installation involves checking that the radio equipment is of an approved type, an inspection and ground test of the installation followed by a flight test. Applications for radio installation approval must be made using a form LAA/MOD 7 which must be completed and signed up by a suitably approved LAA inspector or suitably licensed CAA aircraft radio engineer. (Form LAA/MOD 7 may be downloaded from [www.laa.uk.com](http://www.laa.uk.com)).

Provided that the inspector is satisfied with the radio installation and has signed the declaration on the LAA/MOD 7 form and the aircraft has a valid Permit to Fly or PFRC (Permit Flight Release Certificate), a flight test is to be carried out according to the schedule LAA/FT-RADIO. This form may be downloaded from the LAA website [www.laa.uk.com](http://www.laa.uk.com).

## AIRCRAFT RADIO INSTALLATIONS

Approval is given by LAA Engineering once the installation is shown to be of an acceptable standard and a satisfactory flight test report is received. Since May 2008 this has been signified by LAA Engineering issuing a radio installation approval certificate AD917/LAA which is sent to the aircraft owner.

Subsequent changes and upgrades to radio equipment will require the same attention as above, including application on form LAA/MOD 7 followed by a flight test according to flight test schedule LAA/FT-RADIO. Both these forms may be downloaded from the LAA website.

### 6. Radio Installation Practices

The following particular points are those that will need to be satisfied during installation and maintenance.

Electrical installation must be in accordance with **equipment manufacturer's instructions**. Equipment must be securely installed leaving no possibility that equipment can fall free, perhaps causing injury or **jamming controls**, especially in aerobatic aircraft. The existing **structural integrity** of the aircraft must not be compromised by the radio installation. The pilot must be able to operate associated switches and controls **from the 'strapped-in'** position and switches and controls should be suitably **marked** and **placarded**. Installation must not interfere with the satisfactory operation of the aircraft's controls or systems. E.g., movement of control column must not be restricted and the pilot's line of sight of cockpit instruments should not be impeded. The quality of the pilot's **external view** should not be degraded. Installation must not present a hazard to the aircraft in the event of failure of the equipment; proper **electrical circuit** installation should avoid this possibility. Possible hazard to the occupants in the event of a **crash** should be minimised by ensuring that protruding knobs and brackets do not present in line with occupant's head, knees etc and that adequate soft furnishing protection is provided. Equipment should not unduly restrict occupant **emergency egress** from the cockpit. Associated **wiring and cables** must be properly 'bundled' and secured. Unsupported and spaghetti wiring is not acceptable. Only aviation quality wiring and terminals should be used. Attention should be paid to amending the aircraft **weight schedule** and the aircraft **compass** should be checked and **swung** if required. Proper circuit protection must be incorporated. **Aerials** should be soundly installed with aerial cables properly routed and secured. A satisfactory flight test is required.

While there is no legally mandatory requirement to fit a **back-up press-to-transmit** button in Permit aircraft, it makes good sense to do so in case of failure of the primary PTT switch. In radio-equipped aircraft which are fitted with dual controls, separate PTT buttons should be available for the pilots in the P1 and P2 position and the intercom wiring should be arranged so that radio transmissions can be made from either headset depending on which PTT button is depressed. Radio transmissions ('sidetone') and reception should be clearly audible in flight from both pilot positions. This is now more important than in the past because 2 seat Permit aircraft are increasingly being used for carrying out coaching flying and bi-annual checks, which include a requirement to demonstrate and monitor radio calls. It is impossible to provide effective coaching unless clear communication is available between P1 and P2 positions, as well to and from the ground. Circumstances have also arisen in the past where the check pilot could not transmit from the P2 position and was unable to transmit a warning call when an emergency arose.

Consult your intercom manufacturer for the necessary wiring and switching circuits required to achieve the above.

## AIRCRAFT RADIO INSTALLATIONS

Note that special additional requirements apply for the fitment of **autopilots and wing-levellers** in LAA aircraft – contact LAA Engineering for information when required.

### 7. Continued Maintenance

LAA aircraft radio installations must be inspected during annual inspection for Permit to Fly renewal to show that they are in good working order and remain securely installed. In particular, during flight test the quality of transmission and reception should be checked. The CAA's Light Aircraft Maintenance Schedule (LAMS) requires C of A aircraft to have a radio transmission frequency tolerance check every 3 years and LAA recommend that LAA aircraft owners contact a suitably equipped aircraft radio engineer for this check on a similar basis. LAA recommend that other radio equipment, such as transponders and navigation equipment, should also be presented to a suitably equipped aircraft radio engineer for checking and testing from time to time.