

INTRODUCTION

It has long been realised that the correct labelling of switches and marking of instruments with the essential flight limitations is an important aid to flight safety, particularly during stressful phases of a flight when a large proportion of the pilot's attention is concentrated elsewhere.

The validity of a Permit to Fly may depend on the display of certain placards and notices. Certain other placards and notices, not necessarily mandated directly via the Permit to Fly, will also be required or recommended, and this Technical Leaflet aims to provide guidance on the subject. The Permit to Fly revalidation inspection requires an inspector to check that an aircraft's placards match those required by the Permit to Fly, but ultimately it is an owner's responsibility to ensure that their aircraft remains in compliance with any and all mandatory placard requirements, and to take note of other relevant recommendations. It goes without saying that such notices should not just be present, but should also be correct, secure and legible.

1. CAA REQUIREMENTS WHEN OPERATING ON A PERMIT TO FLY

The Air Navigation Order requires the following placard to be installed:

OCCUPANT WARNING
***This aircraft has not been certificated to
an International Requirement***

This placard must be in full view of the occupants (including pilots), so in the case of a tandem seater it may be necessary that two such placards are installed. Suitable placards are available from the LAA, see paragraph 4 of this Technical Leaflet.

Most aircraft administered by the LAA are issued with an Operating Limitations document which forms part of the Permit to Fly. The Operating Limitations document will specify certain operational and technical limits that apply to the aircraft concerned and states that such information "*shall be displayed by means of cockpit placards or instrument markings*". Owners will need to consult the Operating Limitations document issued for their aircraft to see whether there are any other 'required' placards. The type and subject matter of the placards can vary but typically will include:

Aerobatic Limitations - showing permitted manoeuvres and maximum G limits.

Loading Limitations - showing maximum aircraft weights, C of G datum and C of G limits. There may be other limitations, for example, a maximum baggage weight, maximum or minimum cockpit loading or ballast loading instructions.

Engine Limitations - showing maximum RPMs, RPM avoid bands, maximum and minimum oil temperature and pressure or manifold pressure limits.

Air Speed Limitations - showing maximum air speeds in different configurations.

Other Limitations - usually showing daytime VFR and no smoking restrictions. Many aircraft will be subject to further type-specific or equipment-specific limitations (and placard requirements) under this heading. Just two examples are that solo flight might be prescribed from one particular seat, or that there may be a requirement to select a specific fuel tank before take-off. Amateur-built gyroplanes usually have a 'no flight within 110 meters of a person' limitation under this heading.

Where practicable these limitations may be shown by instrument markings - such as a red line on the ASI at maximum speed, and for more sophisticated aircraft, coloured arcs to show normal and cautionary ranges of operating speed on the ASI, engine temperature and pressure gauges etc. Such marks must be correct, clear and unambiguous. Markings on the glass are

acceptable but it should be established that the glass is secure in its housing and has no possibility of rotating causing a misleading indication.

Aerobatic, loading and 'other' limitations should be shown by means of placards. The wording used is not critical, as long as the facts are correctly displayed and understandable.

One way of making sure that the Operating Limitations placard requirements are satisfied is to photocopy the document, laminate, and affix to the inside of the cockpit. This should satisfy the strict 'legal' requirement, but due to the small writing used, this will seldom provide a satisfactory alternative to a proper easily-legible set of placards and instrument markings as a way of clearly displaying the necessary information to the pilot in flight.

The Operating Limitations document won't be created until a Permit to Fly is issued, so when test or check flying after the completion of a new aircraft project or the overhaul of an imported type it will instead be necessary to consult the Certificate of Clearance authorising flight to determine the limitations and placard requirements. These may change once the full Permit to Fly and associated Operating Limitation document has been issued, so owners should check to make sure that correct placards continue to be displayed.

There are a few aircraft types and aircraft categories administered by the LAA for which an Operating Limitations document is not provided. Such types include Factory-built Gyroplanes, Factory-built Microlights and a few types holding EASA Permits to Fly (e.g. Fournier and Bolkow 208 aircraft). In such cases, owners will need to make reference to the aircraft documentation including, variously, Permit to Fly Conditions, Airworthiness Approval Note (AAN), Pilot's Operating Handbook (POH) and CAA Type Approval Data Sheet (TADS), to identify particular placard requirements for their aircraft.

Another vital and indeed legally required item is a fireproof metal plate (usually stainless steel) engraved or stamped with the aircraft nationality and registration marks, e.g. G-ALAA. The Air Navigation Order (ANO) states that this plate is to be "*affixed in a prominent position on the fuselage*". We interpret this to mean it could be positioned inside or outside the aircraft, preferably in or near the cockpit, as long as it is easily found when looked for. The ANO used to require also the name and address of the registered owner to be included on the plate. A change in the ANO has dispensed with that requirement, which now means that the plate does not need changing with every change of ownership. Suitable plates are available from the LAA, see paragraph 4 of this Technical Leaflet.

2. LAA PLACARD REQUIREMENTS AND ADVICE

When deciding what placards an aircraft should have, thought needs to be given to how important a particular piece of information is to the safe operation of the aircraft - every aircraft will be different in this respect. Certainly, wherever there is a switch, knob or lever (unless otherwise immediately obvious) it should be labelled clearly to show its function and mode of operation. The mode of operation of a switch should be up for on and down for off - in common with established aviation practice.

Engine controls too, when not obvious, should be marked for purpose and mode of operation. Where it is not obvious from their presentation, instruments should be labelled to show their purpose and range of acceptable indication. Warning lights should be labelled to clearly indicate their purpose and, in some cases, labelled with appropriate safety action; for example: "*Caution - Alternator Failure - When lit land within 15 minutes*".

When not otherwise obvious, the external and internal latches on cockpit doors and canopies should be clearly identified by labels or markings sufficiently prominent to be seen in an emergency. In the event of an accident, even a few seconds saved by first responders in rescuing the crew may be critical to a positive outcome, especially where there is the threat of fire. Each normal and emergency exit operating control should be red in colour. Suitable placards should be

near each control and should be designed to clearly indicate its method of operation, especially to a non-aviation person. Where any special procedure must be followed to gain entry, this should be described, for example *'To open canopy in emergency, reach into cockpit through ventilator aperture and press red button. Canopy hinged on right hand side'*.

It is good practice to mark static vents with "keep vent clear" and to label your 'delicate parts' with a "no push" sticker.

It is a good idea to display the fuel and oil capacity and specification next to each filler cap as appropriate. Perhaps the single most important set of labels are those used to show the orientation of fuel cocks in relation to on/off or right/left, etc. Some aircraft have three or more fuel cocks; each should be clearly marked to indicate the tank selected. If there are certain fuel system operational requirements such as rear tank empty for aerobatics, or front tank only for take off, etc, then this information should be placarded where it can be easily seen. Throughout aviation history, accidents have occurred due to the incorrect selection of fuel tanks.

It is useful to sign-write the recommended tyre pressure at a convenient place near each u/c wheel and creep marks should be applied to all wheels fitted with tubed tyres.

3. SPECIAL PLACARD REQUIREMENTS

Depending on the equipment status of an aircraft, or its type of operation, certain other placard requirements may apply. Owners remain responsible for ensuring the correct placarding of their aircraft. Examples of this are:

Use of Mogas Fuel

The LAA checklists associated with gaining LAA approval to operate using motor fuel present certain placard requirements. Refer to the applicable LAA Mogas checklist for information.

Installation of Ballistic Parachute

Aircraft furnished with a ballistic parachute require certain warning and information placards. Refer to aircraft documentation to determine required placards. (*An LAA Technical Leaflet will be published on this subject in the future*).

Night/IFR Operation

Aircraft cleared for Night and/or IFR operation by the LAA are subject to certain placard requirements. Refer to the aircraft's LAA Operating Limitations document, or other aircraft documentation.

Microlight Aircraft

LAA microlight aircraft are subject to particular recommendations and instructions concerning the presentation of aircraft and operational weight issues. Please refer to LAA Technical Leaflet TL 3.16.

Technical Requirements

It is possible that some mandatory technical instructions, such as those typically provided via published LAA Airworthiness Information Leaflets (AILs), Mandatory Permit Directives (MPDs) or Airworthiness Directives (ADs) will include requirements that certain placards are installed.

4. INSTALLATION OF PLACARDS AND LABELS

It's not important how placards and labels are produced, as long as information presented is correct, complete and legible and can be expected to remain securely fixed. They may, for example, be typed on to card and glued to the instrument panel, but professionally produced plastic engraved notices will better complement the look of the aircraft and will be far more robust. To locate label and placard producing services we suggest referring to the Classified advertisements *Light Aviation*, or other aviation magazine. See also LAA Technical Leaflet TL 1.10 – List of aircraft parts / materials suppliers, on the LAA website.

Many placards are freely available from the LAA, such as Mogas and Occupant Warning labels. For a small fee, owners of vintage aircraft wishing to maintain that 'classic' look may obtain from the LAA a smart 'period' looking *Occupant Warning* label and also available to order is a smart stainless steel registration plate bearing the aircraft and builder's details. Contact the LAA for information and prices.

5. AIRCRAFT REGISTRATION MARKINGS

This Technical Leaflet would not be complete if it did not include some advice about the display of registration letters on an aircraft. The legal requirements, which apply to LAA Permit to Fly aircraft, are exactly the same as for aircraft holding a Certificate of Airworthiness. The requirements, stipulated in the Air Navigation Order (ANO), concern the size, shape, positioning and colour of registration letters. Inspectors should be able to provide good advice, but owners remain entirely responsible for compliance with the requirements for their aircraft. The full requirements are far too lengthy to reproduce here, but there is an excellent guidance document on the subject available from the CAA (search for CAA CAP 523).

The only circumstance where an aircraft may be flown without bearing its UK registration markings is when a special exemption has been granted by the CAA. This exemption is normally only available to ex-military or replica military types in a period colour scheme. Contact the CAA directly for information. One commonly overlooked point is that the ANO says that "*An aircraft shall not bear any marks which purport to indicate that the aircraft is registered in a country in which it is not in fact registered*". So owners of aircraft imported from overseas and placed on the UK register must ensure that previous foreign registrations are appropriately obliterated.