

## INTRODUCTION

The existing approved engine/propeller combinations for your particular aircraft are shown on the Permit to Fly Operating Limitations document. If you wish to change to an engine or propeller which is not listed on your Operating Limitations, then you need to seek approval through LAA Engineering.

As an aid to the selection of a new propeller or engine, a list has been produced which shows all of the combinations that have been approved on LAA aircraft (see Technical Leaflet [TL 3.12](#)). It is important to understand that even though an engine or propeller may appear on this list for an aircraft type, you still need approval from LAA Engineering to use this configuration on another example of that type; i.e. engines and propellers are approved on an individual aircraft basis.

The only exception to this is where an Operation Limitations document has the words 'or as propeller type list PTL/1'. These PTL/1 lists are type specific and not all types have such a list. The lists are published on the website ([www.laa.uk.com](http://www.laa.uk.com)). If the engine already installed on your aircraft is included on the list for your aircraft type, then you may install any of the propellers listed against that engine type provided the change is inspected and signed for by an LAA inspector.

Before proceeding with an engine or propeller change, it is strongly recommended that you seek advice from LAA Engineering. The list shown in [TL 3.12](#) can be used as a guide to establish what is more likely to be approvable. Although caution is advised, particularly where there are only one or two examples of the combination. The listed combinations, although safe, may be far from optimum and there may be other adverse effects that may not be immediately apparent.

For aircraft being built, the checking of the engine and propeller generally happens as part of the aircraft's final approval. If you want to install an engine and/or propeller that is new for the aircraft type, then contact LAA Engineering, preferably before buying it.

## APPLYING FOR A PROPELLER CHANGE

Once you have selected your proposed engine/propeller configuration, you need to complete the application form [LAA/MOD4](#). This essentially records all of the details of your aircraft and the exact specification of the new components you are proposing to fit. At initial application, no fee is submitted.

When the application has been received by LAA Engineering, a mod number will be assigned. The aim is to review the application within a month. If the change is considered likely to be approvable, you will be advised as to approximately how many hours of engineers' time will be required and asked to pay the initial modification fee. You will then have the opportunity to cancel the modification if you don't wish to proceed. If a certified propeller is proposed, it will be necessary to check the Type Certificate Data Sheet to ensure it is compatible with the engine. Non-certificated propellers are also acceptable on LAA aircraft, but some testing or analysis may be required if it is a propeller that has no service experience.

Once the technical requirements have been satisfied, you will be authorised to commence the flight test. The extent of the flight testing will depend upon how close the proposed configuration is to one which has already been approved. Once the flight test results have been accepted, you will be invited to submit any remaining certification paperwork including the original Permit to Fly Operating Limitations for amendment. You will also be advised of any outstanding fees to be paid. A modification approval certificate and a new Permit to Fly Operating Limitations document will then be sent to you completing the process.

### **COPYING A PREVIOUSLY APPROVED PROPELLER INSTALLATION**

Choosing a combination which has already been approved greatly simplifies the approval stage. If the exact modification appears on the mod list published in [TL 3.17](#) (not the list in [TL 3.12](#)), then the modification number can be quoted in the appropriate place on the [LAA/MOD4](#) form.

### **APPLYING FOR AN ENGINE CHANGE**

Where an engine (or engine and propeller) change is proposed form [LAA/MOD5](#) is used. At initial application, no fee is submitted.

A mod number will be allocated and the submission reviewed. If the change is considered likely to be approvable, you will be advised as to approximately how many hours of engineers' time will be required and asked to pay the initial modification fee. You will then have the opportunity to cancel the modification if you don't wish to proceed. Where the engine is of a type that is completely new to the LAA, a greater amount of information will be required than a known type.

Once any technical issues have been resolved, you will be authorised to commence the flight test. The extent of the flight testing will depend upon how close the proposed configuration is to one which has already been approved. Pilots undertaking any check or test flying need to be suitably experienced for the task in question. Where no adverse effect is anticipated on aircraft handling or performance, then a pilot with a minimum of 100 hours Pilot in Command and at least 10 hours on type (or similar type) will generally be permitted to perform the checks/tests. Where there is a more significant effect on the aircraft, the LAA may require a more experienced pilot or one with particular skills.

Once the flight test results have been accepted, you will be invited to submit any remaining certification paperwork including the original Permit to Fly Operating Limitations for amendment. You will also be advised of any outstanding fees to be paid. A modification approval certificate and a new Permit to Fly Operating Limitations document will then be sent to you completing the process.

### **COPYING A PREVIOUSLY APPROVED ENGINE INSTALLATION**

Providing the engine/airframe combination has been approved before (as shown in [TL 3.12](#)) the process for approving an engine change follows the principles outlined above for propellers. The difference when compared with a propeller substitution is that the approved design standard for an engine installation must be verified. This includes the mount design and the arrangement of the ancillary components forward of the firewall. This design standard must be declared on the application form [LAA/MOD5](#). In some cases it will be necessary to confirm that permission has been acquired from the owner of the initial design. All of this should be done before making a financial commitment to purchase the new engine as quite often it represents an irresolvable stumbling block. Worksheets recording the changes to the aircraft together with a new weight and balance will all have to be submitted before the change can be approved.

If it is known that the engine installation follows exactly that approved in an existing Prototype mod published in [TL 3.17](#), then that modification number can be referenced in the appropriate place in form [LAA/MOD5](#).

### **CHARGES FOR APPROVAL OF ENGINE/PROPELLER CHANGES**

Provision of services such as this where Engineering resources are deployed to support a specific LAA member are subject to additional fees, these are published on the website ([www.laa.uk.com](http://www.laa.uk.com)) and in each issue of *Light Aviation*.

## CHANGING THE PROPELLER OR ENGINE

In order to keep the running costs of the Engineering department to a minimum, members are requested to submit complete and well-presented applications giving full details and justifications. Remember that the engineers will be approaching the problem 'cold' without necessarily having the level of detailed knowledge of the type that you might have.

There is no fee payable on submission of the initial modification application (form [LAA/MOD4](#) or [LAA/MOD5](#)); subsequently, however, a fee is chargeable depending on the amount of engineers' time spent approving it. Following the initial assessment, LAA Engineering will advise you of the likely number of hours that will be required to approve the modification and invite you to submit further information and the initial fee (the greater of £60 or half the estimated cost). At this stage you'll be given the opportunity to stop the application from going any further at no charge. Once further work starts, you'll be charged a fee even if you subsequently abandon or cancel the modification.

All applications attract a minimum fee of £60 which covers up to 2 hours of engineers' time. Subsequent hours are charged at £30/hour, in £10 (20 minute) increments. We'll keep track of engineers' time spent to the nearest 5 minutes, but the final charge will be rounded down to the nearest 20 minutes. For instance, if we logged 4:35, we'd charge  $4 \times £30 + 1 \times £10 = £130$ .

Any outstanding fees must be paid before final issue of the modification approval. All fees should be paid via the LAA's webshop using your aircraft registration (or serial number if a registration is not yet issued) and mod number as the reference, e.g. 'G-ABCD 14100' or '009-12345 14100'. If LAA Engineering becomes aware that the modification will take significantly longer than initially estimated, this will be communicated to you as soon as possible.

Please report any errors or omissions to LAA Engineering: [engineering@laa.uk.com](mailto:engineering@laa.uk.com)

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