

# CHANGING THE PROPELLER OR ENGINE

## 1. Introduction

### 1.1 General

The existing approved Engine/Propeller combinations for your particular aircraft are shown on the Permit to Fly Operating Limitations. 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 ever 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 a new 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 sheet 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, 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.

### 1.2 Applying for a propeller change

Once you have selected your proposed engine/propeller configuration, you need to complete the application form LAA/MOD 4. This essentially records all of the details of your aircraft and the exact specification of the new components you are proposing to fit. This must be accompanied by the Prototype modification fee. (See below if the mod has already been approved.)

A mod number will be assigned and the new components will be checked for compatibility. 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 these 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 the remaining certification paperwork including the original Permit to Fly Operating Limitations. A new Permit to Fly Operating Limitations document will then be sent to you completing the process.

### 1.3 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/MOD 4 form and the reduced Repeat mod fee can be sent. (Current fees are published on the website and in *Light Aviation*.)

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### 1.4 Applying for an engine change

Where an engine is proposed that has not been previously approved for use on that particular aircraft type, the change would need to be submitted as a modification. Form LAA/MOD 5 may be used, attracting the Prototype mod fee.

### 1.5 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 comparing 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/MOD 5. In some cases it will be necessary to confirm that permission has been acquired from the owner of the installation 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/MOD 5 and the reduced Repeat mod fee will be applicable.

## 2. 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*.

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.

Modifications that exactly replicate an existing Prototype mod published in TL 3.17 are charged at the Repeat mod fee, otherwise the Prototype mod fee applied. The current fees are published on the website and in *Light Aviation*.

**See following page for a flowchart of the approval process**

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### 3. The Process for Approving an Engine/Propeller substitution

Where a propeller or engine have been approved before, the approval process is essentially a case of checking that the design standard is correct and verifying by flight test that the installation is satisfactory.

