

LAA/AWA/18/06
6th August 2018

Seasonal Changes to an Aircraft's Rigging, an Aircraft's Performance and Propeller Tightness

LAA Engineering has received a number of reports from members describing problems they've had as a result of the long hot/dry spell that has been affecting most of the UK; these problems include:

Loosening Propeller Attachments

Slackening Flying Control Cables

Runway Overruns

Loosening Control Surface Attachments

Fuel Vapourisation



Wooden propellers shrink when they dry and can therefore become loose in service. Before flying, especially after a prolonged period of dry weather, check the propeller bolts for correct torque – *remember though, when cooler or wetter conditions arrive you'll need to re-check the propeller attachment torque otherwise you may end up damaging the propeller hub when the wood returns to its original size.*

During prolonged periods of hot or dry weather it's imperative that control cable tensions are regularly checked; as temperature rises and falls cable tensions may change. Prolonged periods of dry weather can cause wooden structures to shrink, this will slacken installed control cables. A recent in-flight flutter incident reported by one LAA member demonstrated what can happen if cable tensions become too loose ... luckily he landed safely.

When wood shrinks as it dries out control surface attachment brackets can become loose; one LAA member recently discovered a very loose tailplane on his Jodel D-150 which may have caused in-flight control problems had it not been spotted before taking to the air.

USE OF E5 UNLEADED MOGAS
(see TL 2.26)

- Only legal in aircraft specifically approved for the purpose
- Fuel to be fresh, clean, free of water
- Fuel must not exceed 5% alcohol content
- Verify take-off power prior to committing to take-off
- Tank fuel temperature not above 20°C
- Fly below 6000 ft.

WARNING - WATER CONTAMINATION, CARB ICING AND VAPOUR-LOCK MORE LIKELY

As fuel becomes warm it is far more likely to form vapour 'bubbles' in the fuel system; this is especially true of Mogas (though in very hot weather all fuels can be affected). If you are using Mogas, make sure you stick within the fuel tank temperature rules – fuel tank (not ambient) temperatures above 20°C may lead to a vapour lock and consequential engine stoppage.



Remember: Your aircraft's performance, and therefore its behaviour, will change as the ambient temperature and pressure changes. These changes will affect all phases of

flight and need to be taken into account by a pilot planning a flight.

Good advice about performance changes, particularly the effects of a raised ambient temperature, can be found in the CAA's excellent *SafetySense* Leaflet (7c) which can be downloaded [HERE](#)