Continuing Airworthiness Notice 61-001

Jabiru 2200 and 3300 Engine Propeller Installations

27 August 2020

Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains non-regulatory information and guidance that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91. CAN numbering is by ATA Chapter followed by a sequential number for the next CAN in that ATA Chapter.

Applicability:

All Jabiru 2200 and 3300 series aircraft engines.

Purpose:

This Continuing Airworthiness Notice (CAN) is issued to advise Jabiru engine operators of the safety recommendations identified by the Australian Transport Safety Bureau (ATSB) with an investigation of a propeller loss on a Jabiru J430 aircraft in Australia.

Background:

This CAN is prompted by a recent propeller loss on a Jabiru 2200A engine and a propeller loss in 2003 on Jabiru J430, VH-TJP in Australia, which resulted in a forced landing upon tidal flats at the western edge of Westernport Bay in Victoria. The pilot of VH-TJP was uninjured and able to disembark the aircraft safely.

The Australian Transport Safety Bureau (ATSB) investigation found that most of the cap screws connecting the propeller mounting flange to the engine crankshaft had failed by bending fatigue fracture – principally due to repeated relative movement between the mounted components. This movement was traced to a combination of an ineffective, multi-step torqueing method and the relaxation of tension within the crank–flange joint due to the compression of multiple layers of paint within the joint. It was also found that there were some anomalies within the maintenance documentation that related to these areas.

In July 2011, the engine manufacturer improved the strength and reliability of the crank–flange joint by adding positive-location dowels in all new production engines. However, that modification was not extended to earlier design assemblies, which included this specific Jabiru J430 aircraft engine.

Jabiru engines manufactured before July 2011 (pre-engine S/N 2446) have reduced strength and reliability of the crankshaft/propeller flange joint, compared with the later design that incorporated positive location dowel pins.

The current (revised) issue of the Engine Overhaul Manual has a strong recommendation that these dowels should be installed at the next full overhaul or at bulk strip of engines manufactured prior to July 2011. Furthermore, in addition to the earlier requirement for no paint on mating faces or where screw heads bear, a broad requirement was introduced to ensure that no paint, thread-locking compound, or contaminants remain in the propeller flange joint. The fastener torqueing method has been amended to a single-step process in which the required torque is to be obtained dynamically, while the fastener is being turned.

Finally, *Jabiru Propeller Flange Attachment Service Bulletin JSB 022-2* now refers maintainers directly to the engine overhaul manual for installation procedures – removing the variability that previously existed between documents.

For further information refer to ATSB Transport Safety Report AO-2013-046 dated 19 August 2014 available on the ATSB website at https://www.atsb.gov.au/publications/safety-investigation-reports/?mode=All&q=AO-2013-046

Recommendation:

Jabiru 2200 / 3300 Engine Overhaul Manual (document JEM0001) now includes a strong recommendation that operators update their engines during the next full overhaul or bulk strip to include propeller flange dowels between the crankshaft and the propeller flange.

Engine Overhaul Manual JEM0001 is available on the Jabiru website at https://jabiru.net.au/service/manuals/

Jabiru Propeller Flange Attachment Service Bulletin JSB 022-2 issue 2, dated 20 June 2014 has been revised to no longer specify the multi-step torqueing procedure, instead referring to the correct torque procedure in the Engine Overhaul Manual i.e. a single-step torqueing procedure.

Propeller Flange Attachment SB JSB 022-2 is available on the Jabiru website at https://jabiru.net.au/service/service-bulletins/

An additional requirement has been introduced into the overhaul manual for mounting surfaces to be free from paint, thread-locking compound, or other contaminants before assembly. The relevant painting process specification now requires that all three faying surfaces of the flange be masked plus an illustrative diagram accompanies the text.