



Civil Aviation Authority
SAFETY NOTICE
Number: SN-2020/005



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Ageing Aircraft Component Reliability & associated Acceptance of Replacement Parts

This Safety Notice contains recommendations regarding operational safety.

Recipients must ensure that this Notice is copied to all members of their staff who need to take appropriate action or who may have an interest in the information (including any ‘in-house’ or contracted maintenance organisations and relevant outside contractors).

Applicability:	
Aerodromes:	Not primarily affected
Air Traffic:	Not primarily affected
Airspace:	Not primarily affected
Airworthiness:	All BCAR A8-23 / A8-24 / A8-25 / A8-26, EASA Part-M/F, M/G and Part CAO/CAMO Organisations
Flight Operations:	Operators of General Aviation Aircraft
Licensed/Unlicensed Personnel:	General Aviation Pilots & Engineers

1 Introduction

- 1.1 This Safety Notice is published to raise awareness of reliability challenges relating to parts fitted to older aircraft types and the acceptance criteria relating to sourcing replacements.
- 1.2 An MOR investigated in 2020 concerning the apparent failure of the magnetos on an M-14P engine fitted to a Yak-52 serves as a useful reminder to affected parties about:
 - i) the reliability of what are sometimes ageing designs of components and the effects of storage and or calendar service and,
 - ii) requirements related to the provision of either direct replacement or alternative (modified) parts.
- 1.3 There appeared in this particular case to be an issue of magneto coils breaking down during flights of longer duration (in this case ferries, as opposed to short aerobatic sorties). The failure mode that triggered the event that featured in the occurrence report was replicated during bench testing. Given the age and relatively large numbers of this engine type in service, it seems unlikely to have been the first such instance of this problem, but due to the differences in approach to type approval and associated reporting criteria between the originating states and the current EASA/CAA model, reliable data is expected to be difficult to obtain.

- 1.4 When replacement components, which may or may not conform to the original design, are available, owners and/or organisations fitting such parts need to ensure these parts are eligible for installation on G- registered aircraft by checking that there is evidence of appropriate release documentation, and if applicable, modification approval.

2 Ageing Component Reliability and the Benefits of Bench Testing

- 2.1 For key, ageing components installed on the aircraft, in addition to straightforward adherence to the appropriate Maintenance Programme, it is prudent to carry out representative functional tests at convenient opportunities and to include testing for a representative length of time to help identify and address such flight endurance or run-time related issues as were apparently experienced in this case. Prior to installation, installers should also be aware of any bench testing requirements previously imposed on the components concerned and recognise the importance of such bench testing in ensuring that the component is properly set up and functional.
- 2.2 It is accepted that specialist bench testing equipment may be required in many cases. Seeking the assistance of 'type clubs', sporting organisations, or suchlike can assist in reducing the costs of accessing the necessary equipment, and potentially benefit from additional expertise in the testing methods, with the significant added advantage of the sharing of the results for mutual advantage in building up, or at least preserving, the industry knowledge-base.

3 Component Modification State and Release Expectations

- 3.1 There have been and continue to be efforts from both EASA and CAA to help make the owning of the simpler ageing types more cost effective whilst maintaining reasonable safety levels. That said, for older, often unsupported aircraft, the sourcing of spares can be far from straightforward, whether used or unused, and whether to the original design or modified. This may be particularly difficult for aircraft originating from states with different approaches to the ownership of design and production responsibility.

Anecdotal reassurance of the acceptability of parts from a distributor (or even the manufacturer) is no substitute for documentary evidence of:

3.1.1 the part either being of the design originally approved for use in the aircraft, or one that has undergone a formalised design approval process using requirement material appropriate to the aircraft involved, and so been approved as a modification.

and

3.1.2 the appropriate release documentation to ensure that the parts conform to that 'approved' design standard (original or modified). For Permit aircraft, the expectation is that whilst this release could be a 'Form 1' or an FAA 8130-3 tag, it is more likely to be a reasonable '*certificate of conformity*' or *Permit Maintenance Release*. This document should include date and/or batch details, serialised part references if appropriate, as well as clear reference to either the original part number/component identification or to the approved modification and new part number if a non-original item).

- 3.2 Non-adherence to requirement material can result in the Permit (or C of A) being invalidated. Knowledge of the applicable modification state release evidence requirements is clearly the only sure way to avoid such implications of non-compliance. There has been a good deal of regulatory change in the recent past, which may have caused some confusion, and more changes are due. However, it is the operator's responsibility to keep abreast of changes and

ignorance is no defence. We strongly recommend contacting the regulatory body responsible for your particular type (be it CAA, LAA etc) if there are any doubts.

4 Aircraft with a Certificate of Airworthiness

The majority of aircraft to which this Safety Notice applies will be on a Permit to Fly. However, the recommendations and guidance provided also apply to components for aircraft with a Certificate of Airworthiness. The formal Maintenance Programme should provide regular and effective maintenance for components. New and used components that are to be fitted should only be those approved as part of the original type design or through a subsequent design change. Each component must have both the relevant release documentation as required by the regulations and be in an acceptable condition to be fitted.

5 Relevant Requirement or Guidance Material

The following sources contain useful information concerning release expectations from both CAA and EASA.

- **CAA CAP 553** (BCAR Section A) Chapter A3-1, A3-7, A8-23, A8-24
- **EASA Part 21**; Subpart D, Subpart K

6 Queries

- 6.1 Any queries or requests for further guidance because of this communication should be addressed to:

GA Unit, Safety & Airspace Regulation Group, Civil Aviation Authority,
Aviation House, Beehive Ring Road,
West Sussex, RH6 0YR E-mail: GA@caa.co.uk

7 Cancellation

- 7.1 This Safety Notice will remain in force until further notice.