



FAA

Airworthiness Concern Sheet

Date: 5/31/02

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 Department FAA
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Make, Model, Series, Serial No.: Teledyne Continental Motors (TCM), Lycoming and Franklin engines, which have TCM (formerly Bendix) S20, S1200, D-2000 or D-3000 series magnetos equipped with impulse coupled starting devices

Reason for Airworthiness Concern: Possibility that existing AD mandates inspections on certain engines that are not necessary

FAA Description of Airworthiness Concern (Who, What, Where, When, How? Attachments: RA and appropriate data)

Impulse couplings are installed on the magneto to retard the spark timing and thereby facilitate starting the engine. The original configuration of the TCM magnetos utilized a riveted retention mechanism for the impulse coupling flyweight. It should be noted that the “shower of sparks” magnetos are not equipped with impulse couplings.

Impulse couplings incorporate moving parts, which are subject to wear. Service reports indicated that the TCM magnetos were experiencing failures of the riveted flyweight retention mechanism and, as result, the FAA issued Airworthiness Directive (AD) 78-09-07 in 1978. The AD originally set mandatory inspection intervals for all Bendix (now TCM) impulse couplings at 1,000 hours time-in-service (TIS). The AD was revised three times in the next 5 years until AD 78-09-07 R3 was issued in 1983 with a 500 hour TIS inspection interval.

In January 1992, TCM changed the impulse coupling flyweight retention configuration from riveted to snap ring. TCM initiated a core return campaign and replaced many early hot upset riveted couplings in the field with the snap ring configuration. In addition to the retention technology change, the shape of the flyweight was altered thereby changing the dynamics such that wear at the flyweight axle is no longer compounded by wear of the tail against the body. Other changes were made with the snap ring coupling introduction, including the letter S stamped on both sides of the nose of each flyweight so that snap ring couplings may be readily identified while the coupling is still assembled to the magneto.

The current AD, 96-12-07, superseded AD 78-09-07 R3 and mandates inspection of all TCM/Bendix impulse couplings, regardless of the flyweight retention configuration, at 500 hour TIS intervals. TCM Mandatory Service Bulletin (MSB) 645, dated April 4, 1994, which is referenced in this AD, specifies inspection of riveted couplings at 100 hour intervals and snap ring couplings at 500 hour intervals.

Attachments: *SDR(s) *A/IDS *SL(s) *SAIB *FAASR/*NTSBSR *AD *AMOC *RA

Notification: FAA *AOPA X *EAA Type Club *TC Holder Other:

Response Requested _8/02/02: **Emergency (10 days)** **Alert (30 days)** **Information (90 days)**
 (Space Bar Adds “X” to Check Boxes)

This Airworthiness Concern Sheet (ACS) is intended as a means for FAA Aviation Safety Engineers to coordinate airworthiness concerns with aircraft owner/operators through associations and type clubs. At this time, the FAA has not made a determination on what type of corrective action (if any) should be taken. The resolution of this airworthiness concern could involve an AD action or an SAIB, or the FAA could determine that no action is needed at this time. The FAA’s final determination will depend in part on the information received in response to this ACS.

The riveted impulse couplings are an obsolete configuration that has been out of production since 1992 and has accounted for all the failures since 1985. There have been no reported failures since 1997. All of the reports of these impulse coupling failures in recent years involve the Lycoming O-540 or IO-540 series engines with two single magnetos installed. None have involved the dual, D-2000/D-3000 series, magneto models. However, the data base may be small because Malfunction or Defect Reports, which comprise the data base, are not mandatory and, therefore, may not have been submitted. The FAA would like to determine the number of riveted configuration impulse couplings that are still in service in order to continue to evaluate the potential safety impact of this configuration magneto.

The FAA is using parallel channels to approach this issue. Concurrent with this ACS, a Special Airworthiness Information Bulletin (SAIB) will be issued to all owners of aircraft with the listed engines installed. The SAIB and this ACS request the following information:

1. The impulse coupling flyweight retention type (the letter S stamped on both sides of the nose of each flyweight indicates snap ring retention, the absence of the S indicates riveted)
2. The model of the magneto.
3. The time-in-service of the impulse coupling.
4. The engine make/model.
5. Any other relevant comments or information. Comments are particularly requested relative to the current AD and whether the 500 hour inspection interval is adequate, should the riveted couplings be inspected at 100 hour intervals, etc.
6. Previously unreported in-service problems with either type impulse couplings involving wear that caused engine failure or other problems.