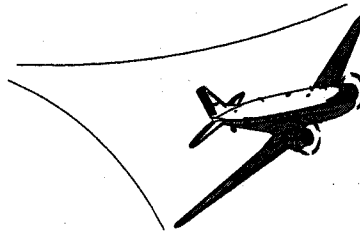


# SPECIAL AIRWORTHINESS INFORMATION BULLETIN

Aircraft Certification Service  
Washington, DC



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

No. NE-02-32  
June 12, 2002

*We post SAIBs on the internet at "av-info.faa.gov"*

*This is information only. Recommendations are not mandatory.*

## Introduction

This Special Airworthiness Information Bulletin (SAIB) recommends that you, owners and operators of **Teledyne Continental Motors (TCM), Lycoming and Franklin** series reciprocating engines equipped with TCM (formerly Bendix) S20, S1200, D-2000 and D-3000 series magnetos with impulse coupled starting devices installed, *inspect the impulse coupling.*

*NOTE: The FAA has received reports of some confusion with the numbering system for S-20, S-1200, D-2000 and D-3000 series magnetos referenced above. Each magneto's model number has a code describing the unit as follows:*

CODE	SIGNIFIES
S or D	Ignition type (Single or Dual)
4, 6 or 8	No. of Cylinders
L or R	Direction of rotation (Left-hand or Right-hand)
N	Manufacturer Designation
-25, -3200	Magneto series

### Examples:

S4LN-1209	4 cylinder engine, Left-hand rotation, Bendix (now TCM), S-1200 series
D6RN-3200	6 cylinder engine, Right-hand rotation, Bendix (now TCM), D-3000 series

## Background

Impulse couplings are installed on the magneto to retard the spark timing and facilitate engine start-up. The original configuration of the TCM magnetos utilized a riveted retention mechanism for the impulse coupling flyweight. *You should note 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. As a 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). We revised the AD three times in the next 5 years until we issued AD 78-09-07 R3 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, they altered the flyweight's shape; 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.

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, referenced in 96-12-07, specifies inspection of riveted couplings at 100 hour intervals and snap ring couplings at 500 hour intervals.

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 the 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 database may be small because Malfunction or Defect Reports, 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.**

#### **Recommendation**

The FAA requests that operators of engines equipped with TCM (formerly Bendix) S-20, S-1200, D-2000 and D-3000 series magnetos with impulse coupled starting devices installed contact this office, *preferably by e-mail* (see For Further Information Contact section for the address). We request the following information:

1. **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. **Model of the magneto.**
3. **TIS of the impulse coupling.**
4. **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.

**The FAA will continue to monitor this service investigation to determine if we need to mandate additional corrective action.**

#### **For Further Information Contact**

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