Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

Magneto Defects

AWB 74-005 **Issue** : 3
Date : 20 October 2014

1. Effectivity

All piston powered spark ignition aircraft utilising magnetos.

2. Purpose

This Airworthiness Bulletin (AWB) is a compilation of information contained in Airworthiness Advisory Circulars (AAC), Service Bulletins (SB), Service Difficulty Reports (SDR) and Advisory Circulars (AC) and will be revised from time to time to incorporate new magneto defects.

Magneto failures continue to result in in-flight engine failure, loss of power or rough running.

3. Background

The following information is supplied as a guide to help prevent unnecessary, avoidable and costly failures. Not only can a failing magneto result in rough engine running inflight, failed magnetos can lead to in-flight engine failures and costly overhaul due to malfunctioning and sheared or broken parts can enter the engine.

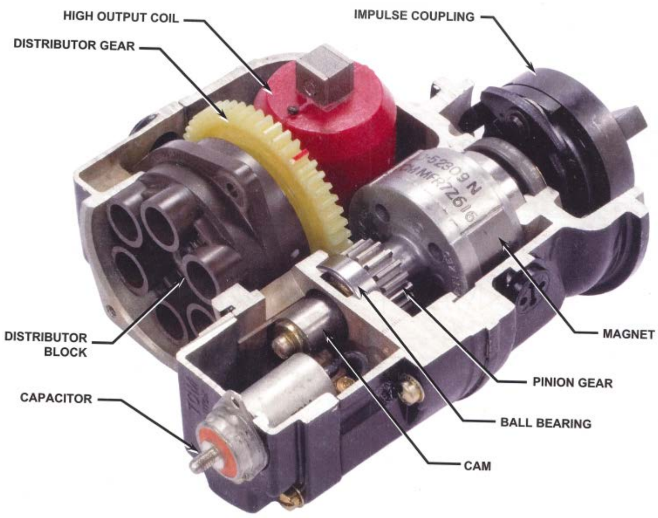

Figure 1 – General Arrangement of 20/200 Series Magneto (Sourced from TCM Aviation Technician Advanced Training Program)

CASA SDRs on both Champion Aerospace (Slick) and Continental (Bendix) magnetos indicate a wide range of problems which have been discovered during basic magneto maintenance and operations. Magnetos are designed and assembled so as to function as a tuned resonant circuit containing resistance, capacitance and inductance. A change in any of these values will affect magneto efficiency. The timing must be such that the energy wave induced in the coils secondary windings is at its peak at the correct engine rotational position. Establishing this timing relationship is done by setting the

"E" gap and setting engine timing. "E" gap timing is set by adjusting the breaker points so that they open and close at the correct rotor angular position.

Installing incorrect magnetos

Examples have been found of people attempting to install or having installed an incorrect magneto for a particular engine and position. Magnetos should have correct part number and model. The correct magneto for the installation must be verified against the approved technical data. Installing incorrect magnetos invalidates the type certification basis of the engine.

In one instance, a left hand rotation magneto was installed in the position where a right hand rotation was specified. This resulted in a rough running engine with reduced power and the associated possibility of destructive detonation.

Care needs to be taken to ensure the correct model magneto is fitted that will suit the direction of rotation of the engine. This is typically marked on the magneto data plate with either "L" or "R". The L or R text does not refer to the position on the engine. Check with the approved technical data for the correct magneto and installation instructions. See Figure 2.

Figure 2 - Data plate showing typical code for direction of magneto rotation

There has even been a case of incorrect rotation direction magnetos being installed on factory supplied engines. Due to the possibility of extensive internal damage, all affected engines had to be removed, dismantled, inspected and repaired to avoid catastrophic in-flight failure of the engine.

Unsolved engine starting or magneto problems may be attributed to an incorrect part number magneto installation.

Broken Distributor Gear Teeth

The magneto in Figure 3 (below) suffered teeth failure approximately 150 hours after the magneto was inspected in accordance with the 500 hour Continental Motors System Support Manual inspection. This issue was found when a magneto failed a dead cut test. When the magneto was opened - the distributor gear was found with several gear teeth broken away from the gear. The teeth were retained inside the magneto case. No other parts were found out of place inside the magneto case. This magneto was documented to have approximately 1000 hours TSO (total since overhaul); however, overhauled magnetos may contain components which have been in service for many years.

Figure 3 - Broken Distributor Gear Teeth (Sourced from FAA Alert 401, December 2011)

A distributor gear which either rotate sporadically or does not rotate due to broken teeth, may also result in additional internal arcing damage to other electrical components, such as tracking burns on the distributor cap and burnt high tension coils. See Figure 4.

Figure 4 - Arcing damage on distributor gear wheel

This is because the high tension electricity is still being generated as the magneto continues to operate and if the electrical energy cannot discharge at the spark plug, it seeks alternate paths to earth.

Although the nylon or "plastic" distributor gears can suffer problems due to ageing, and suffer hardening of the gear material and fatigue cracking, tooth failures may also be attributed to:

- Prop strikes

- High temperature
- Kick back during starting before fire events
- Magneto “locking devices” being left in the magneto
- Lightning strikes see CAAP 42L-1(0)
- Incorrectly installed gears
- Any other event which can cause shock on the gear trains of the back gears and distributor gear

Magneto Timing “Locking” or “Holding” Devices

The use of holding devices (including large flat-bladed screw drivers) to hold the magneto distributor gear in the correct #1 cylinder firing position when installing the magneto to the engine is not recommended.

Continental Motors Ignition Systems "Service Support Manual" also contains a number of cautions throughout the manual against the use of gear holding timing devices using what appears to be “approved” gear holding tools. This repeated caution warns of possible hidden tooth damage resulting from the use of these devices.

Engine damage can be quite extensive as a result of distributor gear failure within the magneto. It is advisable to heed all warnings and cautions provided by the manufacturer to reduce the possibility of such failures.

Distributor Block bearing failure

Magneto miss-firing and dead-cuts have been traced to the distributor wheel shaft bearing spinning and moving in the bearing block. 30 SDRs have been reported regarding this type of failure. On one occasion this problem caused an engine failure on take-off.

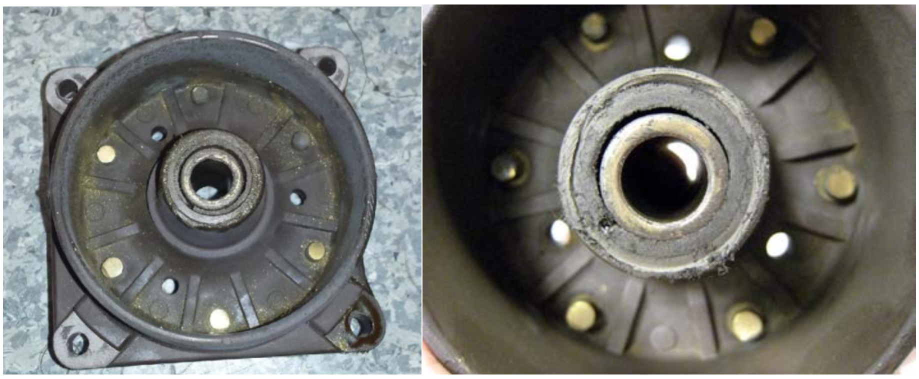

Figure 5 – Distributor Bearing block

When distributor block bearing failures occur, the nylon distributor gear can become intermittently disengaged from the pinion gear and this problem may be first apparent by engine rough running, loss of engine power, and as the failure progresses, complete loss of timing and no output due to distributor gear wheel teeth being sheared off the nylon gear. On inspection because of the play from the bushing it was found that the internal timing had skipped teeth on distributor gear wheel and was 180 degrees out of timing. See Figure 6.

Figure 6 - SDR 510019629 Broken teeth

Lower bearings have been found loose in the cap has also allowed the electrode on the rotor finger to contact the high tension terminals in the cap (see Figure 7). This type of failure could cause premature magneto failure.

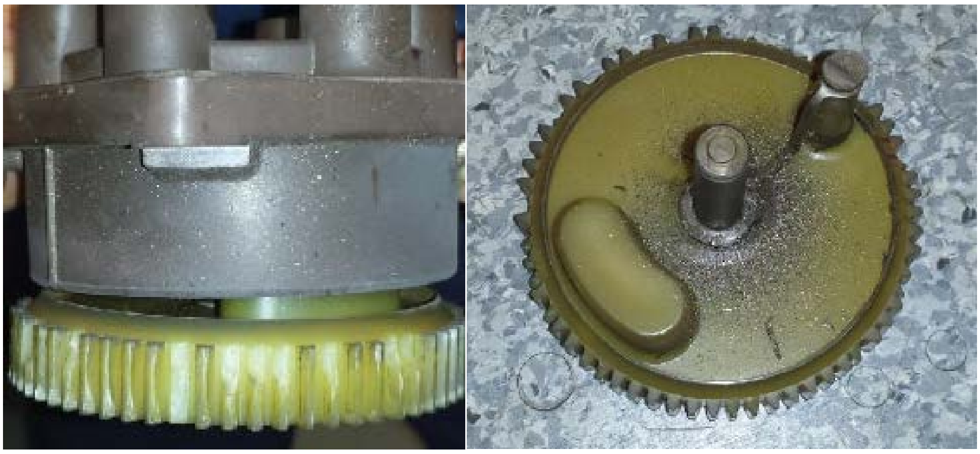

Figure 7 - Sheared teeth and debris from electrode contacting high tension terminals

It is reported by magneto overhaul shops that despite close inspection of new distributor blocks, there is no way to determine if a new distributor block will prove to be reliable in service. This is currently the matter of an active on-going investigation in conjunction with manufacturers. In the CASA SDR database, there has been an approximately 70% increase in loose distributor block bearings in rotorcraft installations.

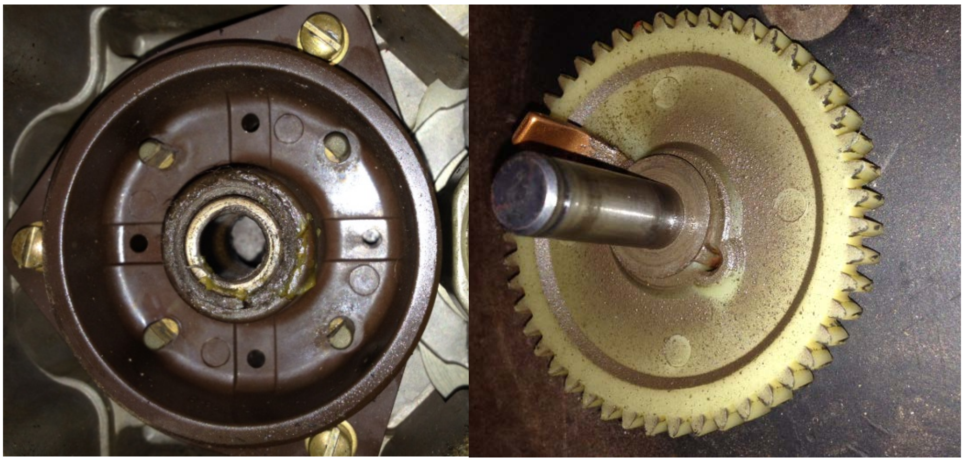

Figure 8 - Bushing failure

Magneto shaft bearings

CASA AAC 1-81 - Magneto Maintenance - General 6/95 documented bearings spinning in the end cap. This has occurred in Slick 4200 and 6200 series magnetos and AD/ELECT/46 was issued to address this problem. The AD has been cancelled and the content of which is now incorporated into manufacturers Service Bulletins see Figure 9 below.

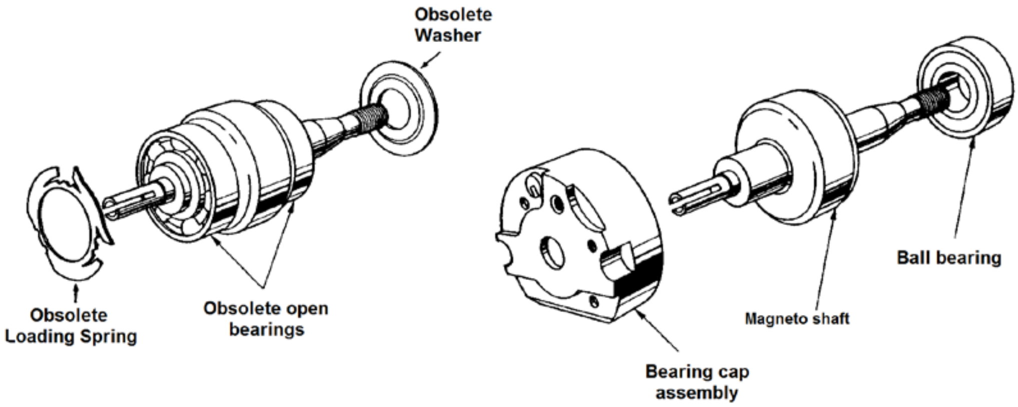

Figure 9 - Old and new slick bearing end cap designs

Several incidents have occurred in Slick 4300 and 6300 series magnetos describing magneto shaft bearings spinning in the end cap. Champion Aerospace have advised that the bearing spin incidents could occur under abnormally high temperature environments with high vibration and/or high bearing side loading caused by misalignment of the engine drive gearing. Champion Aerospace supplies the bearings with the end cap as a replacement part; which eliminates the need to press in new bearings thus reducing the possibility of bearing spin due to improper assembly.

This problem was addressed with the end cap bore diameter being changed to provide an improved interface with the bearing. Champion Aerospace has also advised that tolerances have been tightened even further on the bearing and end cap and replacing the bearing only may cause the bearing to spin in the end cap. Bearings supplied without the end cap are not approved spares and should not be used.

There have been reports from magneto repairers regarding the Bendix magneto shafts spinning on the bearing. This causes damage to the magneto shaft that is beyond economical repair. It is a recommendation that 4300/6300 series magnetos are overhauled at 300 hours or less depending on severity of operating environment.

Magneto sandblasting – (SDR 510017405)

In one instance a magneto was inspected after an overhaul from an FAA approved overhaul facility (see Figure 10). The distributor gear and block were sandblasted during the previous overhaul, causing erosion to the parts.

Figure 10 - Eroded gear and block

Figure 10 shows sand blast beads were found in the block bushing. This issue was identified during an overhaul of the magneto.

Sandblasting is not an approved process during overhaul and this information was provided to the FAA to aid in their inquiries.

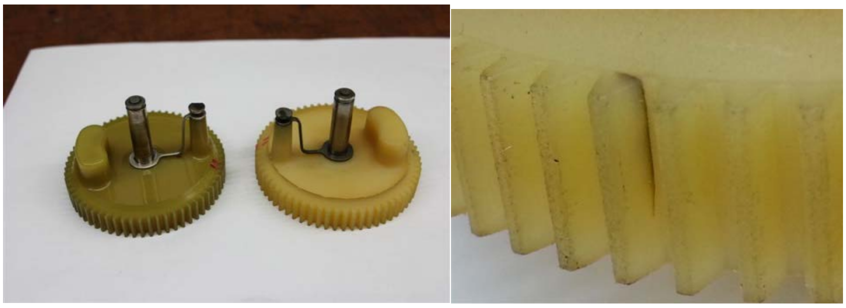

Figure 11 - Original gear compared to sandblasted gear and cracked gear tooth

A closer inspection of the sand-blasted gear tooth revealed cracks, which would have caused an eventual premature failure of the gear.

Missing Block Spring

Figure 12 shows both sides of the magneto distributor block where a distributor block spring was missing in the assembly of the magneto.

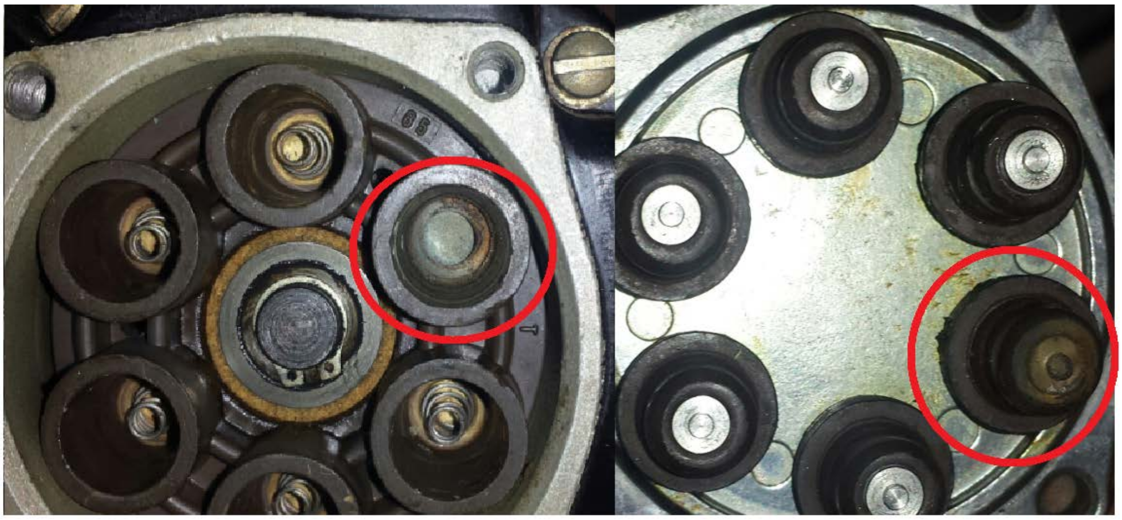

Figure 12 - Missing block spring

This magneto in the engine of rotorcraft, failed in service because a missing spring caused misfiring which lead to an autorotation landing. If the spring is missing it causes intermittent cross firing in the distributor and loss of power. It is important to check the springs are serviceable whenever an opportunity presents itself.

Magneto timing advancing

Engine roughness or internal vibration is also frequently linked to incorrect magneto-to-engine timing which can occur during operation, despite the timing being correct at installation.

There has been an increase in SDR reports to CASA describing advances in timing in between periodic inspection periods in 4300 and 6300 series slick magnetos. The current investigation is looking into manufacture and repair process improvements. According to Champion Aerospace in SB2-08B, excessive timing drift may be caused by premature cam wear. This issue was reported to the FAA to aid in their inquiries.

Slick Magneto Contact Breakers (incorporation of AWB 85-012)

Investigations into reports of magneto failures and instances of hard-starting have been directly attributed to defective primary Champion Aerospace contact breaker sets (points) which were manufactured by SLICK between 01 November 2011 and 22 March 2012.

SLICK Service Bulletin SB1-12 only applies to the genuine Champion Aerospace SLICK point set P/N M3081. Other PMA “M3081” equivalent point sets are not affected. Action in accordance with the attached Champion Aerospace SLICK SB1-12 initially issued 06 September 2012.

Do not persevere with an engine which is hard to start, running rough, including unusual RPM drops during magneto check, or a magneto which is difficult/unstable to time. Such symptoms may indicate failing SLICK P/N M3081contact breakers.

Failed Magneto Shaft

Failures of the type indicated in Figure 13 appear to be a result of high cycle fatigue cracking which initiates from small corrosion pits in the shaft or in the area of the Woodruff key. This shaft can also respond to engine vibration which, under certain conditions may induce a bending or wave motion response typical of shafts rotating at critical whirl speed, making the shafts vulnerable to any surface defect.

Figure 13 - Sheared shaft

Failures of this kind may also be linked to the same possible causal factors listed in as detailed in paragraph on Broken Distributor Gear Teeth.

Magneto induced engine roughness increases propeller and crankshaft stresses. The propeller and engine suffer the effects of the roughness well before the pilot may become aware. The crankshaft and propeller feel such “roughness” as twisting and bending strains that produce stress. Such stresses, if high enough and occurring for a sufficiently long time, may cause propeller, crankshaft or counterweight damage.

Failed Magneto Gaskets

The following article is a copy of an article printed in the Transport Canada Aviation publication titled Feedback, Issue 1/95. This article is reproduced with the kind permission of Transport Canada Aviation.

"Transport Canada (TC) has recently been informed of certain Piper and Mooney aircraft, powered by Lycoming engines, which had magnetos installed with incorrect gaskets. The magnetos were Bendix S-20 and S-200 series from Teledyne Continental Motors (TCM). The first report was a Piper PA23-250, powered by a Lycoming IO-540 engine, which had a magneto fall off in flight in the USA.

According to the A&P mechanic who repaired the aircraft, the failure was caused by the installation of an incorrect gasket which did not provide proper support for the mounting flange, causing the flange to fail. It is thought that the thickness of the gasket had a bearing on the failure. The aircraft's remaining magnetos were inspected and were also found to have incorrect gaskets installed and, although two of the magnetos were cracked, none had progressed to failure. This particular magneto application calls for the installation of two Lycoming gaskets (P/N 62224), one on each side of the adapter plate see Figure 14. The failed magneto on this aircraft had one P/N 62224 gasket between the adapter and the engine case, but had an LW 12681 gasket, and possibly a TCM P/N 534750 gasket, between the magneto and the adapter plate, which is incorrect.

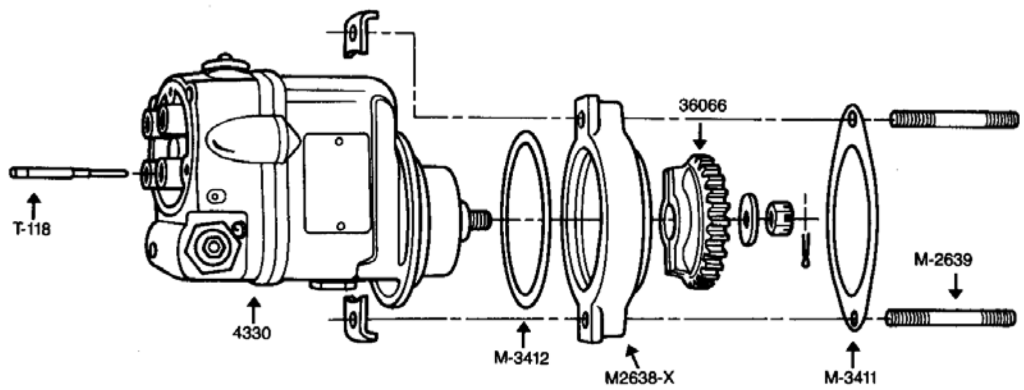

Figure 14 - Extract from SL1-93

The repair shop operator, who reported this problem to Transport Canada, has since found two aircraft with the same problem: a Mooney powered by a Lycoming O-360 engine, and a Piper PA24-250 powered by Lycoming O-540 engine. Although incorrect gasket installation was found, none of the magnetos had progressed to failure. None of these magnetos were installed by the engine manufacturer, but had been removed and reinstalled.

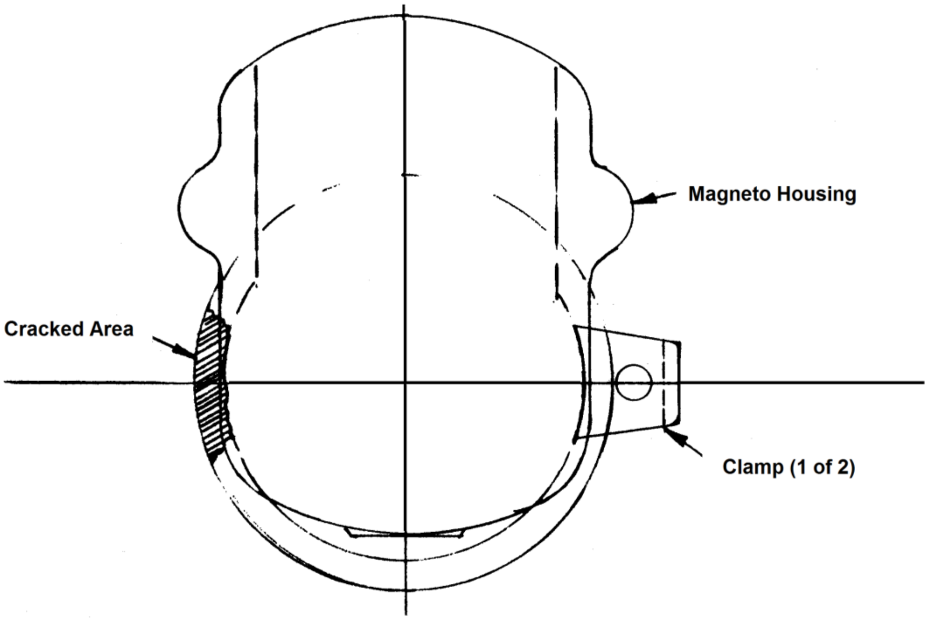

Figure 15 - From Slick SB 3-80B Broken Magneto flanges

TC contacted TCM/Bendix about this problem and was told the magneto gaskets were furnished and installed by the engine manufacturer at time of build-up, and that different engine manufacturers use different gaskets for the same model magneto, e.g. Lycoming engine magneto gaskets differ from Continental engine magneto gaskets. TC also contacted Textron Lycoming, who confirmed that proper installation for the S-20 and S-200 magneto incorporates two P/N 62224 gaskets. These magnetos have an eyelet on the top and bottom of the magneto case, and are mounted using two of these gaskets, one on each side of the adapter plate.

An SDR was submitted to CASA where a manufacturing defect was identified in the housing casting. Failure occurred at the point of contact with the hardware. This caused the separation of a large portion of the flange from the housing.

The Lycoming LW 12681 gasket is used in certain applications when the magneto is secured by clamps, as in the case of S-1200, S-2000 and S-2200 magnetos. It is possible that through misunderstanding of the parts catalogue, or a simple mistake at re-installation of a magneto, that an incorrect gasket was used.

LAMEs are reminded that extra precautions should be taken when new parts are drawn from stores and used during re-installation. The gaskets were all authentic Bendix magneto gaskets. It was their particular application that was faulty in these instances." Note in Bendix SB 3-80B, Bendix attributes broken magneto attachment flanges to over-torqueing the attachment flange nuts.

Over torqueing has also been attributed to distributor block cracks (SDR 510018733).

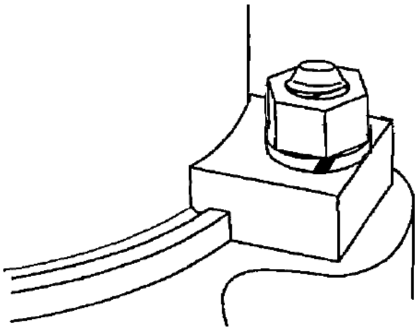

Figure 16 - Adapted from Slick SL3-92C

Example of over-torqued magneto gaskets has been reported to CASA. As a result the gaskets perished in service. Gaskets should not be re-used and the approved data documentation should be followed.

Loss of magneto output due to overheating

There have been cases of magnetos overheating in service resulting in temporary magneto failure. This could be attributed to changes in the temperature of coefficient in copper wiring. Magnetos are constructed from many turns of copper wiring in the secondary coil. As a magneto heats, the resistance of the wiring in the coil will increase causing a decrease in output.

In several cases the engine could not be started when hot due to weak or no spark output from the magneto. Only when the engine magneto cooled down, could the engine be started. It was found that the coil in the particular magneto was susceptible to very high temperatures. Bench testing of magnetos by simulating in-flight conditions of heat, altitude and vibration can reveal issues not easily seen by a simple test.

Capacitors

The capacitor in breaker point circuit prevents points from burning and aids in the rapid collapse of the magnetic field thus increasing secondary out voltage to the spark plugs. A magneto exposed to very high temperatures, may also cause the dielectric in the capacitor to break down. This can cause a partial short between the plates which can lower the voltage in the primary coil. Signs of high temperature on the contact spring or severe breaker point erosion are signs of a failing capacitor. If the capacitor checks okay but the points are burnt then either the capacitor is being overheated or the capacitor has a poor ground.

Some capacitors use oil impregnated paper as the dielectric material. High temperature makes the paper brittle and then as mechanical shock from rapid temperature changes and engine vibrations takes its toll, the paper insulation wears through, reducing the capacitor's performance.

Faulty Capacitor Melts Cam Follower

Teledyne Continental Ignition Systems Service Bulletin, SB651, describes some of the causes and effects of faulty capacitors. That is, if either the ground return path or the flag terminal lead path presents high resistance, arcing will occur at the points. This arcing will cause an increase in resistance due to material build-up and resulting in loss of efficiency. The arcing also overheats the points and spring to which one of the points is attached. The cam follower then melts where it bears against the hot spring. This results in a change in the height of the cam follower and as a result the point clearance decreases allowing the timing to vary. Capacitors will read different values depending on whether Direct Current (DC) or Alternating Current (AC) is selected on a multimeter. Make sure to check test value specifications in the approved technical data and test equipment prior to making measurements.

P-Lead ground stud

Teledyne Continental Motors has identified a quantity of particular magneto capacitors which may have ground stud (also referred to as the P-Lead stud) threads that do not meet specification. This may allow the ground wire (P-Lead) to come loose, resulting in a hot (live) magneto. A list of affected magnetos and capacitors are listed in the service bulletin.

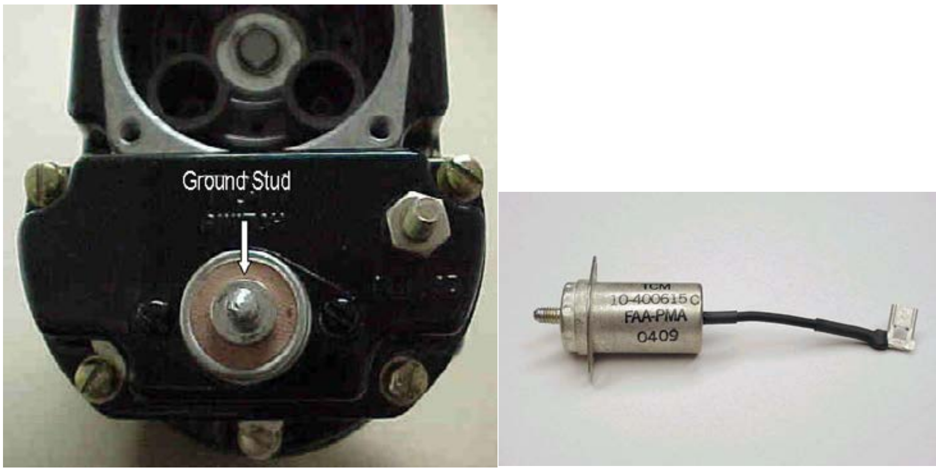

Figure 17 - Capacitor

Hot Magneto Test

Teledyne Continental Motors (TCM) have provided a test procedure in SB653 to ensure the integrity of the magneto grounding circuit. This service bulletin affects all ignition systems utilizing TCM or Bendix magnetos and/or ignition switches on all aircraft types.

Magneto ignition systems should be routinely tested to ensure magnetos are properly grounded after engine shutdown in order to avoid engine starting from people inadvertently moving the propeller during ground handling or maintenance.

Bendix Magneto Impulse Coupling

Engines have been extensively damaged and suffered complete in-flight engine failure due to Bendix magneto coupling failures. Flyweight axles and axle holes may become worn, allowing the tip of the flyweight to contact the magneto housing. If the wear is not checked correctly a worn pawl axle can allow the tip of the flyweight to machine the mounting flange off the magneto allowing the magneto to detach from the engine in flight. These incidents have highlighted an apparent misconception concerning the most satisfactory way to check impulse coupling component wear.

Bendix recommends the use of a driIl shank to make a clearance check between the flyweights and cam of the coupling, but the instructions of this bulletin are in no way intended to replace Bendix service and overhaul manuals.

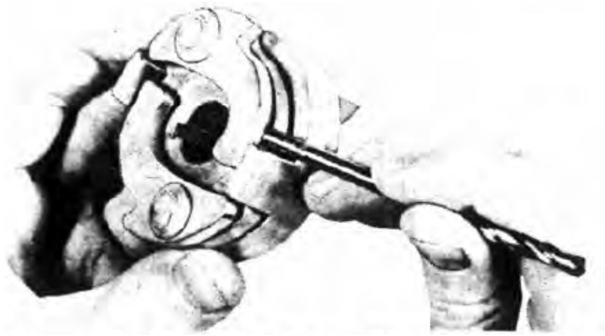

Figure 18 - Checking clearance between flyweights and cam

Particular attention should be paid whilst inspecting the impulse coupling wear between the flyweight axles and axle holes. This should be done on the assembled magneto by employing a small wire hook to pull the flyweight radially outward at a position midway between the axle hole and the weighted end of the flyweight. Reach between the cam and the flyweight with wire hook as near as possible to the stop pin. Ensure that flyweight tail rests against body trip-dog.

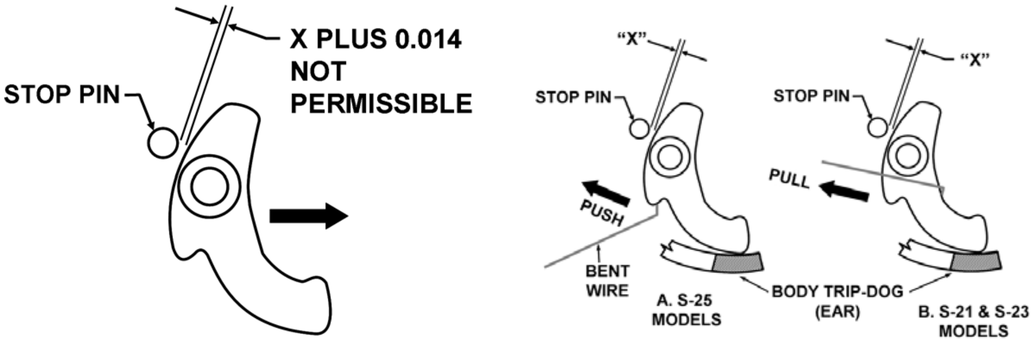

Figure 19 - Adjusting the stops

As some flyweight assemblies are set to disengage the stop pin at 450 rpm, the aircraft manufacturer's manual should also be consulted when setting engine idle speeds, to ensure that the impulse coupling does not engage while the engine is idling. If the coupling will not pass any of the above checks or, if the magneto is removed in service and any sign is found of the radial extremities of the flyweight assembly having contacted the magneto stop pin, the cam plate and flyweight assembly should immediately be discarded.

Clear Case Coil Magnetos

The FAA issued AD 94-01-03 R2 to eliminate poor design coils and certain design rotating magnets. That action was prompted by reports of accidents caused by failures of magnetos incorporating older Bendix components that had not been replaced in accordance with superseded AD 73-07-04, Amendment 39-1731 (38 FR 27600, October 5, 1973). That condition, if not corrected, could result in magneto failure and subsequent engine failure.

CASA issued AD/ELEC/53 in 1994 which notified of the issues of magnetos with clear case coils installed. This AD was superseded by AD/ELEC/66. Clear case coils should not be in service. Even though AD/ELEC/66 Amdt. 1 was issued in 1995 there have still been instances of clear case coils being found in service. The outer case of these coils cracked due to the type of transparent plastic/resin used to encase the coil. The internal insulating varnish leaked out through the cracks and fissures evident on the outer surface of the coils. Varnish is required to prevent voltage arcing.

Replace any coils which are or have:

- Cracked
- Damaged insulation
- Loose connections
- Wear at the contact of the pole shoe laminations
- High tension tab is worn
- Fail resistance checks
- Clamps which fail to meet specifications, damaged or worn

Figure 20 – Slick magneto Coil

Hard starting can be caused by low coil output voltage due to shorted secondary windings in the magneto coil. Secondary windings carry several thousand volts along thin wires in a small physical space.

If a magneto if forced to produce an output without being attached to spark plugs or ground, the full secondary voltage imposes stresses on the winding insulation. This can cause breakdown in the insulation and cause the windings to short. In severe cases, shorted windings may be able to be measured with an ohmmeter in accordance with approved data. However some windings may only short under high voltage and would be unable to be detected with an ohmmeter. Coils will read different value depending whether Direct Current (DC) or Alternating Current (AC) is used on a multimeter. Make sure to check test value specifications in the approved technical data and test equipment prior to making measurements.

Bent Coil Core Wedges

Wedges securing the coil core inside the magneto case were found bent. A bent wedge is unserviceable and will not perform its intended function of securing the coil.

Figure 21 – Bent coil wedge

Loose Coil Core Wedges

Instances of loose coil wedges have been reported to CASA. Loose wedges have could cause the coil to become dislodged and cause premature magneto failure.

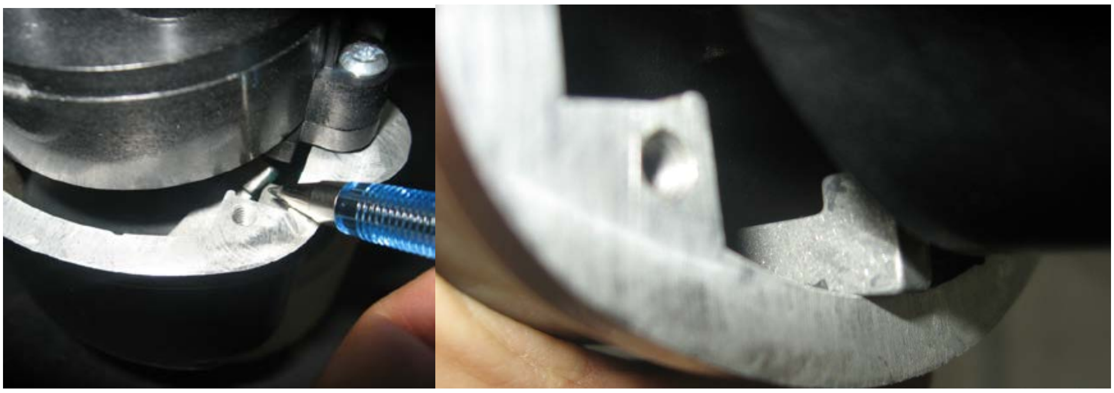

Figure 22 - Magneto wedge loose inside case.

Incorrect Magneto Assembly - Missing Retainer Plate Screws

An SDR has identified missing bearing retainer plate screws. The magneto below in Figure 23, became heavily contaminated with engine oil which had entered the magneto via the missing retainer plate screws. The right hand distribution gear had suffered severe burning and melting. The gear was severely distorted and no longer in mesh with the drive gear.

Figure 23 - Missing bearing retainer plate screws

The magneto is typically designed to be a self-contained unit, not requiring engine oil for lubrication. Oil contamination causes such magnetos to malfunction and fail. Engine oil can enter the magneto via a damaged magneto engine oil seal. Oil seals are known to deteriorate with age, operating hours in service and exposure to heat, including hot engine oil. The sealing lip of the seal wears against a rotating surface. Oil seals should be changed during magneto overhaul.

Oil contamination can also be caused by excessive engine crankcase pressure due to worn piston rings and/or inadequate crankcase venting. Crankcase pressure may be high enough to push engine oil through the magneto bearing and seal causing contamination to the magneto.

Causes of magneto oil contamination include:

- excessive crankcase pressure,
- loose bearing in housing, or
- loose oil deflector.

Incorrectly Torqued Magneto flange screws

Incorrectly torqued magneto flange screws have caused the screws to shear. The stator below in Figure 24 was damaged by the magneto rotor as a result.

Figure 24 – Sheared screw

Magneto drive rubber / cushion fragmentation.

Although the magneto drive rubbers or cushions become hard and brittle during normal operation, it has been found that abnormal torsional engine vibration may cause magneto drive rubbers to fragment.

A case study was published by The Royal New Zealand Air Force (RNZAF) into Lycoming engine torsional vibration in 2009 as a result of an investigation into 6 in-flight failures of Engine Driven Fuel Pump (EDFP) couplings.

Figure 25 - Failed magneto drive rubbers

The study found that torsional vibration from the engine crankshaft was transmitted through the accessory gears to the EDFP coupling and to the magneto coupling. Torsional vibration caused the left hand magneto drive damper within the coupling to fail as illustrated in Figure 25(above). Similar failures of both EDFP couplings and magneto drive rubbers have also been reported in Australia. In the resulting post-study engine overhaul, the cause of EDFP coupling failure was attributed to worn crankshaft counterweight damper rollers and bushes.

Service Bulletins

The following summary information is provided from the various service bulletins that have been released from manufacturers since 2005, when the last CASA Airworthiness Advisory Circulars on magnetos were published. Maintainers need to view the Service Bulletins from manufacturers for specific details on effectivity and accomplishment instructions. This list will be updated from time to time as is it is only for reference.

Slick – Champion Aerospace service publications

For further information on Slick – Champion Aerospace service publications see https://www.championaerospacepubs.com/default_setup.asp

Document	Date	Document Title/Description	Summary
SB1-12	6/9/12	Single Point Magneto points replacement	Replacement of certain serial number magnetos and M3081 point kits due to decreased service life.
SL1-10	16/7/10	Slick 400, 600, 4200, and 6200 Series Magneto Replacement	Replace all Slick 400/600 Series and 4200/6200 Series magnetos with Slick 4300/6300 magnetos when required.
SB3-08-B	13/8/05	Mandatory inspections on all Slick 4200/6200/4300/6300 series and LASAR™ 4700/6700 magnetos	Inspection schedule for specific serial number ranges and magneto and brush operating times due to observed variations in premature wear rates
SB2-08-B	2/5/08	Mandatory inspections on all Slick 4300/6300 and LASAR™ 4700/6700 magnetos	Premature cam wear, causing excessive timing drift and low magneto output power.
SB3-07	31/3/07	Replacement of Impulse Coupling Assembly in Certain Slick Magnetos	Certain magnetos were machined incorrectly causing interference in the assembly of the engine drive gear to the impulse coupling.
SB1-07	31/5/07	Clarification of Torque Requirements for Securing Magneto to Driver PN K5265	Inspection of certain magneto drivers based on reports of impulse cracking. SB provides guidance on correct torque requirements.

Continental Motors service publications

For further information on Continental Motors service publications see http://www.continentalmotors.aero/Support_Materials/Publications/Service_Bulletin_Search/

Document	Date	Document Title/Description	Summary
SB03-7A	10/4/14	IO240 Series Magneto Drive Gear	Replacement of magneto drive gears due to spalling or pitting
SIL03-2C	3/4/13	Currently Active Approved Spark Plug Application	List of spark plugs by engine model and maintenance requirements.
SB12-3	8/10/12	Champion Aerospace Slick SB1-12	Improved point assemblies
MSB00-6D	19/11/10	Slick Service Bulletin SB1-00C	Replacement of certain magnetos See AD/ENG/2011-26-07
SIL04-12A	18/5/10	TCM Authorized Engine Adjustments, Component Replacement and Repositioning of Fitting Orientation	Lists authorisations of adjustments and replacements of magneto components
MSB94-8D	17/2/10	Magneto to Engine Timing	Procedures on magneto to engine timing procedures - Mandatory
SB08-8B	10/4/09	Slick Service Bulletin SB2-08A	Inspection compliance that ends need for repetitive inspections
CSB08-9A	14/10/08	Slick Service Bulletin 03-8A	Mandatory inspections on specific magnetos
SB05-11	8/12/05	Piper Service Bulletin 1157A	Improve air supply flow to reduce moisture build up
SB05-9	20/10/05	Slick Service Bulletin SB1-88B	Announce issue of revision B

Lycoming service publications

For further information on Lycoming service publications see
http://www.lycoming.com/Lycoming/SUPPORT/TechnicalPublications/ServiceBulletins.aspx

Document	Date	Document Title/Description	Summary
SB 603 S1	8/10/12	Reprint of Slick Service Bulletin SB1-12 Supplement 1	Information on warranty claim for magnetos affected by SB1-12
SB 603	4/10/12	Reprint of Slick Service Bulletin SB1-12	Required action for mandatory compliance with SB1-12 for certain magnetos using M3081 point kits
SB 411C	15/12/09	Adapter Kit for Magneto Isolation Drive	Mandatory modification details on certain serial number engines to introduce magneto drive adaptor and rubber cushioning to isolate magneto from vibratory forces
SB 584B	17/10/08	Reprint of mandatory Unison Service Bulletin No. SB3-08A	Inspection schedule for specific serial number ranges and magneto and brush operating times due to observed variations in premature wear rates
SB 583A	21/7/08	Reprint of mandatory Unison Service Bulletin No. SB208	Inspection compliance that ends need for repetitive inspections
SB 576	21/9/07	Reprint of Teledyne Continental Ignition Systems Service Bulletin No. SB633A	Mandatory procedures to ensure integrity of the tachometer in certain magnetos
SB 573 S1	16/3/07	Supplement No. 1 to Service Bulletin No. 573	Supplement No. 1 to Service Bulletin No. 573 is being issued to correct the serial number suffix of certain TIO-540-AJ1A engines.
SB 573	23/2/07	Mandatory pressurized magneto pressure tests	Relief valve and system check for certain serial numbered engines
SB 568	27/3/06	Reprint of Slick Aircraft Products Service Bulletin No. SB1-88B	Mandatory periodic inspections on certain models of slick 6300 series pressurised magnetos

4. Recommendations

Follow manufacturers approved data for maintenance of magnetos. Magnetos operating in harsh environments or operating conditions should be overhauled more frequently than the recommended maintenance intervals. It is recommended when troubleshooting magneto problems to consider checking the entire ignition system including cables and spark plugs.

5. Reporting

Report any magneto issues to CASA online SDR reporting:

http://www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_90818

or by use of CASA Form 404 and forward completed form to the address listed on the form.

Please include Time Since New (TSN) or Time Since Overhaul (TSO) information when sending in SDRs to assist with trend analysis.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

Airworthiness and Engineering Standards Branch
Standards Division
Civil Aviation Safety Authority
GPO Box 2005, Canberra, ACT, 2601