

SERVICE BULLETIN

Compliance Will Enhance Safety

SB658

FAA APPROVED

SUBJECT: DISTRIBUTOR GEAR MAINTENANCE

REASON FOR BULLETIN: To emphasize the value of the use of correct materials and practices relevant to magneto distributor gears.

EQUIPMENT AFFECTED: All Bendix and TCM S-20, S-200, S-1200, D-2000, and D-3000 Series Magnetos.

COMPLIANCE: Any time maintenance is performed on the distributor gear, any time the magneto is installed on the engine, and any time any condition described below is experienced.

GENERAL INFORMATION:

Although Bendix and TCM have previously published detailed service instructions and introduced technological advances for distributor gears, field reports indicate that breakage of distributor gear teeth continues to occur. Gear service life cannot be maximized unless operators perform required maintenance using proper procedures and correct materials. The following instructions consolidate new and previous data to focus attention on this issue.

DETAILED INSTRUCTIONS:

1. **WARNING...DO NOT USE ANY GEAR HOLDING TOOL AS AN AID WHILE ASSEMBLING THE MAGNETO OR WHILE TIMING THE MAGNETO TO THE ENGINE. SUCH TOOLS ARE UNNECESSARY, AND USING THEM MAY CAUSE HIDDEN DAMAGE TO THE DISTRIBUTOR GEAR. SUCH DAMAGE MAY CAUSE MAGNETO FAILURE, AND SUBSEQUENT ENGINE FAILURE, INJURY, OR DEATH MAY RESULT.**
2. Anytime maintenance affords access to the distributor gear, inspect the gear according to the latest applicable service manual and the requirements of this bulletin. Anytime cleaning is required, clean only in accordance with published cleaning procedures as described in the latest applicable magneto service manual. Use only the correct make-up of parts associated with the distributor gear as detailed in the latest Illustrated Parts List chapter of the applicable Magneto Service Manual. When installing magneto pressurization fittings or similar items, ensure that such fittings will not interfere with the gear under any operating conditions.

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3. Always use the latest configuration distributor gears available. In S-20 and S-200 series Magnetos, the earlier gears using "Captivated Washers" were superseded beginning in 1978. Beginning with the 1989 S-20/S-200 Service Manual, the earlier gears were required to be replaced no later than at the next magneto overhaul, which MUST occur before the intervals defined in the latest revision of SB643 have expired. Therefore, the earlier gears MUST now be replaced at the next opportunity when maintenance allows access to the gear, not later than the next required inspection or magneto overhaul, whichever occurs first. For S-1200 series magnetos, all distributor gears without a date code and all distributor gears with date codes 75 (1975) through 78 MUST be replaced no later than next magneto overhaul (Refer to the latest revision of SB643) with a distributor gear with a date code of 79 or higher. All D-2000 and D-3000 series magnetos MUST have laser-welded distributor gears which display marks as required by the latest revisions of SB617B, SB618, and SB619. (Ref. AD 82-11-05, and 81-12-06 R1)
4. Re-lubricate distributor block bushings using 10-391200 lubricant and correct procedures only at intervals not to exceed 500 hours time-in-service or four calendar years from date of factory shipment, whichever comes first. Also re-lubricate distributor gear teeth using 10-27165 grease and correct procedures at the same interval. Procedures for re-lubrication are included in the applicable Magneto Service Manual.
5. Ensure distributor block bushing is not contaminated with any solvent or distributor block coating compound following bushing re-lubrication.
6. Follow all Engine and Airframe Manufacturer's instructions regarding engine cooling, including but not limited to installation and maintenance of engine baffles, operation of cowl flaps, cold weather pre-heating procedures, and post-flight turbocharger cool-down procedures. If an engine has been operated at an oil temperature in excess of gauge red line for any period, the distributor gear in each magneto on that engine MUST be inspected for browned color and/or missing or damaged teeth before further flight. Any gear which is browned in color, and/or has any broken or missing teeth MUST be replaced with a serviceable gear prior to next engine start.
7. Follow all Engine Manufacturer's instructions regarding magneto installation, including but not limited to condition of magneto drive gear and related parts, and correct seating of magneto on drive pad.
8. Ventilation of the magneto is essential for continued airworthiness, as the magneto generates contaminants through normal operation. Unpressurized magnetos use vent plugs to ensure fresh air is introduced into the magneto during operation. Pressurized magnetos are connected to a pressure air source and use a calibrated orifice to maintain a pressure differential with ambient air pressure and also to ensure flushing of contaminated air from within the magneto. If the vent plug(s) or orifice is blocked, the contaminants collect inside the magneto. Any distributor gear which has operated for any period in an unvented magneto MUST be discarded and replaced with a serviceable gear prior to further flight, and the distributor block MUST be replaced or completely cleaned, inspected, and re-lubricated as required by the applicable magneto service manual.
9. Following any engine kickback event during start, shut the engine down and investigate the cause of the kickback. If troubleshooting does not indicate another cause for the kickback, inspect all distributor gear teeth for damage. Although it is unlikely that a kickback could cause gear tooth damage, engine kickback may be a symptom of missing or broken distributor gear teeth.

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10. Any distributor gear found to have any cracks, any missing or broken teeth, brown discoloration, or chalky or crazed surface, **MUST** be discarded and replaced with a serviceable distributor gear prior to next engine start.

AFFECTED PUBLICATIONS:

Insert a copy of this Service Bulletin into the appropriate section of all affected magneto Service Support Manuals.

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