SERVICE BULLETIN

SB24-03

Contains important information pertaining to your aircraft engines.
Compliance Will Enhance Safety

TECHNICAL PORTIONS
FAA APPROVED

SUBJECT: Continental 100 amp alternator inspection

PURPOSE: Notify customers of inspection criteria and frequency for engines equipped with certain serial numbers of Continental 100-ampere gear driven alternator, Part No. 649304 or R-649304 or 100-ampere gear driven alternator and coupling assembly, Part No. 649305 or R-649305.

COMPLIANCE: Within 50 hours of release of this bulletin.

MODELS AFFECTED: New or rebuilt GTSIO-520-L, M, N, S; IO-520-BA, BB, C, CB; TSIO-520-B, BB, BE, D, L, LB, UB, VB, WB; IO-550-A, B, C, G, N, P, R; TSIO-550-B, E; TSIOL-550-A, C engine models equipped with 100-amp alternator assembly Part No. 649304 or R-649304 or 100-amp alternator and coupling assembly Part No. 649305 or R-649305. Affected engines and spares were manufactured from May 2022 through April 2024.

I. GENERAL INFORMATION

Continental has received reports of accelerated wear of alternator drive couplings on engines equipped with (new or rebuilt) Continental 100-amp alternator Part No. 649305. These gear driven alternators are mounted forward of the No. 5 cylinder on the above engine models. This inspection is required on new or rebuilt Part No. 649304 alternator assemblies or Part No. 649305 alternators and coupling assemblies manufactured between May 2022 and April 2024. To determine the manufacturing date of the alternator, refer to the serial number on the alternator data plate.

A. Continental Component Serial Numbers

Component Serial Numbers are unique identifiers, comprised of four segments, Component ID, Year of Manufacture, Production Month, and Sequential Serial Number. Components manufactured in Mobile use the following component serialization process.

Table 1. Component Serial Number Syntax

ID	Year	Month	Serial Number
O	22	F	A001

ID is a one or two letter code at the beginning of the serial number. The number identifies what type of component the number is assigned to. For alternators, the code will be “O”.

The year segment of the serial number is comprised of the last two numbers of the year when the component was manufactured. For 2024, the number would be “24”.

The month manufactured is represented by a single letter assigned to the twelve months of the year, beginning with **A** for January and ending with **L** for December.

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The final segment of the serial number consists of four characters, beginning with the alpha character **A**, followed by three numerical characters beginning with the number **001**. The serial number of the first component assembled each month will be **A001**. Each subsequent component ID serial number will increment until component number 999 is assembled, at which point the serial number of the next component letter will increment to B and the number will reset to 001.

B. Affected Alternator Serial Numbers

All serial numbers beginning with O22E, O22F, O22G, O22H, O22I, O22J, O22K, O22L, O23A, O23B, O23C, O23D, O23E, O23F, O23G, O23H, O23I, O23J, O23K, O23L, O24A, O24B, O24C or O24D are subject to this one time inspection.

Alternators exhibiting a star to the right of the MFG NO. (serial number) field on the data plate have been inspected and determined to be conforming at the factory - No further inspection is required for these alternators.

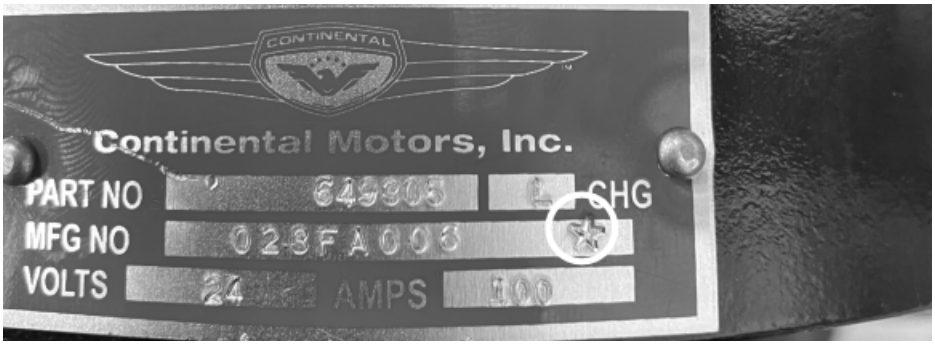

Figure 1. Star Stamp on Dataplate Indicates a Repaired Alternator

II. INSPECTION

Inspection requires access to the drive end of the alternator. This is accomplished by physically removing the alternator from the crankcase according to the instructions in Chapter 10 of Continental Aerospace Technologies Standard Practice Maintenance Manual, **M-0**.

1. Remove cowling and baffling to access the forward section of the engine according to the aircraft manufacturer's instructions.
2. Remove the gear driven alternator from the mounting pad, forward of the No. 5 cylinder according to the instructions in Section 10-4.1 of Standard Practice Maintenance Manual, Part No. **M-0**.
3. Inspect the alternator face gear retaining bolts and lock plates are installed on the crankshaft and confirm they are installed and intact, and exhibit no evidence of contact with the alternator. If the face gear retaining bolts or lock plates exhibit any damage, contact Continental for disposition instructions.
4. Inspect the assembled alternator drive coupling for serviceability. The alternator drive coupling should not exhibit any damage or missing elastomer material. The drive coupling should be securely attached to the alternator drive shaft with a thrust washer, castellated nut, and cotter pin. If any of the attaching parts are loose, or exhibit physical damage or missing material, replace the alternator and drive coupling assembly.
5. Remove the alternator drive coupling according to the instructions in Section 10-4.1.2 of Standard Practice Maintenance Manual, Part No. **M-0.**

6. Remove and discard the woodruff key from the alternator rotor assembly shaft.
7. Remove the O-ring (Part No. 630979-21) and Collar Seal (646791) from the alternator shaft; discard the O-ring according to instructions in X30531.

   NOTE: Ensure the micrometer is not skewed by obstructions to avoid an inaccurate, or incorrect measurement

8. Measure the diameter of the exposed alternator rotor shaft between the keyway and the alternator housing (See Figure 2) using a 0 - 1 inch micrometer (with 0.0001" graduation), with the micrometer jaws perpendicular to the rotor shaft. Repeat the measurement at two additional points 120 degrees apart from the previous measurement. The minimum shaft diameter is 0.6691 inch.

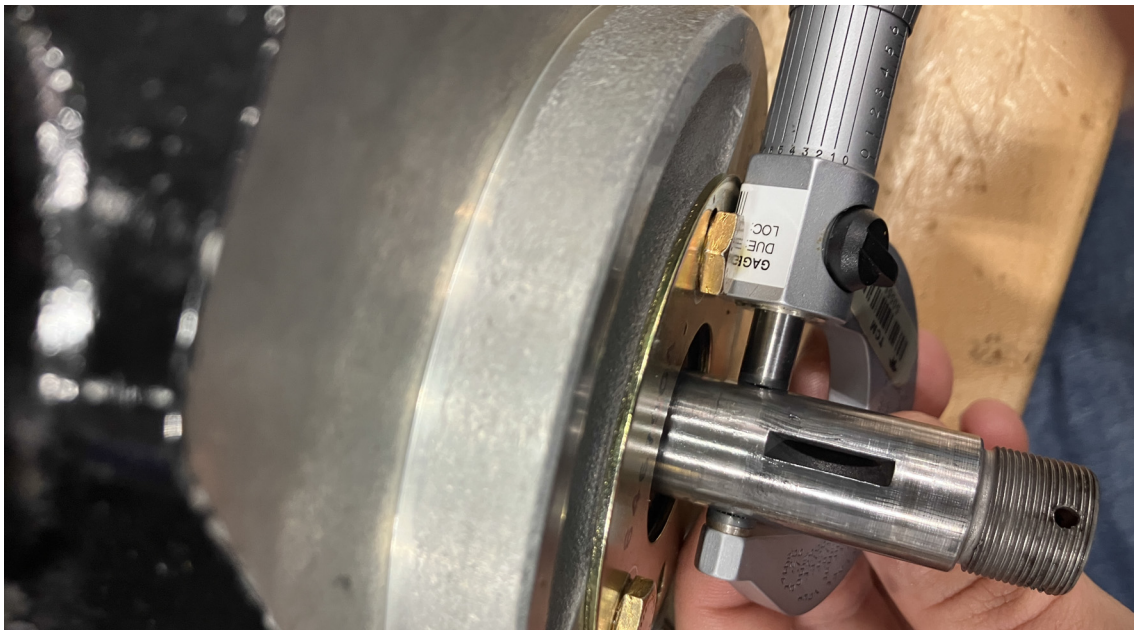

Figure 2. Measure Shaft Diameter

NOTE: Mark the data plate in compliance ONLY if ALL alternator inspection criteria is met. If recurring inspections are required, DO NOT mark the data plate with the steel stamp.

a. If any alternator rotor shaft diameter measures less than 0.6691 inch, replace the alternator or replace the rotor assembly according to the instructions in the latest revision of Alternator Service Support Manual, X30531 and mark the dataplate to the right of the serial number with a commercially available ImpressArt (or equivalent) 2.50mm five-point star stamp and a ball-peen hammer (See Figure 1) to indicate compliance with this bulletin,

   OR

b. If a replacement alternator or rotor is not available, the alternator may remain in service if the seal collar is serviceable. Perform recurring inspections of the alternator and drive coupling at 50-Hour intervals[1] until the alternator is replaced (See Section III).

1. May be deferred to 70-Hour interval to align with FAA approved scheduled maintenance inspection intervals.

9. Inspect the seal collar for wear (Figure 3). If the chamfered edge exhibits wear, displaced or missing material, replace the alternator. If the seal collar meets dimensional inspection requirements, press the seal collar (chamfered end first) on the rotor shaft according to the instructions in X30531, Alternator Service Support Manual.
10. Lubricate a new O-ring (Part No. 630979-21) with clean, 50 wt. aviation engine oil and install the O-ring on the alternator rotor shaft in the seal collar counterbore.
11. Install a serviceable alternator drive coupling on the alternator rotor shaft according to the instructions in Section 10-4.1.3 and perform a drive coupling slippage inspection according to instructions in Section 10-4.1.4 of Standard Practice Maintenance Manual, Part No. **M-0.**

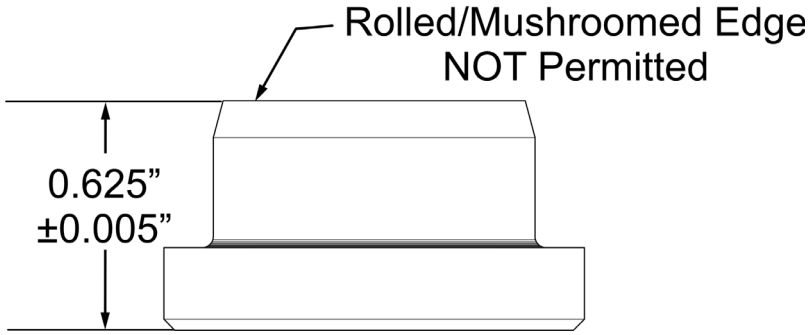

Figure 3. Alternator Shaft Seal Collar

NOTE: Replacement of the affected Alternator, Alternator and Drive Coupling Assembly, or replacement of the rotor assembly in the affected Alternator and Drive Coupling Assemblies is terminating action for this service document.

12. Install the assembled alternator and drive coupling assembly according to instructions in Section 10-4.1.5 of Standard Practice Maintenance Manual, Part No. M-0.
13. If the affected alternator was removed and replaced, record compliance with the replacement portion of the service document in the engine logbook. If the alternator was inspected but replacement was postponed, record compliance with the initial / follow-on inspection according to the instructions in the service document.

III. RECURRING INSPECTION

If the alternator exhibits no damage, the alternator drive coupling is intact, and the alternator face gear bolts and lock plates are serviceable, but the alternator exposed rotor shaft fails to meet the minimum dimension, but no replacement alternator or rotor is available from the distributor:

1. Remove the alternator from the engine according to the instructions in Section 10-4.1.1 of **M-0**, Standard Practice Maintenance Manual.
2. Inspect the alternator drive coupling for looseness on the shaft, or for loose or damaged drive coupling attaching hardware.
3. Remove the cotter pin from the castellated nut; discard the cotter pin.

NOTE: If the castellated nut is discovered to be torqued less than the minimum value specified in Appendix B of **M-0**, remove the alternator from service.

4. Secure the drive coupling with the Drive Hub Spanner Wrench. Set the torque wrench to 50 in-lbs. and attempt to loosen the castellated nut. Gradually increase the torque wrench setting in 100 in-lbs increments and repeat until the minimum torque of 350 in-lbs. If the castellated nut loosens with less than 350 in-lbs. torque - replace the alternator and drive coupling assembly. If torque is 350 in-lbs. or greater, proceed with installation.
5. Install the alternator drive coupling (with a new cotter pin) according to the instructions in Section 10-4.1.3 of **M-0**, Standard Practice Maintenance Manual.

   NOTE: See Figure 10-4 in **M-0**, The cotter pin must not touch the thrust washer or extend beyond the end of the rotor shaft.
6. Install the alternator and drive coupling assembly on the engine according to instructions in Section 10-4.1.5 of **M-0**, Standard Practice Maintenance Manual.
7. Record compliance with the recurring inspection in the Engine Log Book.

IV. WARRANTY

Standard warranty practices apply. Visit the Continental web site at www.continental.aero to obtain copies of Continental Warranty Policies. Continental reserves the right to request copies of invoices and maintenance records to verify warranty applicability.

Complete and email a copy of the linked Compliance Form, along with a copy of the work invoice (*and a copy of the repair agency's W-9 if the repairs are accomplished by a repair facility in the Continental United States*) upon completion for reimbursement. Continental reserves the right to request copies of invoices and maintenance records to verify warranty applicability.

A. Allowances/Reimbursements

Eligible Allowance / Reimbursement Type	Labor Hours[1]	Parts
Inspect alternator drive shaft and interface	**1.5**	Incl.
Remove and replace alternator/coupling assembly	**Various**[2]	Incl.

1. Not to exceed allowable hours at published shop rate
2. See allowable labor rates at continental.aero

B. Contact Us

Contact Continental Technical Services at one of the numbers listed below if you have any questions concerning the technical content of this Service Document.

1.888.826.5465 Toll Free in the United States
+1.251.436.8299 International Callers

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