CONTINENTAL MOTORS® AIRCRAFT ENGINE

SERVICE INFORMATION LETTER

CATEGORY 5

SIL14-4B

Contains Useful Information Pertaining To Your Aircraft Engine

Supersedes SIL14-4A
TECHNICAL PORTIONS
FAA APPROVED

SUBJECT: 24 Volt/70 Amp Belt-Driven Alternator Brace Alignment

PURPOSE: To revise installation and alignment of the 70 Amp Alternator to the bracket and brace.

COMPLIANCE: At next 100-Hour/Annual Inspection, or next maintenance event requiring removal of the belt-driven alternator.

MODELS AFFECTED: New and rebuilt IO-550-N, IOF-550-N, TSIO-550-K, TSIOF-550-D installed prior to 1 APR 2014.

I. GENERAL INFORMATION

Field reports indicate isolated instances of belt-driven alternator bracket damage caused by improper alignment of the belt-driven alternator to the bracket assembly (Part Number (P/N) 646405), improper alignment of the alternator to the drive sheave, or a combination of both conditions.

Strain gauge testing on the bracket assembly (P/N 646405) indicates negative force applied to the leading edge of the bracket causes excessive strain in the area surrounding the fastener boss and helical coil insert.

II. Scope

Remove the belt-driven alternator, perform a visual inspection of the components to determine serviceability, and either reinstall (if determined serviceable) or replace with serviceable belt-driven alternator according to the enhanced instructions in this service document.

III. Inspection

1. Remove the belt-driven alternator according to the instructions in the engine Maintenance and Overhaul Manual.
2. Inspect the alternator, drive sheave, brace, and bracket assembly for physical damage.
3. Perform a visual inspection using a minimum 10x magnifier and bright light source on the cast aluminum bracket to verify the area surrounding the mounting boss and helical coil insert is not cracked (see Figure 1, “Bracket Assembly Inspection Area,” on page 2).
   a. If the components are serviceable, install the belt-driven alternator according to the instructions in Section IV, “Bracket Assembly Installation,” on page 2.
   b. If any of the removed components exhibit physical damage or the 10x visual inspection indicates the bracket assembly is cracked, obtain the necessary replacement parts and install according to the instructions in Section IV, “Bracket Assembly Installation,” on page 2.

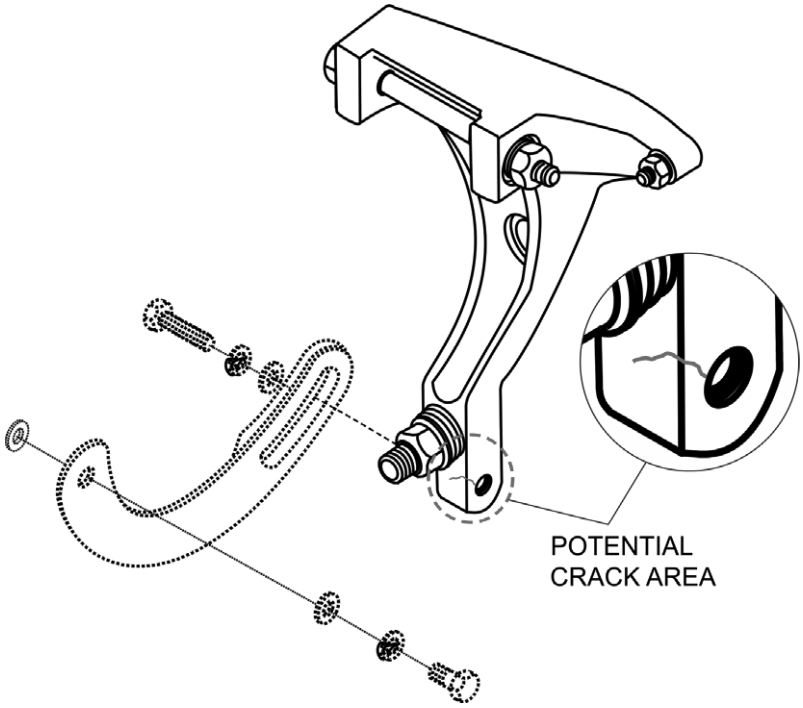

Figure 1. Bracket Assembly Inspection Area

IV. Bracket Assembly Installation

NOTE: The through-bolt nuts at the mounting location must be removed to install the mounting bracket. The drive sheave, split sheave adapter, and the propeller must be installed at the same time. If the propeller is not available at the time of assembly, defer installation until propeller is installed in aircraft.

1. Install the propeller according to the propeller manufacturer's instructions.
2. Align the holes on the drive sheave (Figure 2, item 10) with the propeller flange holes.
3. Align the split sheave adapters' (11) bolt holes with those in the drive sheave (10).

   NOTE: Torque values listed are for use with clean 50 weight aviation engine oil applied to the threads. Follow the latest revision of M-0, Standard Practice Maintenance Manual.

4. Install six bolts (13) with washers (14) through the front of the drive sheave (10) and split sheave adapter (11) bolt holes. Install a lock nut (12) on each of the six bolts (13); torque the fasteners to 90-100 in. lbs.
5. Install the bracket assembly (1) on the 2-4-6 side of the crankcase with the following hardware:
   a. Add spacers (18) to the exposed ends of the 2-4-6 crankcase through-bolts at the propeller flange. Secure the bracket to the through-bolts with washers (17) and nuts (16). Do not torque the bracket fasteners at this time.
   b. If a standard length bolt was installed in crankcase backbone position #3 during crankcase assembly, remove and discard the bolt.

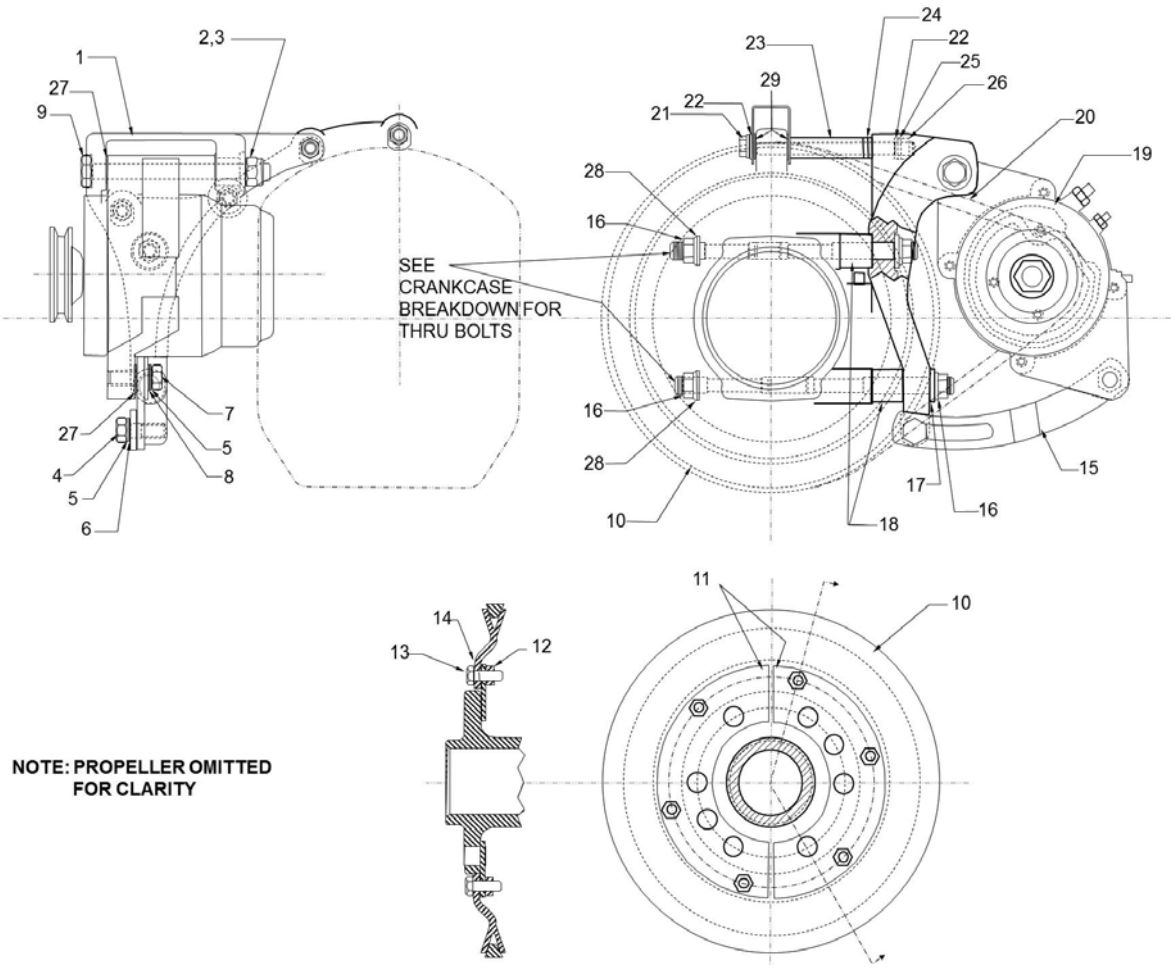

Figure 2. 70 Amp Belt-driven Alternator Assembly

Item	Part Number	Description	Item	Part Number	Description
1	646405	Bracket Assembly	16	652422	Nut
2	AN960-716	Washer	17	20202	Washer
3	MS21045-7	Nut	18	646614-3	Spacer
4	MS51096-360	Bolt, Pivot	19	657199	Alternator Assembly
5	MS35338-46	Lock Washer	20	657970	V-belt
6	649288	Washer	21	AN5-43A	Bolt
7	MS90725-61	Bolt, Adjustment	22	AN960-516L	Washer
8	AN960-616L	Washer	23	646582-2.00	Spacer
9	AN7-45A	Bolt, Alternator Mounting	24	646447-1, 2 & 5	Shims
10	657171	Drive Sheave	25	MS35338-45	Lock Washer
11	653345	Split Sheave Adapter	26	AN315-5R	Nut
12	MS21083N4	Lock Nut	27	AN960-716L	Shim
13	AN4-5A	Bolt	28	646256	Washer
14	AN960-416L	Washer	29	AN960-516	Washer
15	658236	Adjustable Brace			

CAUTION: Inserting an incorrect combination of shims (Figure 2, item 24) at the upper mounting location may hinder the proper alignment of the bracket to the engine crankshaft.

c. Align the throttle assembly bracket and two washers (Figure 2, item 29) with the crankcase bolt hole; insert a bolt (21), with washer (22), through the 1-3-5 side of the throttle body bracket.

d. Place a spacer (23) on the exposed end of the 2-4-6 side of the bolt (21). Add a combination of shims (24, (P/Ns 646447-1, 646447-2, or 646447-5)), as required, to fill the space between the spacer (23) and the bracket assembly (1).

e. Align the bracket assembly (1) with the crankcase assembly and upper and lower through-bolts. Secure the bracket assembly (1) to the crankcase with a washer (22), lock washer (25), and nut (26).

NOTE: Torque values listed are for use with clean 50 weight aviation engine oil applied to the threads. Follow the latest revision of M-0, Standard Practice Maintenance Manual.

WARNING

Failure to torque through bolt nuts on both sides of the engine can result in a loss of main bearing crush with main bearing shift and subsequent engine failure.

6. Torque the nut (26) to 180-220 in. lbs. Torque the crankcase through-bolt nuts (16) to 490-510 in. lbs. according to the instructions in the applicable Maintenance and Overhaul Manual.

7. Align the alternator assembly (19) upper mounting boss with the mounting bracket assembly (1). Insert a bolt (9) through the bracket assembly (1) and the alternator assembly (19) and securely tighten using washer (2) and new lock nut (3). Do not torque at this time.

8. Check the alignment of the alternator sheave to the drive sheave (10) with a “pulley alignment tool” (P/N 8082IA), or equivalent.

   a. Place the alignment tool in the center of the alternator drive sheave and lower the opposite end of the alignment tool into the channel of the propeller drive sheave - true alignment must be within 0.016 inch.

   NOTE: Each shim will move the alternator sheave approximately 0.032” aft.

   b. If misalignment is greater than 0.016 inch, the alternator is not properly aligned. Align the two sheaves by first removing the lock nut (3) and washer (2) from the bolt (9) and insert shims (27) between the forward boss of the mounting bracket (1) and the upper alternator assembly (19) mounting (see Figure 3, “Bracket Shims,” on page 5). Secure the bolt (9) and torque the nut (3) to 250 in. lbs. to seat the alternator bracket bushing then back-off the nut (3) one full-turn counter-clockwise.

9. Align the slotted hole in the adjustable brace (15) with the threaded lower boss on the bracket assembly (1) and install a pivot bolt (4), new lock washer (5), and washer (6) through the adjustable brace (15) into the threaded lower bolt hole of the bracket assembly (1).

10. Raise the adjustable brace (15) to align the round bolt hole with outboard alternator assembly (19) mounting boss and temporarily torque the pivot bolt (4) to 150 in. lbs.

CAUTION: No gap is permitted between the alternator brace and the mounting boss. If the gap is between 0.001" and 0.031", add a shim to fill the void.

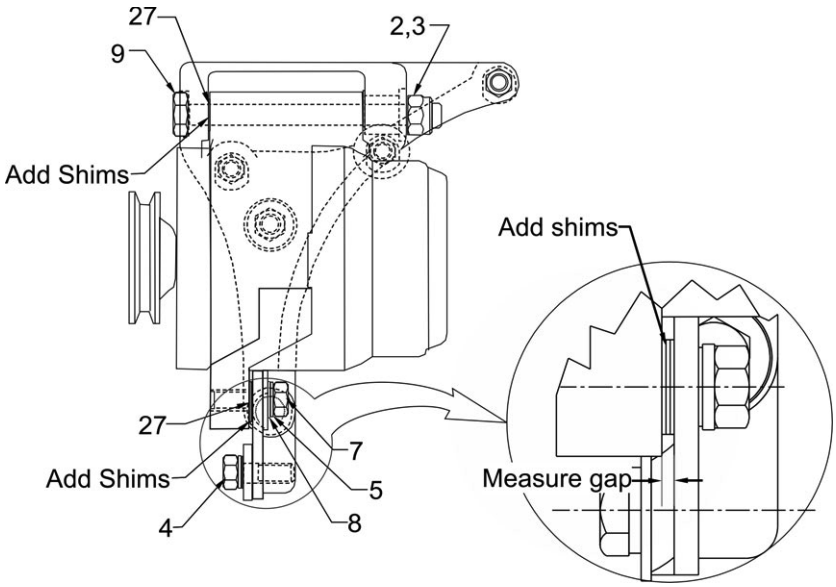

Figure 3. Bracket Shims

11. Measure the gap between the outboard alternator mounting boss and the lower brace with a caliper to determine the number of shims (Figure 2, item 27) to completely fill the gap between the adjustable brace (15) and the alternator mounting boss (19). No gap is permitted between the two surfaces; the thickness of the shims to fill the gap may exceed the distance between the brace and alternator by up to 0.031".
12. Loosen the pivot bolt (Figure 3, item 4) and insert shims (27) to completely fill the gap between the brace and the outboard alternator mounting boss. Install adjustment bolt (7), new lock washer (5), and washer (8) through the shims (27) and adjustable brace (15) and into the threaded outboard alternator mounting boss.
13. Install V-belt (20) and adjust the belt tension:
    a. Inspect the drive belt for obvious signs of wear, nicks, or cracks; replace if necessary.
    b. Adjust the V-belt (20) tension until deflection is less than 0.11 inch (at 6-8 lbs) and securely tighten the adjustment bolt (7).

    NOTE: Torque values listed are for use with clean 50 weight aviation engine oil applied to the threads. Follow the latest revision of M-0, Standard Practice Maintenance Manual.

14. Torque the pivot bolt (4) to 275-325 in. lbs.
15. Torque the adjustment bolt (7) to 220-275 in. lbs.
16. Secure the alternator mounting bolt (9) and torque the lock nut (3) to 400-450 in. lbs.
17. Safety wire the pivot bolt (4) to the adjoining through-bolt according to instructions in the applicable Maintenance and Overhaul Manual.

V. Warranty

The actions required to comply with this bulletin are covered by the applicable engine warranty policy in effect at the time the engine was purchased. Continental Motors, Inc. reserves the right to request copies of invoices and maintenance records to verify warranty applicability.

> NOTE: Visit the Continental Motors, Inc. web site at www.continentalmotors.aero or call 1 (800) 326-0089 to obtain copies of CMI Warranty Policies.

Complete the attached **Compliance Form SIL14-4A, along with a copy of the work invoice, original purchase receipt for the part and a copy of the repair agency's W-9,** immediately upon completion for reimbursement.

A. Allowances/Reimbursements

1. Bracket replacement labor allowance (if applicable, per Section III, "Inspection", 3.b.): **two hours** at published shop rate.
2. Parts replacement (if required, per Section III, "Inspection", 3.b.):
   a. Lock Washers
   b. Lock Nuts
   c. Shims
   d. Bracket assembly (P/N 646405); if required.

B. Parts Return Instructions

Replacement parts required to comply with this bulletin must be ordered directly from Continental Motors Factory Service Center (Fairhope) at 1 (251) 990-5080 or 1 (877) 777-1870, ext. 3099.

As noted above, if the bracket assembly (P/N 646405) is identified as a required replacement (per Section III, "Inspection", 3.b.), order a new bracket assembly and return the old bracket to the following address:

Continental Motors Factory Service Center
C/O **SIL14-4B**
8600 Country Road 32
Fairhope, Alabama 36532

Submit the completed compliance package (in its entirety) no later than **one year from the original date of issuance of this service document (2014/03/24)** via postal service or fax to the following:

Continental Motors
C/O **SIL14-4B**
P.O. Box 90
Mobile, AL 36601

or via Fax to 1 (251) 436-8270

COMPLIANCE FORM
SIL14-4B
Complete one form for each affected engine or aftermarket part

Owner Name:	**Phone:**	**Date:**
Address:		
City:	**State/Province and Country:**	**Postal/Zip Code:**
FBO Name:	**Phone:**	**Fax:**
Address:		
City:	**State/Province and Country:**	**Postal/Zip Code:**
FBO Posted Labor Rate:	**Labor Hours Applied:**	**Total Cost**
❑ Check here to send reimbursement payment to FBO address (leave shaded section blank) ❑ Check here and complete this shaded section to send reimbursement payment to alternate address:		
Name:	**Phone:**	**Fax:**
Address:		
City:	**State/Province and Country:**	**Postal/Zip Code:**
Aircraft Registration Number:	**Aircraft Make/Model:**	**Aircraft Serial Number:**
Engine Model:	**Engine Serial Number:**	**Installed Engine Position:**
Engine Total Time (hours):	**Date Engine Placed in Service: (YYYY/MM/DD)**	

Continental Motor's Fax number is 1 (251) 436-8270.

Repair Agent (print name):_____

Repair Agent (signature):_____

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