

TELEDYNE CONTINENTAL ® AIRCRAFT ENGINE  
**SERVICE BULLETIN**

Contains Important Information Pertaining to Your Aircraft Engine.  
 Compliance Will Enhance Safety

Category 3  
**SB09-4A**

**Technical Portions FAA  
 Approved**

**SUBJECT:** Crankcase inspection for “Permold” engines equipped with Air Conditioner systems installed from 1998 to present.

**PURPOSE:** To issue instructions for a required crankcase inspection at the forward Air Conditioner bracket attachment boss

To require replacement of the Air Conditioner bracket on all affected models listed below

**COMPLIANCE:** At next maintenance event, no later than the next 100 hr or Annual inspection

**MODELS AFFECTED:** IO520-BA, BB IO550-B, G, P, R TSIO520-BE, L, LB, UB, WB  
 TSIO550-A, B, C, E, G

All affected engines equipped with TCM upper rear mounted, factory Air conditioning bracket and “Thinner Rib” crankcase (see page 5)

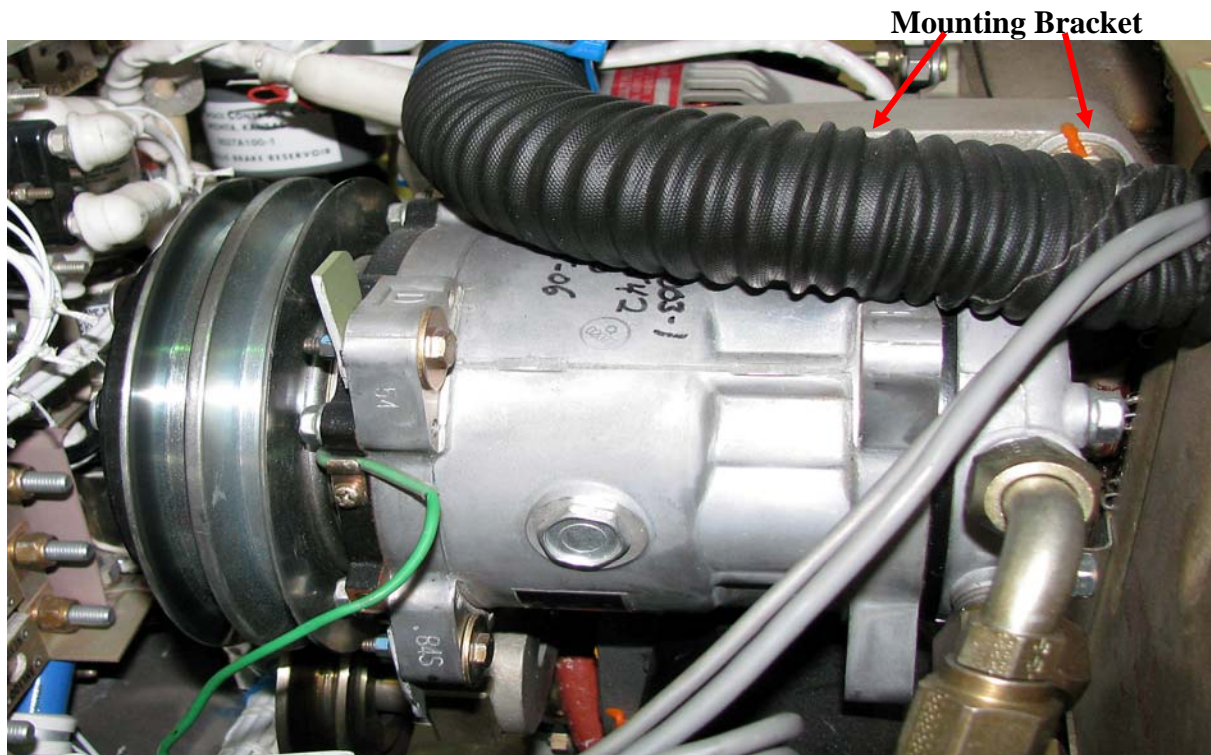
**BACKGROUND**

TCM has confirmed reports of cracks in a rib of some Permold crankcases that are equipped with TCM supplied air conditioning compressor brackets. The rib extends from the 11:00 o’clock position of the number 1 cylinder to the forward air conditioner compressor bracket attachment boss. (See Figures 5 and 6) There are two crankcase rib configurations, a “thinner rib” and a “thicker rib”. These two rib configurations are shown in Figures 5 and 6. The cracks occur in the “thinner rib” crankcases near the forward air conditioner compressor bracket attach bolt point. Figure 3 exhibits a crack indication in a “thinner rib” crankcase. This service bulletin requires inspection of the “thinner rib” configuration for cracks and replacement of the air conditioning compressor bracket on all “thinner rib” crankcases.

The TCM supplied brackets are part of an EQ (equipment) kit that includes all parts to enable installation of an air conditioning compressor system by aircraft OEMs and other installers. See Figure 1 for a typical installation on an IO550B model engine.

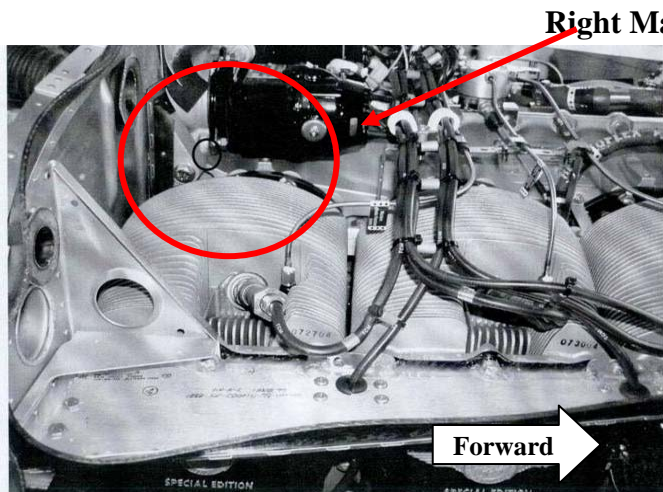
The cracks in the thinner rib are in the “Non-critical” area of the crankcase as identified in Figure 4 of this bulletin and prior in Service Bulletin M90-17. Figure 4 shows an illustration of the areas designated as critical and non-critical.

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MO	DAY	YEAR	MO	DAY	YEAR		1 of 7 SB09-4	A
05	22	2009	06	08	2009			



**Mounting Bracket**

**FIGURE 1**  
Compressor installation




**Right Magneto**

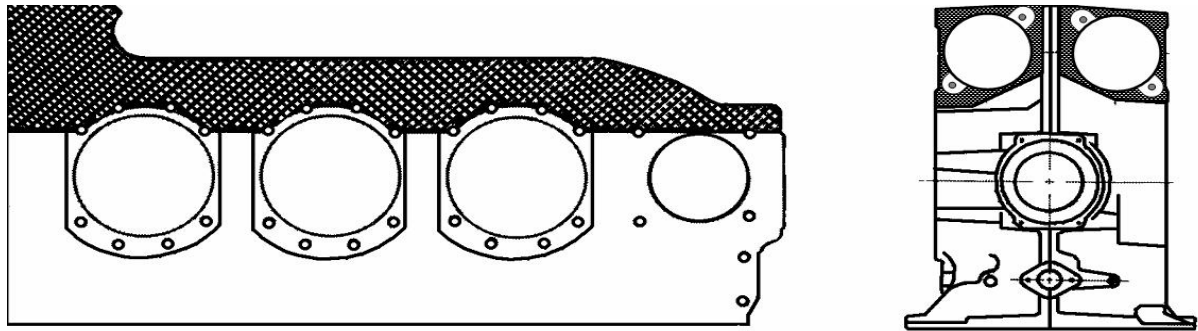
**Forward** →

**FIGURE 2**  
General Area



**FIGURE 3**  
Compressor bracket  
attachment bolt boss crack  
indication

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MO	DAY	YEAR	MO	DAY	YEAR		2 of 7	A
05	22	2009	06	08	2009	SB09-4		

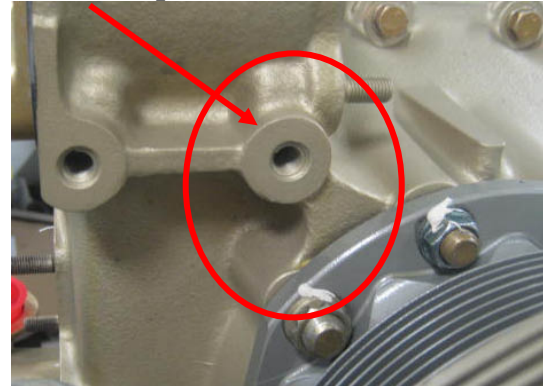


**FIGURE 4** Crankcase 1-3-5 half  
 Critical area depicted in white  
 Non-critical area depicted in shaded area

**Forward A/C bracket attach point**



**FIGURE 5**  
 Thinner Rib  
 (Approximate thickness 3/8")



**FIGURE 6**  
 Thicker Rib  
 (Approximate thickness 3/4")


**CRANKCASE INSPECTION**

**“Thicker rib” crankcases as pictured in Figure 6 require NO INSPECTION**

No inspection is required on the thicker rib crankcases. Make a log book entry that this Service Bulletin is Not Applicable by crankcase rib thickness. No further action is required on these “thicker rib” crankcase engines.

**All “thinner rib” crankcases, as pictured in Figure 5 MUST BE INSPECTED.**

Recurring inspection is required each 50 hours of operation until the air conditioner bracket is replaced with the superseding bracket as listed on Page 6. Replacement with the superseding air conditioner bracket will remove the inspection requirements of this Service Bulletin.

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MO	DAY	YEAR	MO	DAY	YEAR		3 of 7	A
05	22	2009	06	08	2009		SB09-4	

## Visual Inspection Criteria

- Inspection may normally be completed without removal of the air conditioning bracket or right magneto
- Clean the pictured area (Figure5) to remove any debris utilizing Stoddard solvent or mineral spirits
- Utilizing an adequate light source and 10X magnification device, visually inspect the outside of the forward A/C bracket attach point boss as shown in Figure 5
- Inspect the rib at the front air conditioner bracket attach point of bracket up to the Right Magneto flange attachment opening and magneto lower attachment clamp ( See Figures 2,3)
- If any crack indication is found or if question of crack exists, proceed to the following Dye-penetrant inspection to assist in measurement of crack.
- If no crack is found, make a log book entry to include the inspection date, engine total time, results of inspection and the next 50 hour recurring inspection time
- When the air conditioner bracket is replaced by the superseding bracket, make a logbook entry to include the replacement date, engine total time, results of inspection and compliance with Service Bulletin SB09-4

### 2. Dye-penetrant inspection

**NOTE: Dye-penetrant inspection must be performed by a properly qualified mechanic in accordance with the dye-penetrant manufacturer’s instructions. Use “Magnaflex® Portable Spotcheck Kit” or equivalent. These kits can be purchased through many aviation industry distributors.**

- Inspection may normally be completed without removal of air conditioner bracket or right magneto as shown in Figure 7
- Using Dye-penetrant “Cleaner/Remover”, thoroughly clean the area between the A/C bracket base and Magneto as shown in Figure 5
- Spray the “Penetrant/Dye” onto the clean/dry area as illustrated in Figure 7. Allow the “Penetrant/Dye” enough time to set in accordance with the manufacturer’s instructions.
- Remove the excess “Penetrant Dye” and clean the area where the “Penetrant/Dye” was applied in accordance with the manufacturer’s instructions.
- Spray the “Developer” onto the clean/dry area as illustrated in Figure 7. Allow the “Developer” enough time to dwell for the determination of the existence of a crack, in accordance with the manufacturer’s instructions.
- If a crack is present, its appearance and location will be similar to that shown in Figure 3 and Figure 7. See following criteria for cracks to determine what specific further action is required

- **Please report any crack located to TCM Customer support (see page 6)**

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MO	DAY	YEAR	MO	DAY	YEAR		4 of 7	A
05	22	2009	06	08	2009	SB09-4		

**Crack inspection criteria**

**Critical (white) and Non-critical (shaded) areas are illustrated in Figure 4.**

If a crack is observed in the non-critical (shaded) areas **less than two (2) inches in length**, it should be re-inspected for crack progression and signs of oil leakage at the next 50 hours of operation.

If no crack progression is observed and no additional cracks are evident, continue to re-inspect at regular intervals not to exceed 100 hours duration or at Annual inspection.

If a crack is observed in any of the non-critical (shaded) areas **more than two (2) inches in length** or if a previously observed crack has progressed to two (2) or more inches in length, remove the engine and repair or replace the crankcase or prior to further flight.

If any crack is observed in a critical (white) area, remove the engine and repair or replace the crankcase or prior to further flight.

**SUMMARY - Reasons for Crankcase Repair or Replacement**


- A. Any crack in the critical (White) area.
- B. Any crack two (2) inches or more in length in the non-critical (shaded) area.
- C. Any size crack that is leaking oil (not seeping).

Make an appropriate log book entry indicating compliance with this bulletin. Include engine total time in service, method of compliance (visual, dye-penetrant, other) appearance of crack, time for recurring inspection and date completed.



**FIGURE 7**

Example of Dye-penetrant inspection area

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MO	DAY	YEAR	MO	DAY	YEAR		5 of 7	A
05	22	2009	06	08	2009	SB09-4		

## Air Conditioner Bracket Replacement

TCM has superseded the Air Conditioner bracket for all affected engine models. All brackets installed on “Thinner Rib” crankcases must be replaced with the superseding number.

The superseding bracket, required hardware and installation instructions are included in a new EQ installation kit for ease of procurement

**The new air conditioning bracket replacement kit is Part Number EQ7530 and includes the following material:**

- 1 ea 657627 Bracket, Freon Compressor**
- 1 ea 657629 Spacer, 1.00 O.D.X .375 Long**
- 2 ea MS90728-65 Screw-Hex .38 X 1.75 Long**
- 2 ea 24239 Washer-.375 Plain**
- 5 ea 643956-20 Shim Idler Sheave to Spacer (rear)**
- 5 ea 646064-20 Shim Driver Sheave to Spacer**
- 1 ea 657653 Instruction Drawing- Freon Comp Bracket**

**EQ7530 kits may be ordered through any TCM distributor**

### WARRANTY

All engines that are within published Teledyne Continental Motors Warranty coverage by type of engine, should contact TCM Customer Support at 1-888-826-5465 for any questions or concerns on this issue. Warranty coverage examples: HBC three years or 1000 operating hours from date of initial delivery; TCM Factory New one year parts and labor warranty, two additional years parts only or 1000 operating hours; TCM Factory Rebuilt, one year parts and labor or 500 operating hours; Platinum Engines two years parts and labor warranty, three additional years parts only to published TBO.


The following labor will be allowed for all engines within warranty coverage, as above;

Inspection of crankcase: 1.0 hours

Additional time allowed if magneto must be removed to confirm crankcase condition: 1.5 hours

Replacement of Air Conditioner Bracket: 4.0 hours


Warranty coverage for compliance with this bulletin will be accepted only through June 1<sup>st</sup>, 2010 for all claims filed in accordance with the warranty criteria above.

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MO	DAY	YEAR	MO	DAY	YEAR		6 of 7	A
05	22	2009	06	08	2009	SB09-4		

No claims of warranty compensation for work accomplished on engines beyond the coverage criteria outlined above will be considered.

TCM Customer Support may be reached via email at [tcm.warranty@teledyne.com](mailto:tcm.warranty@teledyne.com)  
Or [tcm.technical@teledyne.com](mailto:tcm.technical@teledyne.com)

Please have engine serial number, date of installation or date placed in service, aircraft serial and registration number ready at the time of call to customer service.

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MO	DAY	YEAR	MO	DAY	YEAR		7 of 7	A
05	22	2009	06	08	2009		SB09-4	