service bulletin

23 August, 1990

TO: Aircraft Manufacturers, Distributors, Dealers, Engine Overhaul Facilities, Owners and Operators of Teledyne Continental Motors Aircraft Engines

SUBJECT: CRANKCASE INSPECTION CRITERIA

MODELS AFFECTED: All

COMPLIANCE: At 100 hour inspection

Teledyne Continental Motors has incorporated Engineering and Manufacturing improvements into crankcases installed on many engine models. These new crankcases incorporate improved casting methods which reduce material porosity and increase thickness in certain areas to improve structural integrity. The changes should significantly reduce the rate of crack incidence in all areas.

All new and factory rebuilt engines currently being produced have the crankcases identified below, or a higher number, installed at the time of assembly at no additional cost to the customer. Current prices for new and factory rebuilt engines can be obtained from your Teledyne Continental Motors distributors.

It is strongly recommended that the crankcases be replaced at the time of major overhaul if they do not have the number identified in Table 1, or a higher number, cast into the case:

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Casting Number</th>
<th>Year Casting Production Released</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-200</td>
<td>All casting numbers acceptable</td>
<td>N/A</td>
</tr>
<tr>
<td>O300</td>
<td>530836/530837</td>
<td>1948</td>
</tr>
<tr>
<td>360</td>
<td>640432/640433</td>
<td>1973</td>
</tr>
<tr>
<td>470</td>
<td>All casting numbers acceptable</td>
<td>N/A</td>
</tr>
<tr>
<td>520 Sandcast</td>
<td>640960/640961</td>
<td>1974</td>
</tr>
<tr>
<td>*520 Permold</td>
<td>642000/642001</td>
<td>1977</td>
</tr>
<tr>
<td>GTSIO520</td>
<td>642080/642081</td>
<td>1977</td>
</tr>
</tbody>
</table>

Table 1

Refer to the current parts catalog for the correct P/N crankcase service assembly.

*Direct drive 520 permold crankcases have the alternator pad on the right front of the crankcase.

(continued)
Critical (gray) and non-critical (dark gray) areas are illustrated in Figures 2,3,4,5,6 & 7. If a crack is observed in any of the non-critical (dark gray) areas less than two (2) inches in length, the crack should be scribe marked at its extremities and re-inspected for crack progression at the next 50 hours of operation, see Figure 1. If no crack progression is observed and no additional cracks are found, continue to re-inspect at regular intervals not to exceed 100 hours duration.

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

SUMMARY - Reasons for Crankcase Repair or Replacement

A. Any crack in the critical (gray) area.

B. Any crack two (2) inches or more in length in the non-critical (dark gray) area.

C. Any size crack that is leaking oil (not seeping).

D. Major overhaul with crankcases having lower numbers than set forth in Table 1.

Teledyne Continental Motors has established that welding of crankcases is an acceptable repair process. The weld procedure must conform to approved FAA repair standards, and dimensional integrity of the crankcase must be maintained.

Make an appropriate log book entry indicating compliance with this bulletin. Include engine total time in service, method of compliance (visual, Zyglo, dye penetrant, other) and date.

(continued)
When replacing a crankcase not listed in Table 1 with the later improved crankcase it is necessary to order and install on certain engine models an EQ Kit which includes longer bolts, wider manifold valve bracket, 2 studs used at the starter adapter where necessary, and information required for installation. The EQ kits and corresponding engine models are listed in Table 2.

<table>
<thead>
<tr>
<th>EQ Kit</th>
<th>Applicable Engine Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ 6530</td>
<td>IO520B, BA</td>
</tr>
<tr>
<td></td>
<td>TSIO520B, D, E, J, K, L, N</td>
</tr>
<tr>
<td>EQ 6531</td>
<td>IO520C, M</td>
</tr>
<tr>
<td>EQ 6533</td>
<td>*GTSIO520C, D, F, H</td>
</tr>
</tbody>
</table>

*P/N 641407 lifting eye must be ordered separately for the GTSIO520C model engine.

Table 2

![Figure 1](image.png)

Crack less than 2 inches in length and located in dark gray area as illustrated in Figures 2, 3, 4, 5, 6 & 7.

Figure 1

(continued)
FIGURE 2  O-200 CASE

FIGURE 3  O-300 CASE

(continued)
FIGURE 4  360 CASE

FIGURE 5  DIRECT DRIVE SNADCAST 470 AND 520 CASE

(continued)
FIGURE 6 DIRECT DRIVE PERMOLD 520 CASE

FIGURE 7 GEARED DRIVE 520 CASE