

# service bulletin

M90-17  
 Supersedes M83-10R.1  
 and M77-14R.1  
 Technical Portions Are  
 FAA Approved

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:

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

**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.

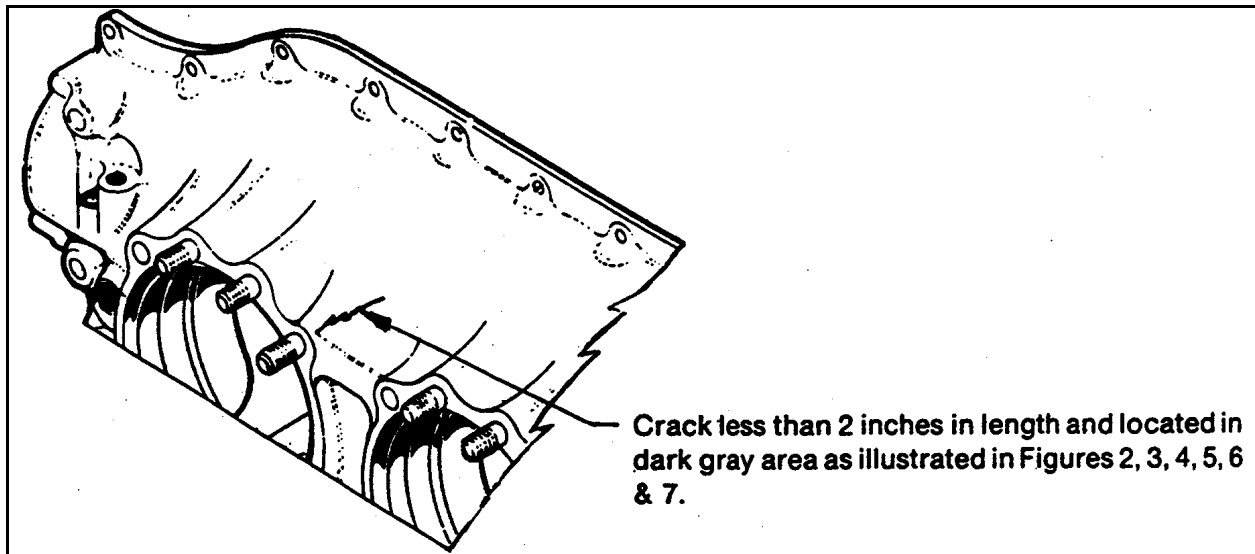
Make an appropriate log book entry indicating compliance with this bulletin. Include engine total time in service, method of compliance (visual, Zygo, dye penetrant, other) and date.

*(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.

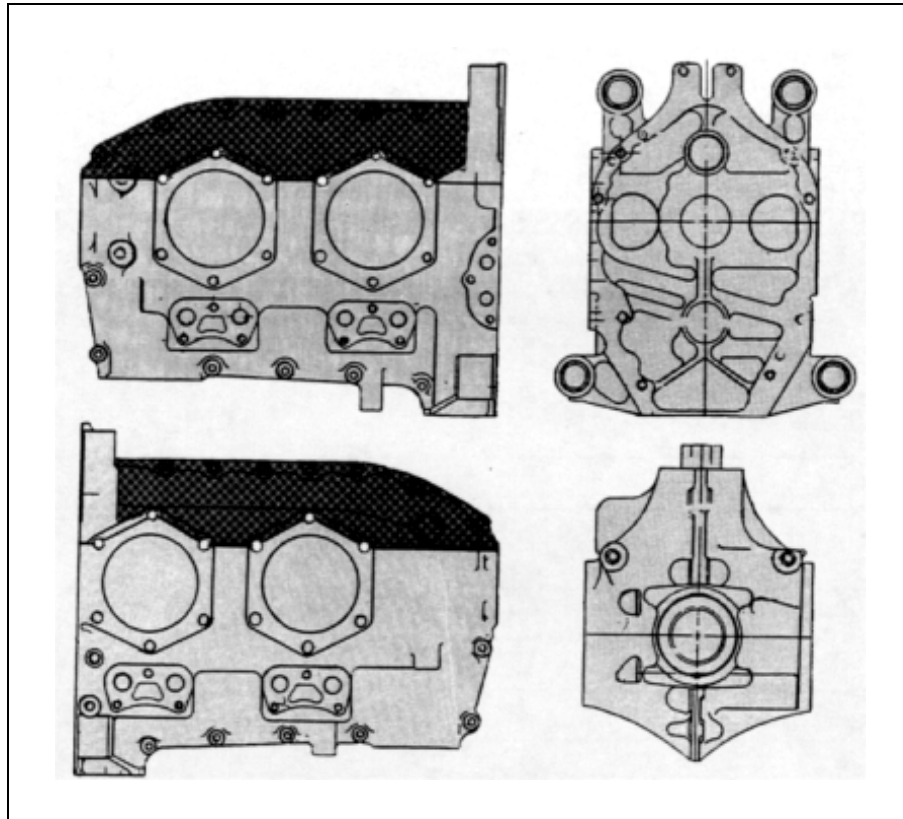
EQ Kit	Applicable Engine Model
EQ 6530	IO520B, BA TSIO520B, D, E, J, K, L, N
EQ 6531	IO520C, M
EQ 6533	*GTSIO520C, D, F, H
*P/N 641407 lifting eye must be ordered separately for the GTSIO520C model engine.	

**Table 2**

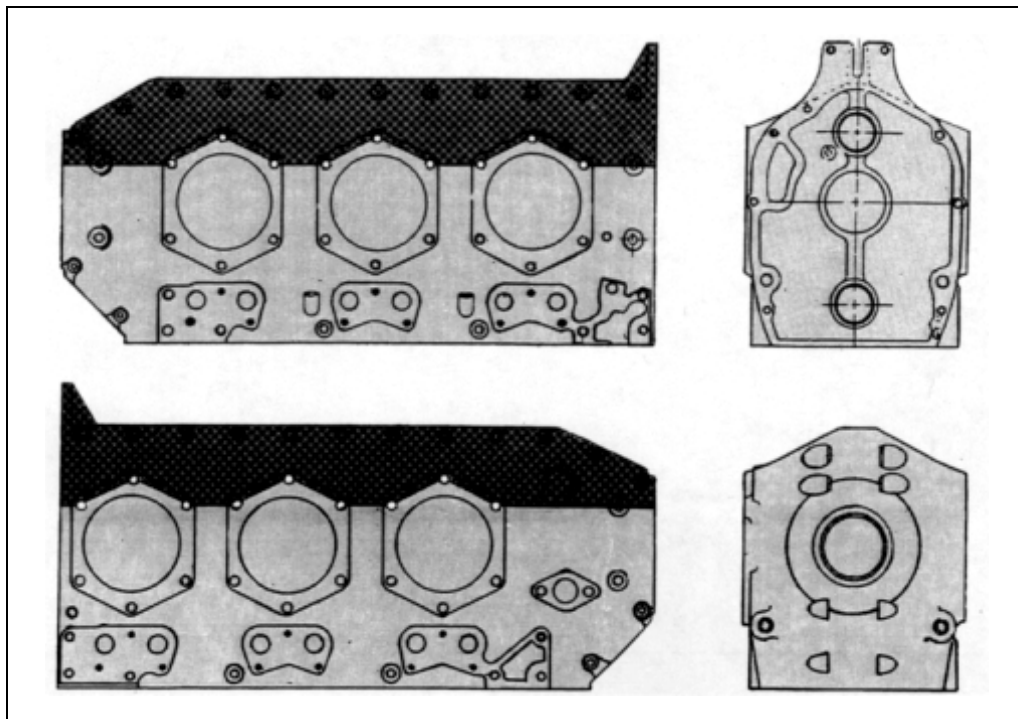


**Figure 1**

*(continued)*

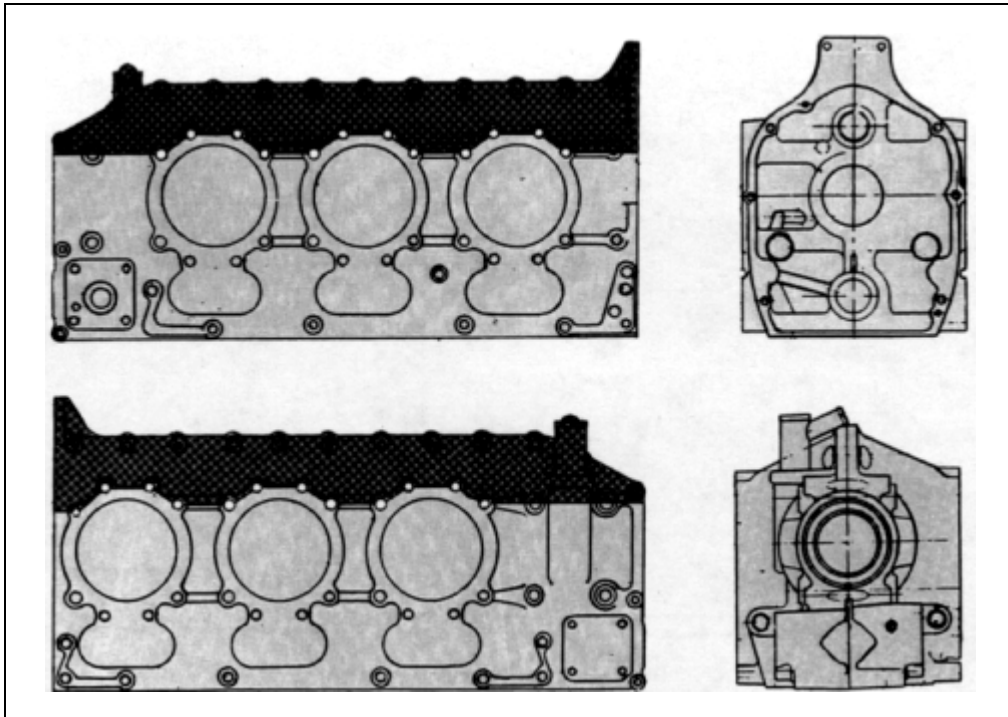


**FIGURE 2 O-200 CASE**

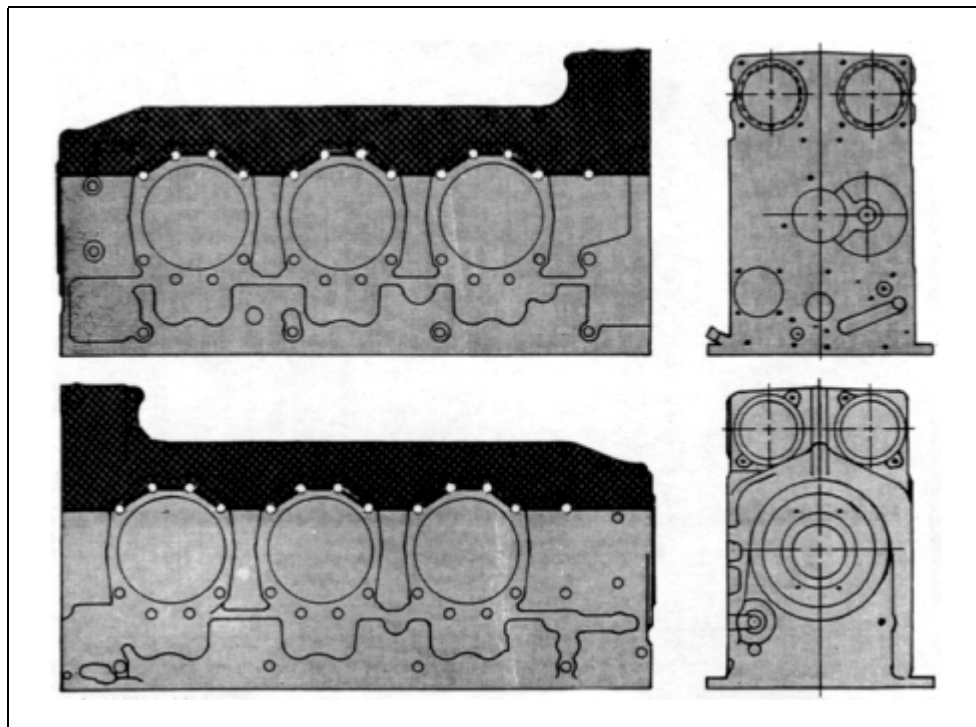


**FIGURE 3 O-300 CASE**

*(continued)*

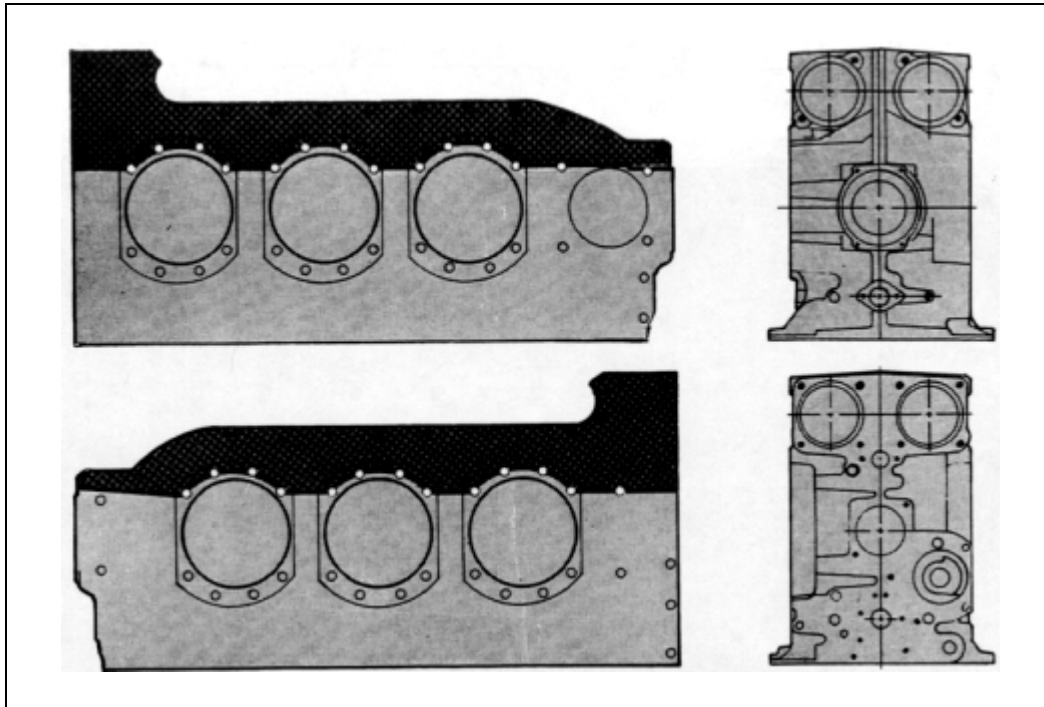


**FIGURE 4 360 CASE**

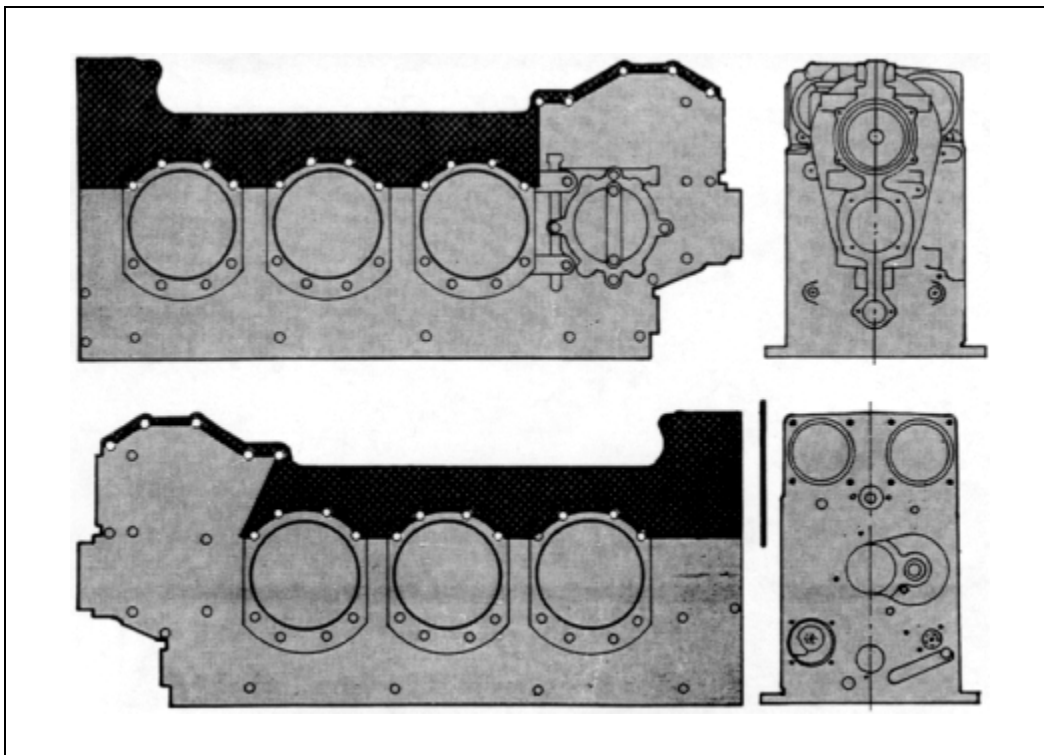


**FIGURE 5 DIRECT DRIVE SANDCAST 470 AND 520 CASE**

*(continued)*



**FIGURE 6 DIRECT DRIVE PERMOLD 520 CASE**



**FIGURE 7 GEARED DRIVE 520 CASE**