

77-13-22 TELEDYNE CONTINENTAL MOTORS: Amendment 39-2947 as amended by Amendment 39-3188. Applies to the following engine models:

IO-520-A, -B, -BA, -C, -D, -E, -F, -J, -K, -L, and -M which do not incorporate the identification markings in Table 1.

TSIO-520-B, -C, -D, -E, -G, -H, -J, -K, -L, and -N which do not incorporate the identification markings in Table 1.

GTSIO-520-C, -D, -F, and -H which do not incorporate the identification markings in Table 1.

NOTE: This A.D. does not apply to engines bearing the following serial numbers:

	NEW	TCM REBUILT
IO-520-A	550024 & up	112354-R & up
-B, -BA	562678 "	122539-R "
-C	561476 "	172903-R "
-D	563853 "	174412-R "
-E	556319 "	215510-R "
-F	564398 "	195707-R "
-J	558005 "	216505-R "
-K	557306 "	224007-R "
-L	554919 "	220537-R "
-M	565039 "	227309-R "
TSIO-520-B	500457 & up	176235-R & up
-C	509518 "	178143-R "
-D	505004 "	180043-R "
-E	510125 "	182692-R "
-G	507057 "	216007-R "
-H	506853 "	217031-R "
-J	503582 "	218621-R "
-K	504311 "	224529-R "
-L	508311 "	227611-R "
-N	509516 "	No Rebuilt
GTSIO-520-C	602221 & up	155418-R & up
-D	601051 "	219249-R "
-F	603112 "	224227-R "
-H	600915 "	218260-R "

TABLE 1

The improved design crankcase may be identified by the following table. This A.D. does not apply to engines so identified.

To prevent the possibility of undetected crankcase cracks progressing into a crankcase failure, accomplish the following:

(a) Within the next 50 hours time in service after the effective date of this A.D., visually inspect the engine crankcase for evidence of cracks. Particular attention during inspection should be given to the upper rear stud area of the number 2 and number 6 cylinders, the magneto pads and in the sections between the cylinder mounting bases.

(1) If no cracks are found, reinspect each 100 hours time in service thereafter, unless replaced by a crankcase described in Table 1.

(2) If cracks are found, proceed to paragraph (c).

(b) Critical (shaded) and non-critical (non-shaded) areas are illustrated in Figures 1, 2, and 3 below.

(c) If any crack is observed in the non-critical (non-shaded) area that exceeds two (2) inches in total length or is leaking oil, regardless of length, or if any cracks are observed in the critical (shaded) area, the engine crankcase must be replaced prior to further flight with a serviceable crankcase, except that the engine may be operated on an aircraft which is flown in accordance with FAR's 21.197 and 21.199 to a base where replacement may be accomplished.

(1) If a crack of two (2) inches or less in length is observed in any of the non-critical (non-shaded) areas, the crack extremity may be stop-drilled using a 3/32" drill bit (.0938"). Prior to drilling, identify the end of the crack using the dye penetrant method and locate the hole one-eighth (1/8) inch from the crack extremity. Do not stop-drill the end of any crack which would require the hole to intersect with a cylinder hold-down stud, require the hole to be placed in a heavy fillet area such as that which immediately surrounds the cylinder mount pad, or which would require the hole to be placed in an upper backbone bolt boss. (Cracks in these areas must be scribe marked at their extremities and reinspected at the intervals stated in (c)(2) to check for progression.) Stop drill only those cracks which terminate in the crankcase wall sections. Coat the bit with beeswax or modeling clay to retain chips, and operate the drill at the slowest possible speed. Additionally, pressurization of the crankcase with vacuum cleaner outlet air or regulated shop air (not to exceed 5 psi) may be used to help prevent drilling chips from entering the crankcase. Thoroughly clean the immediate area surrounding the newly drilled hole. Fill the hole with a small amount of freshly mixed epoxy adhesive such as Loctite brand, "Fast Cure" Epoxy Adhesive, Loctite P/N 44581 or 3M, "Scotch Weld" brand Structural Adhesive, 3M P/N 1838 B/A, or equivalent, being careful not to allow any epoxy to enter the interior of the crankcase. See Figures 4, 5, and 6 for additional details.

(2) Reinspect for crack progression and additional cracks within the next fifty (50) hours time in service. If no crack progression has taken place or no additional cracks are found, continue to reinspect at intervals not to exceed 100 hours time in service, until replaced with a crankcase described in Table 1. If further crack progression is noted, or additional cracks are found, repeat Paragraph (c).

(d) In addition to the above inspections, accomplish the following on the Models IO-520-B, -BA, -C, and -M, and TSIO-520-B, -D, -E, -J, -K, -L, and -N engines.

(1) Within the next fifty (50) hours time in service after the effective date of this A.D., inspect the crankcase immediately above the backbone bolts to determine if the crankcase is of the design which incorporates raised backbone bolt bosses (bumps).

(i) If the crankcase incorporates the raised backbone bolt bosses, no further action is required.

(ii) If the crankcase does not incorporate the raised backbone bolt bosses, install Teledyne Continental Motors backbone bolt kit Number EQ 6541 in lieu of the current backbone bolts in accordance with steps (iii) and (iv) below.

(iii) Remove backbone bolts three (3) through ten (10) inclusive (counting from front to rear). CAUTION: Remove no more than two (2) bolts at a time and install replacement bolts prior to removing the next two (2) bolts, etc.

(iv) Install the longer bolts and thicker washers as shown in the instruction drawing included

in kit Part Number EQ 6541. Torque to 160 to 180 in.-lbs.

NOTE: Cracks found in the upper backbone boss area are acceptable; however, if cracks extend down into the crankcase wall, follow procedure outlined in paragraph (c).

(e) Make a log book entry indicating compliance with applicable portions of this A.D. Include backbone kit installation, if applicable, and engine time in service.

(f) Upon request of the operator, an FAA maintenance inspector may adjust the repetitive inspection interval specified in paragraph (a)(1) of this A.D. up to a maximum time between inspections of 125 hours to permit compliance at an established inspection period of the operator if the request contains substantiating data to justify the increase for that operator. The compliance time for inspection of engines with existing crankcase cracks required by paragraph (c)(2) of this A.D. may not be adjusted.

Alternate methods of compliance must be approved by the Chief, Engineering and Manufacturing Branch, Federal Aviation Administration, Southern Region.

TCM Service Bulletin M77-14 pertains to this subject.

Amendment 39-2947 became effective July 22, 1977.

This Amendment 39-3188 becomes effective immediately upon publication in the Federal Register.