

**MANDATORY SERVICE BULLETIN**

**MSB96-10A**

The Subject Matter Of This Service Bulletin Is Incorporated In Whole Or In Part In An FAA Airworthiness Directive

FAA APPROVED  
Supersedes M87-5  
Rev.1,MSB96-10

**SUBJECT:** CRANKSHAFT ULTRASONIC INSPECTION.

**PURPOSE:** To provide crankshaft ultrasonic inspection requirements for all crankshafts utilized in the affected engine models.

**COMPLIANCE:** At the next and each subsequent removal of the crankshaft from the crankcase for inspection or overhaul, the crankshaft must be ultrasonically inspected by a "qualified inspector" as mandated by this service bulletin.

NOTE: The ultrasonic inspection requirements set forth in this Service Bulletin must be performed on replacement crankshafts prior to installation. Ultrasonic inspection is NOT required on TCM Factory new crankshafts prior to initial installation, but must be performed at each subsequent removal as stated above.

**MODELS AFFECTED:** All TCM six cylinder engine models.


Although a high level of reliability has been attained in the design and manufacture of aircraft engine crankshafts, experience shows that fractures can and do occur. Such fractures are frequently attributed to operational or maintenance conditions of the type discussed in F. A. A. Advisory Circular AC20-103 dated March 7, 1978, which addresses these conditions and details preventive measures that can be practiced to alleviate them.

In addition to crankshaft fractures of known causes, some engine models have experienced unexplained subsurface origin fatigue cracks initiating below the intermediate main bearing fillets. These cracks can propagate in fatigue through the short cheek of the crank pin, resulting in crankshaft fracture. In an effort to detect such cracks, TCM has established an ultrasonic test procedure TCM Specification MHS 200. Utilization of this test procedure has resulted in the detection of subsurface cracks in the intermediate main bearing fillet area of crankshafts which could not be detected using the standard magnetic particle inspection method.

NOTE: Any crankshaft listed in the latest revision of TCM Service Bulletin CSB96-8 that is NOT verified as being a VAR forging must be replaced.

**INSPECTOR QUALIFICATION**

The ultrasonic inspection of the crankshaft must be performed in accordance with TCM specification MHS 200 and only by individuals that have:

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1. Attended the complete 40 hour ultrasonic training course presented by Teledyne Continental Motors' designated representative within the last 36 months or;
2. Been certified to a minimum of NDT UT Level II inspector in accordance with MIL-STD-410 and received specialized training from Teledyne Continental Motors' designated representative, specific to this ultrasonic inspection procedure.

Any person interested in training and qualification should request information by writing to:

**Teledyne Continental Motors**  
**ATTN. Technical Customer Service**  
**P.O. Box 90**  
**Mobile, AL 36601**

**QUALIFIED INSPECTORS**

For the facility nearest you that employs a qualified inspector, contact TCM Customer Service at 251-438-3411.

**CRANKSHAFT INSPECTION AND ACCEPTANCE CRITERIA**

1. Prior to the installation of a crankshaft in an affected engine model, verify that the crankshaft has been inspected by a "qualified inspector" as set forth in this service bulletin and has been found to be in an acceptable condition.
2. Any crankshaft that is verified as unacceptable by ultrasonic, magnetic particle, dimensional or visual inspection methods set forth in this service bulletin and the appropriate TCM overhaul manual must be replaced.
3. Any crankshaft listed in the latest revision of TCM Service Bulletin CSB96-8 that is NOT verified as being a VAR forging must be replaced.

**AFFECTED PUBLICATIONS:**

Insert a copy of this Service Bulletin into the latest publication of the following manuals:

C125, C145 & O-300 Overhaul Manual.

GO-300 Overhaul Manual.

IO-360 Overhaul Manual.

L/TSIO-360 Overhaul Manual.


E-165, E-185 & E-225 Overhaul Manual.

O-470 Overhaul Manual.

IO-470 Overhaul Manual.

TSIO-470 Overhaul Manual.

IO-520 Overhaul Manual.

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TSIO-520 Sandcast Series Overhaul Manual.

TSIO-520 Permold Series Overhaul Manual.

GTSIO-520 Overhaul Manual.


IO-550 Permold Series Overhaul Manual.

IO-550 Sandcast Series Overhaul Manual.

TSIOL-550 Overhaul Manual.

Tiara Overhaul Manual.

\* - This manual is obsolete with the issuance of this service bulletin.

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