

SERVICE BULLETIN

SB06-5

Compliance Will Enhance Safety

Technical Portions FAA Approved

**SUBJECT:** CRANKSHAFT OIL TRANSFER TUBE INSPECTION AND REPLACEMENT  
**PURPOSE:** Revise crankshaft inspection, repair and overhaul procedures.  
**COMPLIANCE:** During Engine Overhaul or on condition crankshaft repair.  
**MODELS**  
**AFFECTED:** C-125, C-145, O-300, E-165, E-185, E-225; All IO-360; All L/TSIO-360; All O-470; All IO-470; All TSIO-470; All IO-520-A, D, E, F, J, K, L and P; L/TSIO-520-A, AE, AF, C, CE, G, H, M, P, R and T; All GTSIO-520; IO/IOF-550-D, E, F and L.

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**GENERAL**

1. This is an overhaul manual supplement for engine models that have a crankshaft fitted with oil transfer tubes.
2. This supplemental information is to be used when crankshaft repairs are performed in accordance with any of the following overhaul manuals: X30013, X30016, X30019, X30033, X30039A, X30045A, X30574A, X30575A, X30586A, X30588A, X30594A, X30596A or X30596AS1.

NOTE: This bulletin contains updates to the Manufacturer's Instructions For Continued Airworthiness as required by FAR43.13. **A copy of this bulletin must be inserted into the inspection section of the above listed TCM Overhaul Manuals.**

**INSPECTION**

At engine overhaul or whenever the crankshaft is removed from the crankcase, inspect the crankshaft for loose oil transfer tubes using a non-metallic pointed tool (awl).

1. Try to move the oil transfer tubes with the awl to check for movement.
2. Measure each oil transfer tube on both ends using the dimensions given in Figure 3.
3. If oil transfer tubes are secure and conform with the dimensions specifications in Figure 3, proceed with the crankshaft repair procedure in the applicable overhaul manual.
4. Replace loose or non-conforming oil transfer tubes using the procedures contained in this bulletin.

NOTE: Teledyne Continental Motors offers factory new crankshafts as an alternative to crankshaft repair.

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## **OIL TRANSFER TUBE REMOVAL**

1. Place the crankshaft on a secure workbench stand that will allow it to be rotated without damage.
2. Visually inspect the crankshaft oil transfer tube counterbore prior to removal with a 10X magnifying glass. Discard crankshafts exhibiting any of the following indications:
  - Handling damage
  - Machine tool damage
  - Corrosion
  - Nicks, dings, scratches or burrs

### **WARNING**

**Do not attempt to drill out the oil transfer tubes. The crankshaft nitrided surface must not be compromised.**

3. Remove loose oil transfer tubes using a slide hammer (See Figure 1) fitted with a # 10 X 1.5 inch long self-tapping screw. Turn the puller screw into the oil transfer tube until the threads firmly grip the tubing. Use the slide action of the hammer to remove the oil transfer tube.



**Figure 1. Transfer Tube Removal**

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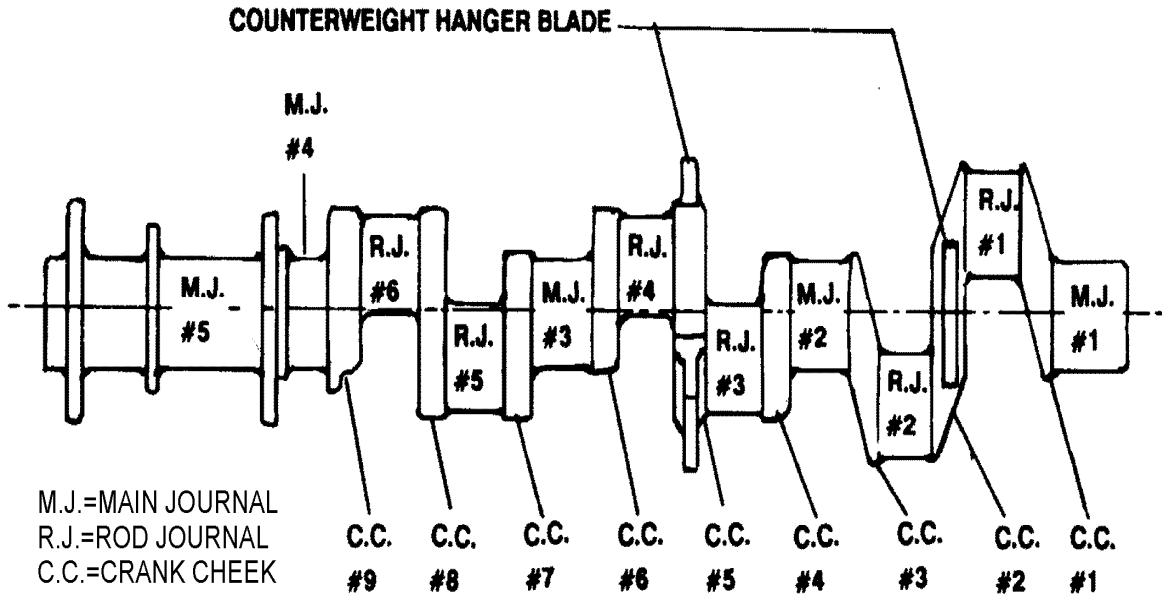
4. Visually inspect the crankshaft oil transfer tube bore after removal with a 10X magnifying glass. Discard crankshafts exhibiting any of the following indications:
  - Handling damage
  - Machine tool damage
  - Corrosion
  - Nicks, dings, scratches or burrs
5. Perform a dimensional inspection on the crankshaft oil transfer tube hole. The inside diameter should measure 0.218-0.221 inches. Discard crankshafts with oil transfer tube inside diameters greater than 0.221 inches.

**WARNING**

**Removing and replacing oil transfer tubes with makeshift tools or unauthorized methods may result in irreparable damage to the crankshaft or future engine malfunction.**

**OIL TRANSFER TUBE INSTALLATION**

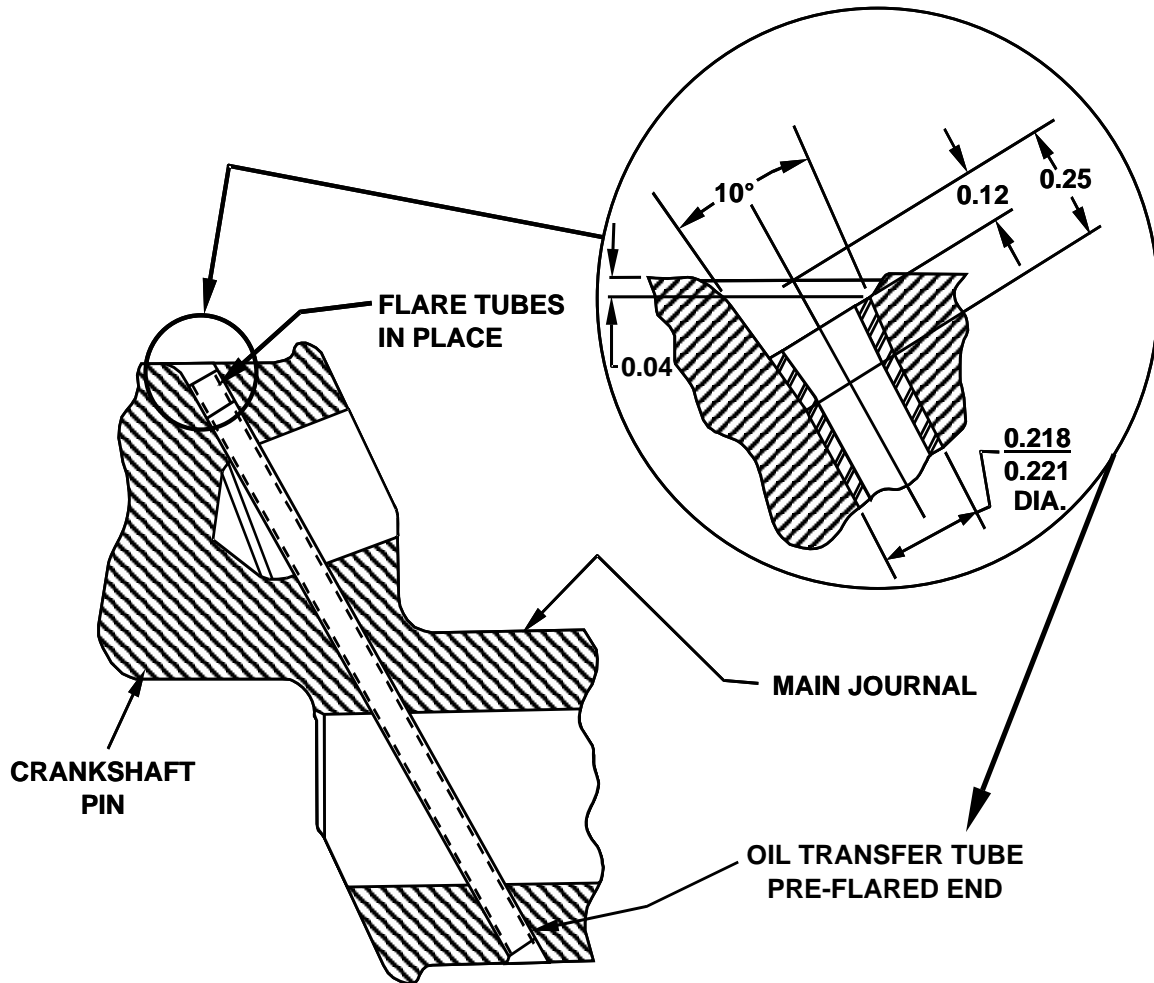
1. Ensure the new oil transfer tube is the correct part number and length. Some crankshafts use a different length tube at the #6 Rod Journal (Figure 2). Compare the removed tube length to that of the new tube.



**Figure 2. Journal Identification**

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2. Install new oil transfer tube with pre-flared end toward the main journal. See Figure 3 and Figure 7.

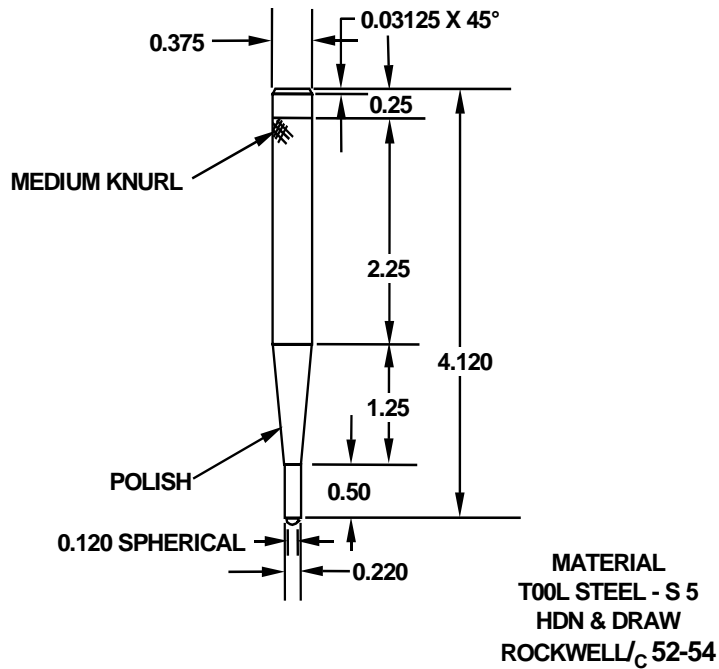


**Figure 3. Oil Transfer Tube Installation**

3. Using a tool that conforms to the specifications in Figure 4 and a small (not to exceed 12 ounces) ball peen hammer, tap the oil transfer tube until it is firmly seated into the main journal tube bore.

*CAUTION: Do not use excessive force.*

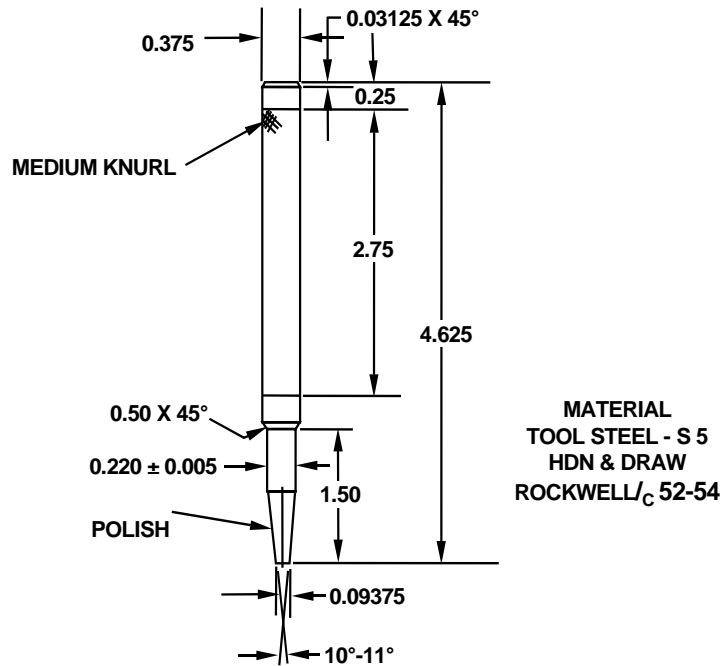
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**Figure 4. Oil Transfer Tube Seating Tool**

- Using a tool that conforms to the specifications in Figure 5 and a small (not to exceed 12 ounces) ball peen hammer, complete the flare of the tube on the main journal side.

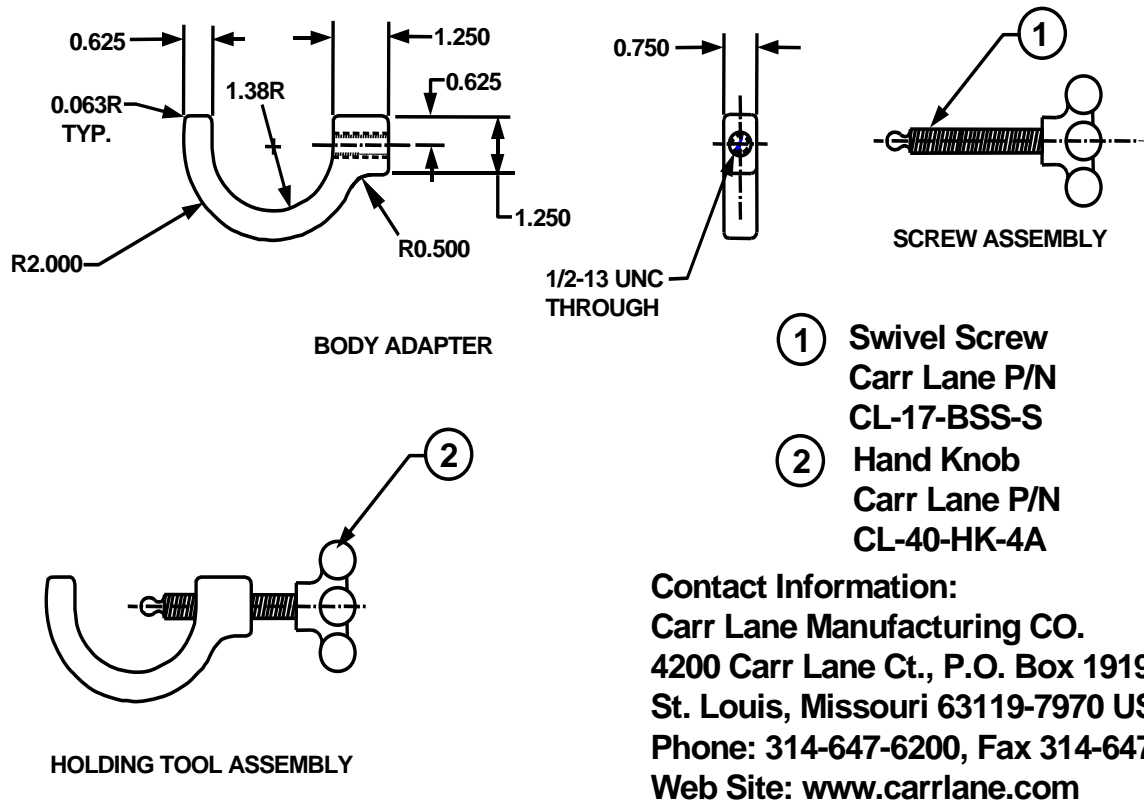
*CAUTION: Do not use excessive force.*



**Figure 5. Oil Transfer Tube Swage Tool**

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- Secure the oil transfer tube in the journal with tube clamp illustrated in Figure 6. Install the holding tool at the main journal and screw the ball end into oil transfer tube flare. Tighten only enough to secure the tube in the crankshaft.

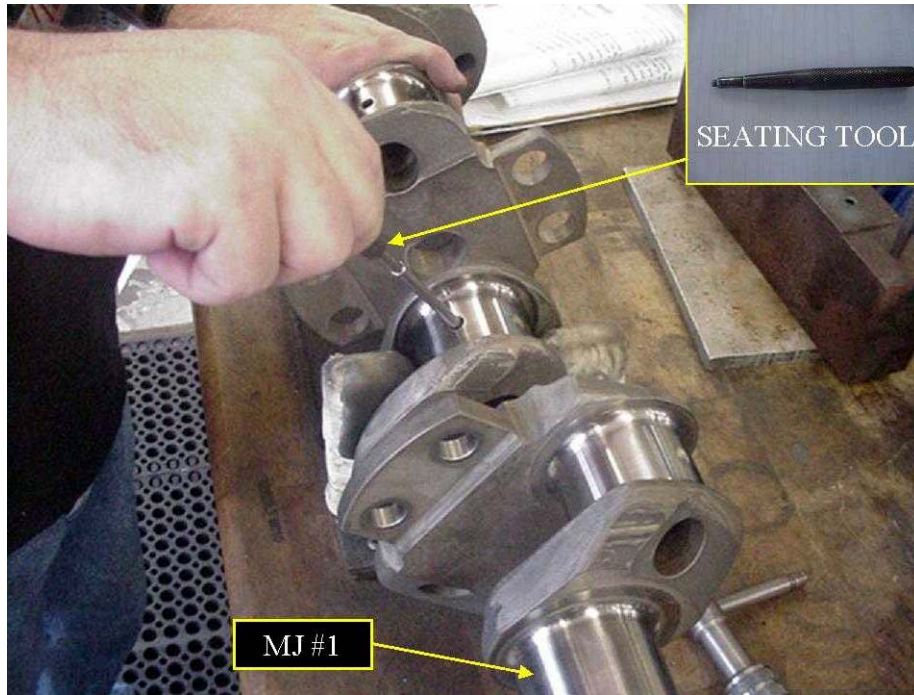


**Figure 6. Oil Transfer Tube Clamp**

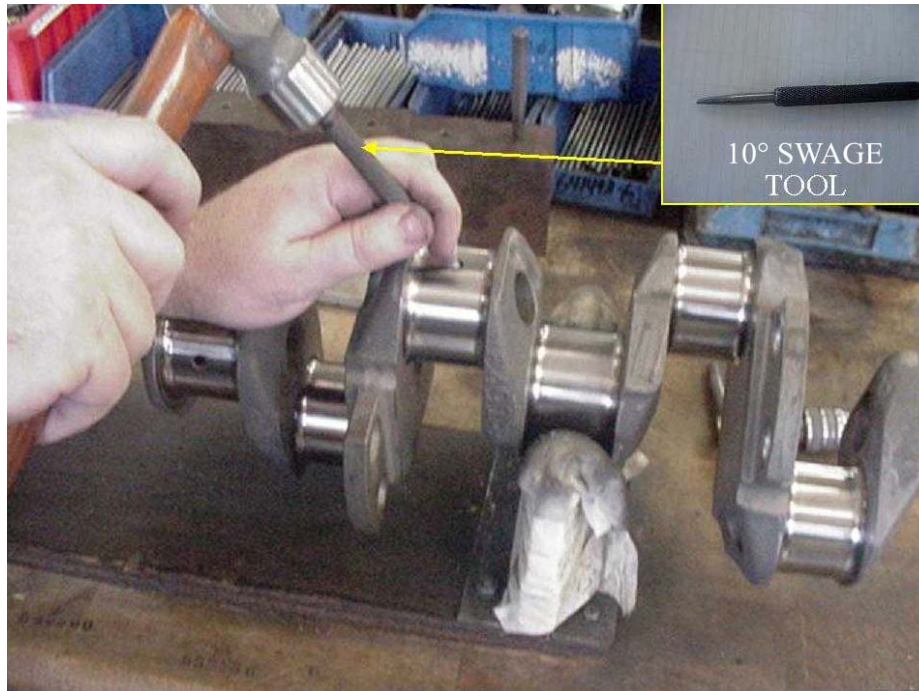
- Rotate the crankshaft to access the opposite end of the tube.
- Using a tool meeting with the specifications in Figure 5 and a ball peen hammer, complete the flare of the tube on the connecting rod journal side. See Figure 3 and Figure 8.

*CAUTION: Do not use excessive force.*

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**Figure 7. Installing Oil Transfer Tube in Main Journal**



**Figure 8. Swage the Oil Transfer Tube in the Crankshaft Pin**

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## **FINAL INSTALLATION INSPECTION**

1. Inspect the installed tube with a 10X magnifying glass. Oil transfer tube ends must not protrude beyond dimensions shown in Figure 3. The swaged tube ends must not be split. Discard crankshafts with any of the following indications:
  - Handling damage
  - Machine tool damage
  - Corrosion
  - Nicks, dings, scratches or burrs
2. Thoroughly wash the crankshaft with solvent. The crankshaft must be free of debris.
3. Perform a crankshaft magnetic particle inspection according to the Overhaul Manual instructions.

**NOTE: All TCM six cylinder engine crankshafts must be ultrasonic inspected IAW MHS-200 prior to return to service. This inspection must be performed each time the crankshaft is removed for any reason. Reference TCM service bulletin MSB96-10 and FAA AD 97-26-17 for details.**

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