

**MANDATORY**  
**SERVICE BULLETIN****DATE:** June 3, 1988Service Bulletin No. 482  
Engineering Aspects are  
FAA Approved**SUBJECT:** Crankshaft Flange Area Cracking**MODELS AFFECTED:** All AEIO-540-D series, IO-540 (250 & 260 horsepower) engines converted for aerobatic flight or any other 540 engines employing a 2-3/8 diameter main bearing seal used in unlimited category aerobatic maneuvers.**TIME OF COMPLIANCE:** Visual inspection within next 10 hours and at each 10 hour interval of unlimited aerobatics or earlier at owner's discretion.

Reports from the field indicate that a few of the above mentioned engines have encountered cracking in the crankshaft area during unlimited category aerobatic maneuvers.

Textron Lycoming certified the "AEIO" engine models for prolonged inverted flight and for normal aerobatic maneuvers. In recent years, aircraft performance and competitive requirements have caused these maneuvers to become increasingly severe.

Unlimited category maneuvers such as multiple snap rolls, inverted flat spins, lomcevak, etc. produce severe bending loads on the propeller flange area. Exceeding the engine maximum rated speed and/or using the aircraft in maneuvers which produce rapid angular propeller centerline acceleration may result in crankshaft failure. Any engine which has been subjected to unlimited category aerobatic maneuvers must be inspected for cracks in the crankshaft flange area within the next 10 hours. See Figure 1.

After each additional 10 hours of aerobatic flight involving unlimited category maneuvers, close visual inspection for cracks in the crankshaft flange area back to the oil slinger is required. The proper

logbook entry should be made to indicate that these inspections have been completed.

**VISUAL INSPECTION PROCEDURE**

1. Make sure the ignition switch is in the "off" position.
2. Remove a spark plug from each cylinder to allow easier crankshaft rotation.
3. Remove the propeller and starter ring gear and using a black marking pen, mark the two bushings directly in line with the propeller blades as shown in Figure 1.
4. Remove crankshaft oil seal.

**CAUTION**

WHEN REMOVING THE CRANKSHAFT SEAL, USE EXTREME CARE NOT TO SCRATCH THE CRANKSHAFT OIL SEAL JOURNAL SURFACE.

5. Clean the area to be inspected by using Methyl-Ethyl-Ketone (MEK) or equivalent.

6. Using an inspection mirror and suitable light, visually inspect the entire crankshaft flange area rotating the crankshaft 360 degrees. Pay special attention to the area behind the two bushings that were marked with black marking pen as instructed in step 3.

7. If the crankshaft is found to be cracked, it must be replaced. If crankshaft is determined serviceable,

install a new crankshaft oil seal. Refer to the latest edition of Service Instruction No. 1324.

8. Reinstall starter ring gear.

9. Reinstall propeller per airframe manufacturers instructions.

10. Reinstall spark plugs.

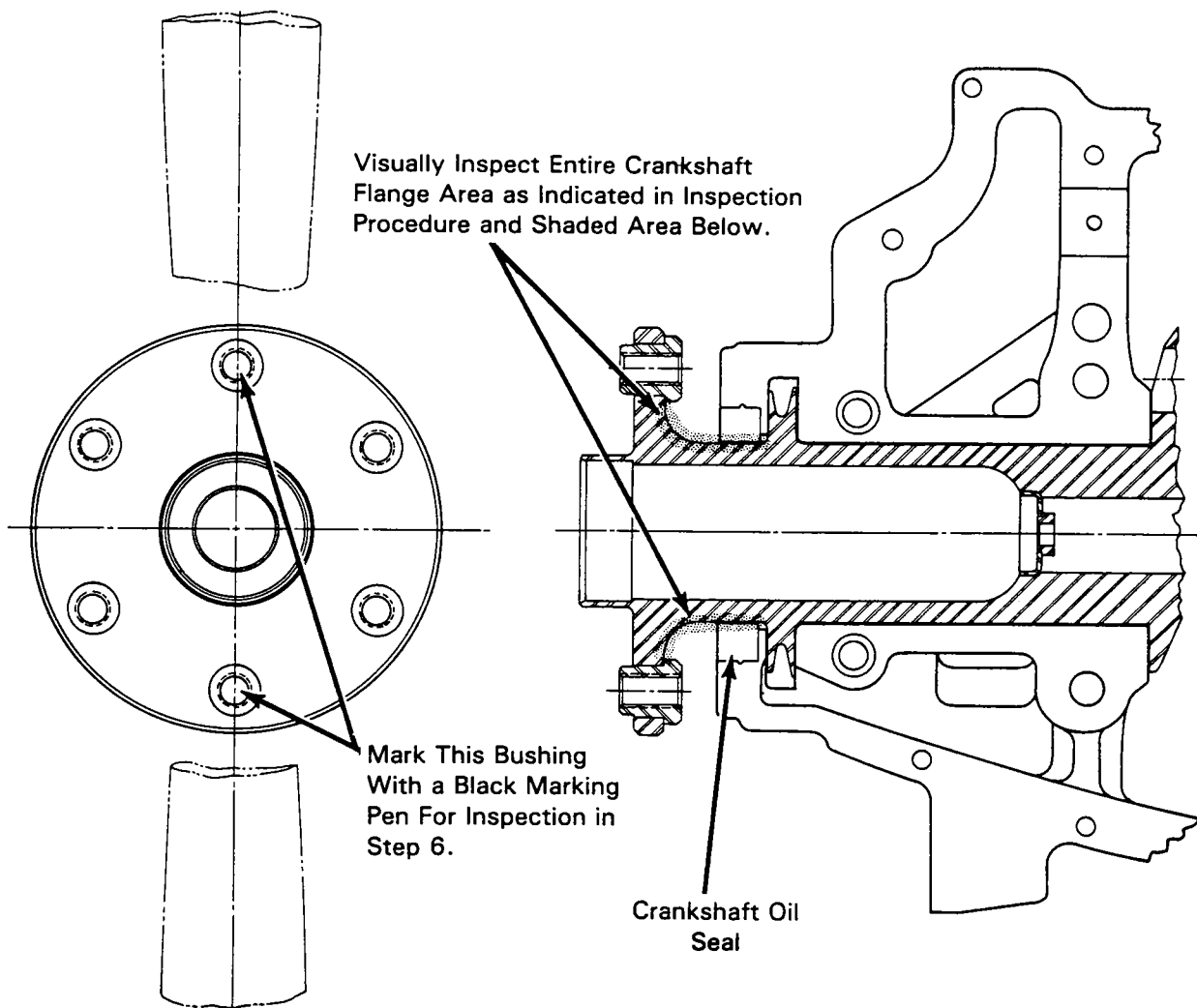


Figure 1. Visual Inspection of Crankshaft Flange Area