



Service Instruction

ENGINE COMPONENTS, INC.

S.I. No.: **98-5-2**

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Title: ALTERNATE MEANS OF COMPLIANCE: CRANKSHAFT GEAR RECESS REPAIR

Issued: **10/12/00**

Revision: **5 (11/15/06)**

Technical Portions are FAA DER Approved.

MODELS AFFECTED:

Lycoming and Engine Components, Inc. (ECi®) crankshafts that are eligible to use the AEL19646, AEL19647, AEL19648, or AEL19649 crankshaft gears (See ECi web site at www.eci2fly.com for installation eligibility).

BACKGROUND:

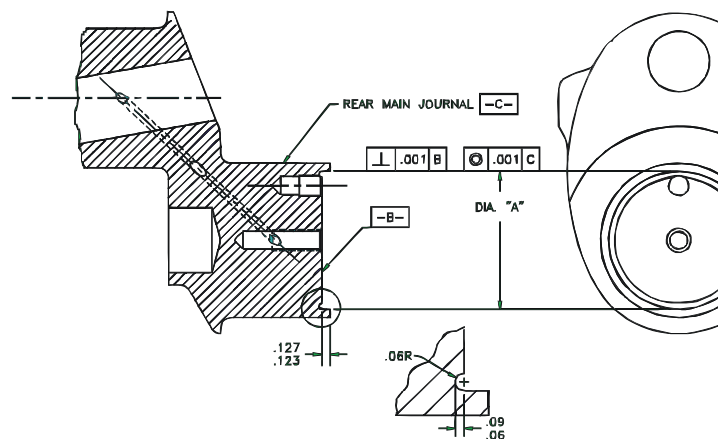
Lycoming Service Bulletin No. 475C provides a method of repairing the pilot bore for the crankshaft gear that is installed on the aft end of direct drive engine crankshafts. This repair requires that the pilot bore be machined oversize and then plated back undersize and finally ground to dimensions provided. This Lycoming repair is functional when accomplished properly, but can be accomplished only by repair stations that have access to plating facilities appropriate for the repair. The very short depth of the pilot bore makes plating tooling somewhat difficult.

ECi has FAA-PMA approval for replacement gears for the subject crankshafts. The production of gears with oversize pilot flanges permits repair without plating. The alternate means of compliance was granted by the New York ACO in their letter dated March 6, 2001. This Service Instruction provides FAA approved data (Southwest Region SW-190) for use as an alternate means of compliance to SB 475C. This alternate means of compliance must be accomplished by FAA Approved Repair Stations (FAR Part 145) with crankshaft repair approval on their operating specifications.

ECi has additional approval to alter crankshaft gears by chrome plating the pilot flange edge (outside diameter) and then grinding back to one of the approved oversize diameters. This process results in airworthy oversize gears, but the processing is much more complex than producing new gears with oversize flanges. Accordingly, this alteration of crankshaft gears by ECi will only be accomplished when appropriate oversize gears are not available.

PROCEDURES:

The repair procedure is to machine or grind the crankshaft gear pilot bore (Diameter "A" in the illustration below) to one of the oversize dimensions shown in Table 1. The pilot bore diameter must be maintained perpendicular to the bottom of the recess and concentric with the rear main journal within .001 TIR. The surface roughness of the pilot bore must be not greater than 32 micro-inches Ra.





The new crankshaft gear should fit within the pilot without apparent looseness. The .0010 loose to .0005 tight fit (see Table 1) may seem somewhat tight, but the gear should be able to be seated with minor tapping with a brass or plastic face mallet. The inspections specified in SB 475C should be followed to ensure the gear is flat against the flat surface at the bottom of the recess. Bolt torque specifications and additional assembly information are provided in Lycoming Overhaul Manual 60294-7.

The crankshaft must be magnetic particle inspected when all repairs are completed but before the gear is permanently installed.

TABLE 1		
Gear P/N	Gear Flange Outside DIA.	Pilot Bore Inside DIA. "A"
AEL19646P005 AEL19647P005 AEL19648P005 AEL19649P005	2.1300-2.1305	2.130-2.131
AEL19646P010 AEL19647P010 AEL19648P010 AEL19649P010	2.1350-2.1355	2.135-2.136
AEL19646P015 AEL19647P015 AEL19648P015 AEL19649P015	2.1400-2.1405	2.140-2.141
AEL19646P020 AEL19647P020 AEL19648P020 AEL19649P020	2.1450-2.1455	2.145-2.146

NOTE: CHECK GEAR CLEARANCE IN CRANKSHAFT BORE. THE FIT SHALL BE FROM .001 INCH LOOSE TO .0005 INCH TIGHT.

NOTE: THE CRANKSHAFT FLANGE SHOULD BE PERMANENTLY MARKED WITH THE OVERSIZE IDENTIFICATION GB-P005, GB-P010, GB-P015, OR GB-P020.