Service Instruction

For Engines Produced in Accordance with ASTM F2339

Title: **Eliminating Oil Seepage in Titan O-340CC Engines**

Technical portions are approved by Airmotive Engineering Corp.

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1.0 PURPOSE: The purpose of this Service Instruction is to inform owner/operators of a limited number of Titan O-340CC engines that they may experience a minor seepage of lubricating oil at the front AEL76220 thru-bolts that attach the Number 1 cylinder to the crankcase. This Service Instruction also provides instructions for a fix to eliminate that oil seepage.

2.0 BACKGROUND: For a short time period, Titan engines were assembled without using O-Rings around the forward thru-bolts, which is the current configuration of similar OEM engines. Some of these engines have experienced a slight oil seepage at the AELSTD2090 thru-bolts nuts on the front left side of the crankcase. These thru-bolts extend through special bushings that are placed between the crankcase and the thru-bolt nuts. AEC has developed a fix to prevent this seepage. It should be noted that the seepage is not an airworthiness issue, but is a nuisance issue.

3.0 TOOLS MATERIALS AND MECHANIC: The following tools are required to accomplish corrective action according to this continued operational data:

Torque Wrench	Calibrated up to at least 600 inch pounds
Cylinder Base Wrenches	3/4 inch
Sand Paper	600 grit to clean crankcase paint from under spacer
Plastic Mallet	To bump thru-bolts into position

The O-Rings to be used are:

MOR-9X2 Buna-N, 4 each	9mm ID, 13mm OD, Buna-N material or equivalent

AEC strongly recommends that this maintenance be performed by an experienced A & P Mechanic.

4.0 APPLICABILITY: The inspection and seep prevention are applicable to the following:

Engine Serial No.	Carbon Cub Serial No.
C4B002	321
C4D007	322
C4B009	323
C5B002	325
C5B005	327
C6B001	329
C6B002	328
C6B007	330
C7B002	331
C7B004	332

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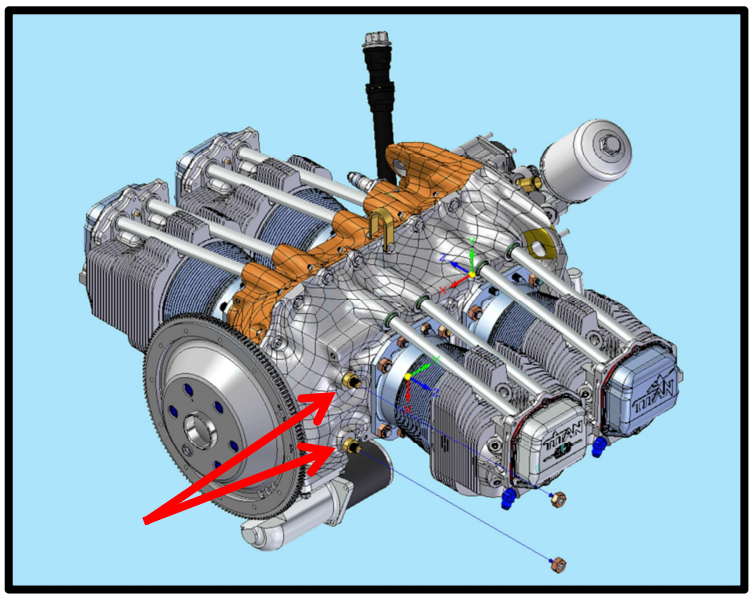
5.0 INSPECTION: Remove cowling to gain access to the engine. Inspect the area around the AELSTD209 nuts in the location shown in Illustration 1. If there is no oil seepage, then no further action is required. However, if there is evidence of oil seepage, then the remedy described in § 5.0 may be used to inhibit the seepage.



6.0 REMEDY FOR OIL SEEPAGE: If seepage is found, then remove the AELSTD2090 nuts from each end of the lower AEL76220 thru-bolt. Remove the AEL74887 spacer and push the thru-bolt toward cylinder #1 until the reduced diameter area of the thru-bolt is visible outside the cylinder #1 flange.

Note: The thru-bolt will be tight in the crankcase, so a plastic mallet will be required to bump the thru- bolt to the desired location.

Place a MOR-9X2 Buna N O-Ring over the threads of the thru-bolt and slide the O-Ring onto the reduced area of the thru-bolt. Lubricate the O-Ring with engine oil and slide the ring into the hole in the flange. Use of an end of a plastic tie-wrap or similar material may aid in inserting the O-Ring between the hole in the flange and the thru-bolt. When completely inside the flange, slide the thru-bolt back into the cylinder flange until the reduced diameter is visible on the left side of the crankcase. Place an O-Ring over the thru-bolt threads, lubricate and slide down over the reduced diameter section. Slide the thru-bolt back into position for installation of the AELSTD2090 nuts.

NOTE: The O-Ring to be used is a metric size with an inside diameter of 9mm and the outside diameter is 13mm. The diameter of the cross section is 2mm. The recommended O-Rings are made from Buna-N material. The compatibility of the material with oil must be established before any material substitution.

Additional safeguard against seepage will be achieved by placing O-Rings on the upper thru-bolt.

Before installing the nuts, check the crankcase around the thru-bolts to insure that there is no paint that will be under the spacer when re-installed. If paint is found, remove with a fine grit sandpaper.

Install the spacer and nuts and insure the same number of threads is exposed on both sides with the nuts snugged up. Torque the nuts on both sides of the engine to 300 inch pounds.

Further tighten nuts to 600 inch pounds. Nuts on the opposite ends of the thru-bolts should be counter-torqued simultaneously a helper.

Reinstall cowling and accomplish a test flight of at least 30 minutes. After landing, check to insure no further seepage from the thru-bolts.

For additional information or assistance, contact Nicole Wheeler at Titan Engines (210) 820-2146.