



# Service Instruction

ENGINE COMPONENTS, INC.

S.I. No.: 93-6-5

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**Title: RECOMMENDED TIME BETWEEN OVERHAUL (TBO) FOR ENGINE COMPONENTS, INC. FREEDOM™ BRAND CYLINDER ASSEMBLIES**

Issued: 07/30/01

Revision: 4 (09/01/01)

*Technical Portions are FAA DER Approved.*

- 1.0 **SUBJECT:** Recommended Time between overhaul (TBO) for Engine Components, Inc. FREEDOM™ Brand cylinder Assemblies.
- 2.0 **CYLINDERS AFFECTED:** All 520 Series FREEDOM™ Brand cylinders which are installed in 1600-hour TBO engines.
- 3.0 **COMPLIANCE:** Overhaul, rebuild, Top Overhaul or cylinder replacement.
- 4.0 **LIMITATIONS:** A 1600-hour TBO is contingent upon the following:
  - (a) No welding can be performed on the cylinder head without post heat treatment by the IFR™ process.
  - (b) The IFR™ process, which improves the fatigue life of the cylinder head, has an effective life of 1600 hours (with extensions as may be granted by the FAA). Therefore, cylinders overhauled at the end of each TBO must include IFR™ processing in order for the 1600 hour TBO to apply to the next TBO period.

Operating experience demonstrates that Engine Components, Inc. (ECi) Class 71 FREEDOM™ Brand, Cerminil® process and Steel Freedom cylinder assemblies can be operated up to 1600 hours between overhaul with the following stipulations:

- (a) Proper Break-in: Reference ECi Service Instruction No. 88-7-1.
- (b) Proper Ring Fitting: Reference ECi Service Instruction No. 94-4-1 for proper fitting of piston rings.
- (c) Proper Operation: (Reference Operator's Manual.)
  1. Temperature and power limits to be observed.
  2. Smooth, timed throttle reductions to inhibit shock cooling. Suggest maximum of 2 Hg/min. in increments in descent.
  3. Adequate servicing.

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Corporate Office • 9503 Middlex • San Antonio, TX 78217 • Tel (210) 820-8100 • Fax (210) 820-8103 • 800-ECi-2FLY (800-324-2359)  
www.eci2fly.com • sales-service@eci2fly.com • FAA Repair Station #AG2R689K

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**RECOMMENDED TIME BETWEEN OVERHAUL (TBO) FOR ENGINE COMPONENTS, INC. FREEDOM™ BRAND CYLINDER ASSEMBLIES**

**5.0 OVERHAUL:** Overhaul periods are recommended and are subject to many variables in addition to those listed above. ECI TBO recommendations are based on certification type testing and durability testing as well as service data showing the components to have a proven reliability.

Critical and/or complex parts are endurance tested according to FAR Part 33.49 and durability tested according to protocol established in a draft AC by the FAA (ANE-110) to quality for overhaul periods equivalent to the parts manufactured by the original equipment manufacturer.

ECi recommends the use of Phillips 20W50 XC oil for continued operation to TBO in accordance with the following schedule:

<u>Hours on Overhaul</u>	<u>Description</u>	<u>Lubrication Package</u>
0	Initial fill-up	Phillips X/C SAE20W-50
10	Change oil and filter	Phillips X/C SAE20W-50
35	Change oil and filter	Phillips X/C SAE20W-50
60	Change oil and filter	Phillips X/C SAE20W-50
Every 50 hr. or 3 months whichever comes first.	Change oil and filter	Phillips X/C SAE20W-50 is recommended or other approved aviation oil.