

# **TEXTRON** Lycoming

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# SERVICE INSTRUCTION

DATE: July 1, 1992

Service Instruction No. 1009AJ  
(Supersedes Service Letter No. L201C)  
Engineering Aspects are  
FAA Approved

SUBJECT: Recommended Time Between Overhaul Periods.

MODELS AFFECTED: All Textron Lycoming Piston Aircraft Engines.

The following chart shows the established time between overhaul (TBO) for Textron Lycoming piston aircraft engines. TBO's can be established on engines that incorporate GENUINE TEXTRON LYCOMING PARTS only, and are not applicable if the engine contains parts other than those supplied by Textron Lycoming. Service experience, variations in operating conditions, and frequency of operation are some of the factors taken into consideration when a TBO is established. Because of variations in the manner in which engines are operated and maintained, Textron Lycoming can give no assurance that any individual operator will achieve the recommended TBO.

Continuous service assumes that the aircraft will not be out of service for any extended period of time. Refer to latest revision of Service Letter No. L180 if the aircraft is to be out of service for a period of time greater than 30 days.

Because of engine deterioration in the form of corrosion (rust), drying out and hardening of composition materials such as gaskets, seals, flexible hoses, fuel pump diaphragms and abnormal wear during starting on soft metal bearing surfaces due to the loss of a protective oil film during extended periods of inactivity, all engines that do not accumulate the recommended operating hours between overhaul in a twelve (12) year period must be overhauled during the twelfth year.

Although the TBO's shown in the Table on page 2

represent Textron Lycoming's recommendations, owners of some Textron Lycoming piston engines may decide to continue to operate the engine beyond the hours stated, unless otherwise limited by government regulations. It is the responsibility of the party maintaining the engine to decide if it is feasible to operate the engine beyond the recommended number of hours. This decision should be based on knowledge of the engine and the conditions under which it has been operated.

Engine accessories and propellers may require overhaul prior to engine overhaul. This decision, too, is to be made by the party responsible for maintaining the engine or by the accessory manufacturer.

The TBO's in the chart do not apply to engines engaged in crop dusting or other chemical-application flying. These engines should be overhauled at 1500-hour intervals or at recommended TBO, whichever is lower.

Reliability and average service life cannot be predicted when an engine has undergone any modification not approved by Textron Lycoming. The TBO's shown in the table are recommendations for engines as manufactured, without considering any modifications that may alter the life of the engine. The TBO's in no way affect, change, or alter Textron Lycoming's current published warranty policy.

## RECOMMENDED TIME BETWEEN OVERHAUL PERIODS

FIXED WING AIRCRAFT					
Engine Models	See Note	Hours	Engine Models	See Note	Hours
O-235 Series (except -F, -G, -J)	12	2400	IO-540-E, -G, -P	1,10,11	1600
O-235-F, -G, -J	13	2000	IO-540-S, -AA, -AB	2,10	1800
O-290-D	-----	2000	IO-540-J, -R	2,10	1800
O-290-D2	-----	1500	IO-540-K, -L, -M	10	2000
O-320 Series (except O-320-H);			IO-540-K1B5, -K1G5	10,11	2000
IO-320-A, -E	1,10	2000	AEIO-540 Series	6,10	1400
O-320-H	10	2000	IGO & IGSO-540 Series	-----	1200
IO-320-B, -D, -F	4,6,10	2000	TIO-540-V, -W, -AE	3,4,11	2000
IO-320-C	2,4,10	1800	TIO-540-C, -AA, -AB, -AF	3,4,7,11	2000
AIO-320 (160 hp)	6,10	1600	TIO-540-A, -F, -J, -N, -R, -S, -U	3,4,11,14	1800
AEIO-320 Series	6,10	1600	TIO-541-A (310 hp)	3	1300
O-340 Series	1	2000	TIO-541-E (380 hp)	3,9	1600
O-360 Series (except O-360-E);			TIGO-541 (425 hp)	3	1200
IO-360-B, -E, -F (180 hp)	1,4,10	2000	IO-720 Series	10,11	1800
O-360-E	4,10	2000			
IO-360-A, -C, -D, -J (200 hp)	4,5,6,10	2000			
TO-360-C, -F; TIO-360-C	3	1800			
TO-360-E (180 hp)	3,4	1800			
AIO-360 (200 hp)	6,10	1400			
TIO-360-A Series	3	1200			
AEIO-360 Series (180 hp)	6,10	1600			
AEIO-360 Series (200 hp)	6,10	1400			
O-435; GO-435	-----	1200			
GO, GSO-480; IGSO-480	1	1400			
O-540-A, -B, -E4A5, -F;					
IO-540-C, -D	1,10	2000			
O-540-E4B5, -E4C5	1,10,11	2000			
O-540-G, -H, -J; IO-540-N,					
-T, -V, -W	10	2000			
O-540-L3C5D	2,10	2000			
IO-540-A, -B (290 hp)	1,10,11	1400			

  

ROTARY WING AIRCRAFT		
O-320-A2C, -B2C	-----	2000
O-360-C2B, -C2D; HO-360;		
HIO-360-B	-----	1500
HIO-360-A, -C, -D, -E, -F Series	-----	1500
VO-360-A Series	-----	600
VO-360-B; IVO-360	-----	1000
VO-435-A Series	-----	1200
VO-435-B Series	-----	1200
TVO-435 Series	3	1000
VO-540 Series	8	1200
IVO-540 Series	-----	600
TVO, TIVO-540 Series	3,8	1200

## NOTES

1. Only engines built with 1/2 inch dia. exhaust valve stems. Engines of this series with 7/16 inch dia. exhaust valves should not exceed 1200 hours between overhauls regardless of the type of operation. New and remanufactured engines built with 1/2 inch dia. exhaust valve stems are identified, respectively, by serial number and date in the latest edition of Service Instruction No. 1136.

2. These engines are designed to incorporate exhaust

turbocharging.

3. Turbochargers may require removal, prior to engine overhaul, for carbon removal and repair.

4. Engines with reverse rotation have same overhaul times as corresponding normal rotation models.

5. 1200 HOURS: Engines that do not have large main bearing dowels should not be operated more than 1200 hours between overhauls.

**1400 HOURS:** Engines that have large main bearing dowels may be operated to 1400 hours between overhauls. These include engines with serial numbers L-7100-51A and up, and L-101-67A and up; engines which are in compliance with the latest edition of Service Bulletin No. 326; and remanufactured engines shipped after January 26, 1970.

**2000 HOURS:** Engines that have large main bearing dowels and redesigned camshafts may be operated to 2000 hours between overhauls. These include engines with serial numbers L-9762-51A and up; IO-360-C1E6 engines with serial numbers L-9723-51A and up; LIO-360-C1E6 engines with serial numbers L-524-67A and up; engines that are in compliance with the latest edition of Service Bulletin No. 326 and Service Instruction No. 1263. Remanufactured engines shipped after October 1, 1972 may be operated to 2000 hours between overhauls except those with serial numbers L-2349-51A and L-7852-51A which do not have the redesigned camshaft and must not exceed 1400 hours operating time between overhauls.

6. The reliability and service life of engines can be detrimentally affected if they are repeatedly operated at alternating high and low power applications which cause extreme changes in cylinder temperatures. Flight maneuvers which cause engine overspeed also contribute to abnormal wear characteristics that tend to shorten engine life. These factors must be considered to establish TBO of aerobatic engines; therefore it is the responsibility of the operator to determine the percentage of time the engine is used for aerobatics and establish his own TBO. The maximum recommendation is the time specified in this instruction.

7. TIO-540-C series engines with serial numbers L-1754-61 and up, TIO-540-C series engines that were remanufactured or overhauled at Textron Lycoming, Williamsport, PA after March 1, 1971 and TIO-540-C series engines that have been modified to incorporate large main bearing dowels as described in the latest revision of Service Instruction No. 1225 may be operated to 2000 hours. Engines that do not incorporate this modification must not exceed 1500 hours between overhauls.

8. VO, TVO and TIVO-540 engines built with P/N

77450 connecting rods as described in the latest edition of Service Bulletin No. 371 may be continued in service to 1200 hours. Engines that do not incorporate this new connecting rod are restricted to 1000 hours for VO-540 models and 900 hours for TVO and TIVO-540. See latest edition of Service Bulletin No. 371 for improved connecting rod assembly.

9. TIO-541-E series engines with serial numbers L-804-59 and up, remanufactured engines shipped after March 1, 1976 and all engines that incorporate the improved crankcases and cylinder assemblies described in the latest revision to Service Bulletin Nos. 334 and 353 may be operated for 1600 hours before overhaul. Engines not in compliance with these requirements are limited to 1200 hours recommended time between overhaul.

10. Some engines in the field have been altered to incorporate an inverted oil system in order to perform aerobatic maneuvers. Whenever this modification is done to an engine, the TBO of the engine must be determined in the same manner listed for AEIO engines of the same model series.

11. If an engine is being used in "scheduled frequent" type service but not for flight training, and accumulates 60 hours or more per month, and has been so operated consistently, add 200 hours to TBO time.

12. To qualify for the 2400 hour TBO, high-compression O-235's must have the increased strength pistons (P/N LW-18729). See latest issue of Service Letter L213.

13. The high-compression O-235-F, -G, and -J series do not have the increased-strength pistons (P/N LW-18729); therefore, they do not qualify for the 2400-hour TBO.

14. TIO-540-A series engines with serial numbers L-1880-61 and up, TIO-540-A series engines that were remanufactured or overhauled at Textron Lycoming, Williamsport, PA after March 1, 1971 and TIO-540-A series engines that have been modified to incorporate large main bearing dowels as described in the latest revision of Service Instruction No. 1225 may be operated to 1800 hours. Engines that do not incorporate this modification must not exceed 1500 hours between overhauls.