ÚCL

ÚŘAD PRO CIVILNÍ LETECTVÍ
ČESKÁ REPUBLIKA
Sekce technická
letiště Ruzyně, 160 08 Praha 6
tel: 233320922, fax: 220562270

PŘÍKAZ K ZACHOVÁNÍ LETOVÉ ZPŮSOBILOSTI

Číslo: 2005-19-11

Datum účinnosti: 21. října 2005

Lycoming Engines
modely AEIO-360, IO-360, O-360, LIO-360, LO-360, AEIO-540, IO-540, O-540, TIO-540

Tento PZZ je vydáván pro výrobek transferovaný pod působnost EASA

Na základě rozhodnutí EASA je následující Příkaz k zachování letové způsobilosti závazný pro všechny výrobky provozované v EU na které se daný PZZ vztahuje.

Provedení PZZ, který se vztahuje podle typu a výrobního čísla na výrobek je pro provozovatele/vlastníka letadla zapsaného do leteckého rejstříku závazné. Neprovedením PZZ ve stanoveném termínu dojde ke ztrátě letové způsobilosti výrobku.

Poznámky:
- Provedení tohoto PZZ musí být zapsáno do provozní dokumentace letadla.
- Případné dotazy týkající se tohoto PZZ adresujte na ÚCL sekce technická.
- Pokud to vyžaduje povaha tohoto PZZ, musí být zapracován do příslušné části dokumentace pro obsluhu, údržbu a opravy letadla.

[Federal Register: September 16, 2005 (Volume 70, Number 179)]
[Rules and Regulations]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-21864; Directorate Identifier 2005-NE-29-AD; Amendment 39-14276; AD 2005-19-11]

RIN 2120-AA64

Airworthiness Directives; Lycoming Engines (Formerly TextronLycoming) AEIO-360, IO-360, O-360, LIO-360, LO-360, AEIO-540, IO-540, O-540, and TIO-540 Series Reciprocating Engines

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Lycoming Engines (formerly Textron Lycoming) AEIO-360, IO-360, O-360, LIO-360, LO-360, AEIO-540, IO-540, O-540, and TIO-540 series reciprocating engines rated at 300 horsepower (HP) or lower. This AD requires replacing certain crankshafts. This AD results from reports of 12 crankshaft failures in Lycoming 360 and 540 series engines rated at 300 HP or lower. We are issuing this AD to prevent failure of the crankshaft, which could result in total engine power loss, in-flight engine failure, and possible loss of the aircraft.

DATES: This AD becomes effective October 21, 2005. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of October 21, 2005.

ADDRESSES: You can get the service information identified in this AD from Lycoming, 652 Oliver Street, Williamsport, PA 17701; telephone (570) 323-6181; fax (570) 327-7101, or on the Internet at *http://www.Lycoming.Textron.com*.

You may examine the AD docket on the Internet at *http://dms.dot.gov* or in Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Norm Perenson, Aerospace Engineer, New York Aircraft Certification Office, FAA, Engine & Propeller Directorate, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone (516) 228-7337; fax (516) 794-5531.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed airworthiness directive (AD). The proposed AD applies to Lycoming Engines (formerly Textron Lycoming) AEIO-360, IO-360, O-360, LIO-360, LO-360, AEIO-540, IO-540, O-540, and TIO-540 series reciprocating engines rated at 300 horsepower (HP) or lower. We published the proposed AD in the Federal Register on July 22, 2005 (70 FR 42282). That action proposed to require replacing certain crankshafts within 50 hours time-in-service or 6 months after the effective date of the proposed AD, whichever is earlier.

Examining the AD Docket

You may examine the docket that contains the AD, any comments received, and any final disposition in person at the Docket Management Facility Docket Offices between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5227) is located on the plaza level of the Department of Transportation Nassif Building at the street address stated in ADDRESSES. Comments will be available in the AD docket shortly after the DMS receives them.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Will Additional Engines and Crankshafts Be Affected in the Future

One commenter asks if additional serial numbered engines and crankshafts will be affected in the future.

At this time we do not anticipate that the affected population will increase, but Lycoming and the FAA are monitoring crankshaft performance.

Affected Engines and Crankshafts

The same commenter asks why these engines and crankshafts are the only ones affected by the SB and AD.

Both the previous AD (2002-19-03) and this AD advise that the affected population of engines and crankshafts were manufactured in a specific time period. We are addressing that time period.

Suspect Crankshafts Should Be Either Tested or Replaced

One commenter states that suspect crankshafts should be either tested or replaced before further flight, because the problem with these crankshafts is similar to the problem that caused the crankshaft failures on the 540 engines.

We disagree. The compliance interval in this AD is based on an assessment of operating stresses, service experience, and duty cycle of the affected engine population. The compliance interval differs from that imposed in AD 2002-19-03 due to differences in these parameters.

Request To Include Lycoming TIO-540-AE2A and Other Unspecified Engine Models

One commenter requests that we include the Lycoming TIO-540-AE2A and other unspecified engine models in this AD. The commenter states that many of the TIO-540-AE2A engines have never been recalled or replaced yet should be, because recent litigation has shown that Lycoming's crankshaft end core sample test is insufficient.

We disagree. We have seen no evidence that refutes the validity of the test. Further, AD 2002-19-03 (the previous AD) effective on September 20, 2002, described two groups of crankshafts. We required one crankshaft group to be removed before further flight, and we required the other crankshaft group to have a sample of the crankshaft material tested. The crankshafts in each group were selected based on our evaluation of the risk both groups presented. Crankshafts from either group may be installed in the TIO-540-AE2A engine model. No failures of crankshafts listed in either group have occurred since.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD as proposed.

Costs of Compliance

We estimate that this AD will affect 1,128 engines installed on aircraft of U.S. registry. We estimate that it will take the following work hours to perform the inspection:

Type of application	Work-hours per engine	Number of engines affected
Helicopter	12	200
Constant-Speed Propeller	3	557
Fixed-Pitch Propeller	1.5	371

We also estimate that it will take about 33 work hours to replace the crankshaft. We estimate the average labor rate is $65 per work hour and that required parts for each engine will cost about $16,218. Based on these figures, we estimate the total cost of the AD to U.S. operators to be $18,594,724. Lycoming Engines informed us that they intend to supply the new parts at no charge, which may substantially reduce the estimated cost of this AD.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in subtitle VII, part A, subpart III, section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

PART 39–AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2005-19-11 Lycoming Engines: Amendment 39-14276. Docket No. FAA-2005-21864; Directorate Identifier 2005-NE-29-AD.

Effective Date

(a) This airworthiness directive (AD) becomes effective October 21, 2005.

Affected ADs

(b) None.

Applicability

(c) This AD applies to Lycoming Engines (Formerly Textron Lycoming) AEIO-360, IO-360, O-360, LIO-360, LO-360, AEIO-540, IO-540, O-540, and TIO-540 series reciprocating engines, rated at 300 horsepower (HP) or lower, manufactured new, rebuilt, overhauled after March 1, 1999, or that had a crankshaft installed after March 1, 1999. These engines are installed on, but not limited to, the following aircraft:

Engine model	Manufacturer	Aircraft model
IO–540–V4A5	A.M.F	17–D Mushshak
	Aero Commander	500 B, S, U/Merlyn Products Conv.
IO–540–E1A5	Aero Commander	500–E
	Aerofab	LA 250 Renegade
	Aeronautica	Agricola Mexicana Quail
IO–540–K1F5	Aerostar	600
	Aircraft Manufacturing Factory	Mushshak
O–540–E4A5	Aviamilano	F–250 Flamingo
IO–540–C4B5	Avions	Pierre Robin HR–100/250
LO–360–A1G6D	Beech	76 Duchess
O–360–A1G6D	Beech	76 Duchess
		C–24R Sierra or 200 Sierra
	Bellanca	Aircraft Aries T–250
O–540–E4B5	Britten Norman	BN–2 Islander
O–540–E4C5	Britten Norman	BN–2A & BN–2B Islander

Engine model	Manufacturer	Aircraft model
IO–540–K1B5	Britten Norman	BN–2A Islander
	Celair	Eagle
O–360–A1F6	Cessna	177 Cardinal
O–360–A1F6D	Cessna	177 Cardinal
O–540–J3C5D	Cessna	182–RG Skylane
IO–540–AB1A5	Cessna	182–S
O–360–F1A6	Cessna	C–172RG Cutlass RG
IO–540–AC1A5	Cessna	C–206 Stationair
		R–G Cardinal
IO–360–A1B6D	Cessna	R–G Cardinal
TIO–540–AK1A	Cessna	T182T Skylane
O–540–L3C5D	Cessna	TR–182 Turbo Skylane
AEIO–540–D4A5	Christen Pitts	S–2S, S–2B
IO–540–T4B5D	Commander	114
IO–540–T4B5	Commander	114B
TIO–540–AG1A	Commander	114TC
	Dornier	DO–28
IO–540–K1J5D	Embraer	EMB–201 Ipanema
O–540–B4B5	Embraer	EMB–710 Corioca
		EMB–720 Minuano
		EMB–720 Minuano & EMB–721 Sertanejo
		EMB–721 Sertanejo
AEIO–540–L1B5	Extra-Flugzeugbau	Extra 300
	F.F.A	FFA–2000 Eurotrainer
	H.A.L	HPT–32
O–540–A1A5	Helio Military	H–250
AEIO–360–A1E6	Integrated Systems	Omega
IO–540–M1C5	King Engineering	Angel
	Korean Air	Chang Gong–91
	Lake	LA–4–200 Buccaneer
O–540–J3A5	Maule.	MT–7–260 & M–7–260
		MX–7–235 Star Rocket
IO–540–W1A5	Maule.	MX–7–235, MT–7–235 & M7–235
	Mod Works	Trophy 212 Conversion
IO–360–A3B6	Mooney	201
		M–201
IO–360–A1B6	Mooney	M–20–J
IO–360–A3B6D	Mooney	M20J–201
TIO–540–AF1B	Mooney	M20M TLS Bravo
	Moravan	Z143L Zlin
		Z242L Zlin
	Partenavia	P–68 Series Observer
IO–540–K1J5	Piper	600–A Aerostar
IO–540–S1A5	Piper	601–A, 601B & 601P Aerostar
IO–540–AA1A5	Piper	602P Sequoia
O–540–A1B5	Piper	PA–23–235 Aztec & PA–24–250 Comanche
		PA–23–250 Aztec

Engine model	Manufacturer	Aircraft model
IO–540–J4A5	Piper	PA–23–250 Aztec
IO–540–C1B5	Piper	PA–23–250 Aztec & PA–24–250 Comanche
TIO–540–C1A	Piper	PA–23–250T Turbo Aztec
		PA–24–150 Comanche
O–540–A1C5	Piper	PA–24–250 Comanche
O–540–A1D5	Piper	PA–24–250 Comanche
IO–540–D4A5	Piper	PA–24–260 Comanche
		PA–24–260 Comanche
O–540–B2C5	Piper	PA–25–235 Pawnee
O–540–B2B5	Piper	PA–28–235 Cherokee
		PA–28–235 Cherokee
IO–360–C1C6	Piper	PA–28R–201 Arrow
IO–540–M1A5	Piper	PA–31–300 Navajo
		PA–32–260 Cherokee 6
IO–540–K1G5	Piper	PA–32–300 & PA–32–301 Saratoga
IO–540–K1A5	Piper	PA–32–300 Cherokee 6
IO–540–K1A5D	Piper	PA–32–300 Cherokee 6
IO–540–K1G5D	Piper	PA–32–300R Lance
		PA–32–301R Saratoga
IO–360–C1E6	Piper	PA–34–200 Seneca I
IO–540–K1G5	Piper	PA–36–300 Brave
O–360–A1H6	Piper	PA–44–180
LO–360–A1H6	Piper	PA–44–180 Seminole
IO–540–K1K5	Piper	T–35 Pillan
	Robin	R–3000/235
O–540–F1B5	Robinson	R–44
	Rockwell	114
	Ruschmeyer	MF–85
	Saab	MFI–15 Safari or MFI–17 Supporter
	Scottish Avia	Bulldog
	Siai Marchetti	S–205
	Siai Marchetti	S–208 & SF–260
	Siai Marchetti	SF–260
	Siai Marchetti	SF–260
	Slingsby	Firefly T3A
	Socata	R–235 Rallye Cuerrier
		Rallye 235CA
IO–540–C4D5D	Socata	TB–20 Trinidad
		TB–200
TIO–540–AB1AD	Socata	TB–21 & TB–21–TC Trinidad TC
IO–540–AB1A5	Stoddard Hamilton	Glasair
IO–540–K1H5	Stoddard Hamilton	Glasair III
IO–540–L1C5	Swearingen Aircraft	SX–300
	Transava	T–300 Skyfarmer
AEIO–360–A1B6	Valmet	L–70 Vinka
	Wassmer	WA4–21
	Yoeman	Aviation YA–1

Unsafe Condition

(d) This AD results from 12 crankshaft failures in Lycoming model 360 and 540 series engines rated at 300 HP or lower. We are issuing this AD to prevent failure of the crankshaft, which could result in total engine power loss, in-flight engine failure, and possible loss of the airplane.

Compliance

(e) You are responsible for having the actions required by this AD performed within 50 hours time-in-service or 6 months after the effective date of this AD, whichever is earlier, unless the actions have already been done.

Engines Manufactured Before March 1, 1999

(f) If Lycoming Engines manufactured new, rebuilt, or overhauled your engine before March 1, 1999, and you haven't had the crankshaft replaced, no further action is required.

AEIO-540, IO-540, O-540, and TIO-540 Series Engines Manufactured New or Rebuilt, Overhauled, or That Had a Crankshaft Installed After March 1, 1999

(g) For AEIO-540, IO-540, O-540, and TIO-540 series engines manufactured new or rebuilt, overhauled, or that had a crankshaft installed after March 1, 1999, do the following:

(1) If Table 1 or Table 2 of Lycoming Mandatory Service Bulletin (MSB) No. 566, dated July 11, 2005, lists your engine serial number (SN), use Table 4 to verify the crankshaft SN.

(2) If Table 4 of Lycoming MSB No. 566, dated July 11, 2005, lists your crankshaft SN, replace the crankshaft with a crankshaft that is not listed in Table 4 of Lycoming MSB No. 566, dated July 11, 2005.

AEIO-360, IO-360, O-360, LIO-360, and LO-360 Series Engines Manufactured New or Rebuilt, Overhauled, or That Had a Crankshaft Installed After March 1, 1999

(h) For AEIO-360, IO-360, O-360, LIO-360, and LO-360 series engines manufactured new or rebuilt, overhauled, or that had a crankshaft installed after March 1, 1999, do the following:

(1) If Table 3 of Lycoming MSB No. 566, dated July 11, 2005, lists your engine SN, use Table 4 to verify the crankshaft SN.

(2) If Table 4 of Lycoming MSB No. 566, dated July 11, 2005, lists your crankshaft SN, replace the crankshaft with a crankshaft that is not listed in Table 4 of Lycoming MSB No. 566, dated July 11, 2005.

Prohibition Against Installing Certain Crankshafts

(i) After the effective date of this AD, do not install any crankshaft that has a SN listed in Table 4 of Lycoming MSB No. 566, dated July 11, 2005, into any engine.

Alternative Methods of Compliance (AMOCs)

(j) The Manager, New York Aircraft Certification Office, has the authority to approve AMOCs for this AD if requested using the procedures found in 14 CFR 39.19.

Related Information

(k) None.

Material Incorporated by Reference

(l) You must use Lycoming Mandatory Service Bulletin No. 566, dated July 11, 2005, to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Lycoming, 652 Oliver Street, Williamsport, PA 17701; telephone (570) 323-6181; fax (570) 327-7101, or on the Internet at *http://www.Lycoming.Textron.com* for a copy of this service information. You may review copies at the Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-0001, on the Internet at *http://dms.dot.gov*, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: *http://www.archives.gov/federal-register/cfr/ibr-locations.html*.

Issued in Burlington, Massachusetts, on September 9, 2005.
Jay J. Pardee,
Manager, Engine and Propeller Directorate, Aircraft Certification Service.
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