

# EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

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

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*We post Emergency ADs on the internet at "av-info.faa.gov"*

**DATE: October 1, 2002**

**AD #: 2002-20-51**

Send to all U.S. owners and operators of Textron Lycoming AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 series reciprocating engines. These engines are used on, but not limited to, the following aircraft:

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Aero Commander. (500), (500-B), (500-E), (500-U)

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Aero Mercantil. Gavilan.

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Aerofab. Renegade 250.

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Bellanca Aircraft. Aries T-250

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Britten-Norman. (BN-2).

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Cessna Aircraft. Skylane C-182, Stationair C-206, Turbo Skylane T182T, Turbo Stationair T-206

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Christen. Pitts (S-2S), (S-2B).

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Commander Aircraft. 114TC, 114B

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DeHavilland. (DH-114-2X)

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Dornier. (DO-28-B1)

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Evangel-Air.

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Extra-Flugzeugbau. Extra 300.

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Found Bros. (FBA-2C), Centennial (100)

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Gippsland. GA-200.

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Helio. Military (H-250).

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King Engineering. Angel.

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Maule. MT-7-260, M-7-260, MX-7-235, MT-7-235, M7-235, Star

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Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235).

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Mooney Aircraft. "TLS" M20M.

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Moravan. Zlin-50L

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Pilatus Britten-Norman. Islander (BN-2A-26), Islander (BN-2A-27), Islander II (BN-2B-26), Islander (BN-2A-21), Trislander (BN-2A-Mark III-2), Islander (BN-2B).

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Piper Aircraft. 700P Aerostar, Aerostar 600A, Aerostar 601B, Aerostar 601P, Apache (PA-23 "235"), Aztec (PA-23 "250"), Aztec (PA-23 "250"), Comanche (PA-24 "250"), Comanche (PA-24 "260"), Aztec F, Aztec C (PA-23 "250", Cherokee (PA-24 "250"), Cherokee (PA-28 "235"), Cherokee Six (PA-32 "260", Cherokee Six (PA-32-300). "LANCE", Comanche (PA-24 "150"), Comanche (PA-24 "250"), Comanche (PA-24), Comanche (PA-24 "260"), Comanche 260, Mirage (PA-46-350P, Navajo (PA-31), Navajo (PA-31-300), Navy Aztec (PA-23 "250"), Pawnee (PA-24 "235"), Pawnee (PA-25 "260"), Saratoga (PA-32-300), Brave 300, Sequoia 602P, T-1020, T35, Turbo Aztec (PA-23-250), Turbo Saratoga TC (PA-32-301T)

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S.O.C.A.T.A. Rallye 235CA., Rallye 235GT, Rallye 235C, TB-20

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This Emergency Airworthiness Directive (AD) is prompted by two recent failures of zinc-plated crankshaft gear retaining bolts with one failure resulting in two fatalities. Since 1999, when the FAA issued AD 99-03-05 that was applicable to O-540-F series engines installed on Robinson R44 helicopters, five failures have occurred on fixed-wing airplanes. This condition, if not corrected, could result in loss of all engine power and possible forced landing.

### **Manufacturer's Service Information**

The FAA has reviewed and approved the technical contents of Lycoming Service Bulletin (SB) No. 554, dated September 30, 2002, that specifies suspect engines by serial number, and describes procedures for replacing the existing crankshaft gear retaining bolt.

### **FAA's Determination of an Unsafe Condition and Required Actions**

Since an unsafe condition has been identified that is likely to exist or develop on other Textron Lycoming AEIO-540, IO-540, O-540, LTIO-540, and TIO-540 series reciprocating engines of the same type design, this AD requires replacing certain crankshaft gear retaining bolts within 10 hours time-in-service (TIS) after receipt of this AD, or within 7 days after receipt of this AD, whichever is earlier. The actions must be done in accordance with the service bulletin described previously. This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this emergency AD.

### **2002-20-51 Textron Lycoming: Docket No. 2002-NE-31-AD**

### **Applicability**

This airworthiness directive (AD) is applicable to all Textron Lycoming AEIO-540, IO-540, LTIO-540, O-540, and TIO-540 series reciprocating engines with crankshaft gear retaining bolts, part number (P/N) STD-2209 installed, except engines with single-drive dual magnetos and O-540-F series engines to which AD 99-03-05 applies. These engines are installed on, but not limited to the following aircraft:

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Aero Commander. (500), (500-B), (500-E), (500-U)

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Aero Mercantil. Gavilan.

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Aerofab. Renegade 250.

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Bellanca Aircraft. Aries T-250

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Britten-Norman. (BN-2).

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Cessna Aircraft. Skylane C-182, Stationair C-206, Turbo Skylane T182T, Turbo Stationair T-206

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Christen. Pitts (S-2S), (S-2B).

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Commander Aircraft. 114TC, 114B

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DeHavilland. (DH-114-2X)

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Dornier. (DO-28-B1)

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Evangel-Air.

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Extra-Flugzeugbau. Extra 300.

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Found Bros. (FBA-2C), Centennial (100)

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Gippsland. GA-200.

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Helio. Military (H-250).

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King Engineering. Angel.

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Maule. MT-7-260, M-7-260, MX-7-235, MT-7-235, M7-235, Star

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Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235).

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Mooney Aircraft. "TLS" M20M.

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Moravan. Zlin-50L

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Pilatus Britten-Norman. Islander (BN-2A-26), Islander (BN-2A-27), Islander II (BN-2B-26), Islander (BN-2A-21), Trislander (BN-2A-Mark III-2), Islander (BN-2B).

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Piper Aircraft. 700P Aerostar, Aerostar 600A, Aerostar 601B, Aerostar 601P, Apache (PA-23 "235"), Aztec (PA-23 "250"), Aztec (PA-23 "250"), Comanche (PA-24 "250"), Comanche (PA-24 "260"), Aztec F, Aztec C (PA-23 "250", Cherokee (PA-24 "250"), Cherokee (PA-28 "235"), Cherokee Six (PA-32 "260", Cherokee Six (PA-32-300). "LANCE", Comanche (PA-24 "150"), Comanche (PA-24 "250"), Comanche (PA-24), Comanche (PA-24 "260"), Comanche 260, Mirage (PA-46-350P, Navajo (PA-31), Navajo (PA-31-300), Navy Aztec (PA-23 "250"), Pawnee (PA-24 "235"), Pawnee (PA-25 "260"), Saratoga (PA-32-300), Brave 300, Sequoia 602P, T-1020, T35, Turbo Aztec (PA-23-250), Turbo Saratoga TC (PA-32-301T)

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S.O.C.A.T.A. Rallye 235CA., Rallye 235GT, Rallye 235C, TB-20

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**Note 1:** This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

## **Compliance**

Compliance with this AD is required within 10 hours TIS after receipt this Emergency AD or 7 days after receipt this Emergency AD, whichever is earlier, unless already done.

To prevent loss of all engine power and possible forced landing, do the following:

### **Engines Listed by SN**

(a) if your engine SN is listed in Table 1 of Lycoming SB No. 554, dated September 30, 2002, replace the crankshaft gear retaining bolt in accordance with Lycoming SB No. 554, dated September 30, 2002.

### **Bolts That Have Been Replaced During Maintenance or Overhaul**

(b) If the bolt was replaced or the engine was overhauled between November 27, 1996 and November 10, 1998, replace the bolt in accordance with Lycoming SB No. 554, dated September 30, 2002.

### **Prohibition Against Installing Zinc-plated Bolts**

(c) After the receipt of this AD, do not install any zinc-plated crankshaft gear retaining bolt, P/N STD-2209, onto any engine listed in this AD. Zinc-plated bolts are gold in color.

### **Alternative Methods of Compliance**

(d) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, New York Aircraft Certification Office (NYACO). Operators must submit their requests through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, NYACO.

**Note 2:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the NYACO.

(e) Special flight permits may be issued in accordance with §§ 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be done.

(f) Copies of the applicable service information may be obtained from Lycoming, a Textron Company, 652 Oliver Street, Williamsport, PA 10071; telephone (570) 323-6181. This information may also be obtained electronically on “[www.lycoming.textron.com](http://www.lycoming.textron.com)”. This information may be examined, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

(g) **Emergency AD 2002-20-51, issued October 1, 2002, becomes effective upon receipt.**

**FOR FURTHER INFORMATION CONTACT:** Norman Perenson, Aerospace Engineer, New York Aircraft Certification Office, FAA, Engine and Propeller Directorate, 10 Fifth Street, 3<sup>rd</sup> floor, Valley Stream, NY 11581-1200; telephone (516) 256-7537; fax (516) 568-2716.

Issued in Burlington, Massachusetts on October 1, 2002.

Jay J. Pardee,  
Manager, Engine and Propeller Directorate,  
Aircraft Certification Service.