# FEDERAL AVIATION ADMINISTRATION
# AIRWORTHINESS DIRECTIVES
# SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

## BIWEEKLY 2000-15

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U.S. Department of Transportation
Federal Aviation Administration
Regulatory Support Division
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## SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

| AD No. | Information | Manufacturer | Applicability |
|---|---|---|---|

Info: E - Emergency; COR - Correction; S - Supersedes; R - Revision; + - See AD for additional information

| | | | |
|---|---|---|---|
| **Biweekly 2000-01** | | | |
| 99-27-02 | | Cessna | 170B, 172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, + |
| 99-27-12 | S 99-26-13 | Agusta | Rotorcraft: A109A and A109A II |
| **Biweekly 2000-02** | | | |
| 98-19-15 R1 | R 98-19-15 | Fairchild | SA226-T, SA226-T(B), SA226-AT, SA226-TC + |
| 99-26-04 | | Kaman | Rotorcraft: K-1200 |
| 2000-01-06 | | Rolladen | Glider: LS6-c Sailplane |
| 2000-01-09 | | General Electric | Engine: CJ610, CF700 |
| 2000-01-10 | S 98-08-07 | Pilatus | PC-7 |
| 2000-01-11 | S 99-17-07 | Eurocopter Deutschland | Rotorcraft: MBB-BK 117 A-1, A-3, A-4, B-1, B-2, C-1 |
| 2000-01-16 | S 75-23-08 R5 | Cessna | T310P, T310Q, T310R, 320, 320A, 320B, 320C, 320D + |
| 2000-01-19 | | Eurocopter Deutschland | Rotorcraft: EC 135 P1, EC 135 T1 |
| 2000-02-12 | E | Bell | Rotorcraft: 407 |
| **Biweekly 2000-03** | | | |
| 2000-02-09 | | Agusta | Rotorcraft: AB412 |
| 2000-02-14 | S 98-13-10 | Cessna | 182S |
| 2000-02-16 | | Short Brothers | SC-7 Series 2 and SC-7 Series 3 |
| 2000-02-32 | S 98-12-21 | Eurocopter France | Rotorcraft: SA.315B |
| **Biweekly 2000-04** | | | |
| 99-25-08 | | MD Helicopters | Rotorcraft: 500N |
| 2000-02-12 | | Bell | Rotorcraft: 407 |
| 2000-02-15 | | Raytheon | 65-90, 65-A90, B90, and C90 |
| 2000-02-25 | | Mitsubishi | MU-2B Series |
| 2000-02-26 | | Harbin | Y12 IV |
| 2000-02-27 | | Empresa | EMB-110P1 and EMB-110P2 |
| 2000-02-28 | | Aerospace Technologies | N22B and N24A |
| 2000-02-29 | | Socata | TBM 700 |
| 2000-02-30 | | Twin Commander | 600 Series |
| 2000-02-31 | | Pilatus | PC-12 and PC-12/45 |
| 2000-03-06 | | Eurocopter France | Rotorcraft: SE 3130, SA 3180, SE 313B, SA 318B, + |
| 2000-03-17 | S 97-23-01 | Fairchild | SA226 and SA227 Series |
| 2000-03-18 | | Partenavia | AP68TP 300 “Sartacus” and AP68TP 600 “Viator” |
| 2000-03-19 | | Industrie Aeronautiche | Piaggio P-180 |
| 2000-04-01 | | Cessna | 172R, 172S, 182S, 206H, and T206H |
| 2000-04-10 | | Hoffmann | Propeller: HO27( ) and HO4/27 Series |
| 2000-04-12 | | Cameron | Appliance: Titanium Propane Cylinders |
| **Biweekly 2000-05** | | | |
| 98-21-21 | R1 | Bob Fields Aerocessories | Appliance: Electric inflatable door seals |
| 2000-03-09 | | Cessna | 560 Series |
| 2000-04-16 | | Alexander Schleicher | ASH 25M and ASH 26E sailplanes |
| 2000-04-26 | | Alexander Schleicher | ASW-27 sailplanes |
| 2000-05-11 | | Eurocopter France | Rotorcraft: SA.315B, SA.316B, SA.316C, SA 318B, + |

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| **Biweekly 2000-06** | | | |
| 2000-04-20 | | Bell | Rotorcraft: 407 |
| 2000-04-21 | | MD Helicopters | Rotorcraft: MD600N |
| 2000-04-24 | | Honeywell (AlliedSignal) | Appliance: Auxiliary Power Units |
| 2000-04-25 | | Bell | Rotorcraft: 407 |
| 2000-05-15 | | Eurocopter France | Rotorcraft: AS355N |
| 2000-05-16 | | Sikorsky | Rotorcraft: S-61 |
| 2000-05-17 | S 99-19-23 | Eurocopter France | Rotorcraft: EC 120B |
| 2000-05-23 | | Ayres | S-2R, S2R-G1, S2R-G5, S2R-G6, S2R-G10, S2R-R3S + |
| 2000-05-24 | | Honeywell International | Appliance: KAP 140 or KFC 225 autopilot system |
| 2000-06-01 | | Cessna | 150F, 150G, 150H, 150J, 150K, 150L, 150M, A150K, + |
| 2000-06-02 | | Dornier | 228-100, 228-101, 228-200, 228-201, 228-202, + |
| 2000-06-03 | | Bombardier | DHC-6-1, DHC-6-100, DHC-6-200, DHC-6-300 |
| 2000-06-04 | | Fairchild | SA226-T, SA226-AT, SA226-T(B), SA227-AT, + |
| 2000-06-06 | | The New Piper | PA-31, PA-31-300, PA-31-325, PA-31-350, PA-31P, + |
| **Biweekly 2000-07** | | | |
| 2000-06-05 | | Eurocopter France | Rotorcraft: SA330F, SA330G, SA330J, AS332C, + |
| 2000-06-07 | | Eurocopter Deutschland | Rotorcraft: MBB-BK 117 |
| 2000-07-03 | | Robinson Helicopter | Rotorcraft: R44 |
| **Biweekly 2000-08** | | | |
| 2000-04-15 | | Bell Helicopter | 222, 222B, 222U, and 230 |
| 99-23-22 R2 | Rescission | Transport Category Airplanes | Appliance: Mode “C” Transponder |
| 2000-06-09 | | Turbomeca | Engine: Arrius 1A Series Turboshaft |
| 2000-06-11 | | Turbomeca | Engine: Makila 1A and 1A1 Turboshaft |
| 2000-06-12 | | Turbomeca | Engine: Artouste III B-B1-D Series Turboshaft |
| 2000-07-27 | | Transport Category Airplanes | Appliance: Honeywell Air Data Inertial Reference Unit |
| 2000-08-02 | | Agusta | Rotorcraft: A109A, A109AII, and A109C |
| 2000-08-09 | | Robinson Helicopter | Rotorcraft: R22 |
| **Biweekly 2000-09** | | | |
| 86-15-10 | R2 | Eurocopter France | Rotorcraft: AS-350B, BA, B1, B2, C, D, and D1, + |
| 95-19-04 R1 | Rescission | Learjet | 35, 35A, 36, 36A, 55, 55B, and 55C |
| 2000-06-10 | | Bell Helicopter | Rotorcraft: 407 |
| 2000-08-04 | | Robinson Helicopter | Rotorcraft: R44 |
| 2000-08-06 | | Eurocopter France | Rotorcraft: SA-366G1 |
| 2000-08-05 | S 99-02-09 | Agusta SpA | Rotorcraft: A109C and A109K2 |
| 2000-08-16 | | Eurocopter Deutschland | Rotorcraft: MBB-BK 117 A-1, A-3, A-4, B-1, B-2, and C-1 |
| 2000-08-22 | | MD Helicopters Inc. | Rotorcraft: 369D, 369E, and 500N, 600N |
| 2000-08-51 | E | Teledyne Continental | Engine: IO-360, TSIO-360, LTSIO-360, O-470, IO-470, + |
| 2000-08-52 | E, S 98-24-15 | Bell Helicopter | Rotorcraft: 204B, 205A, 205A-1, 205B, and 212 |
| 2000-08-53 | E, S 89-17-03 | Bell Helicopter | Rotorcraft: HH-1K, TH-1F, TH-1L, UH-1A, UH-1B, + |
| **Biweekly 2000-10** | | | |
| 2000-09-06 | | Maule Aerospace | MX-7-160C, M-7-260C, M-7-420AC, MX-7-180C, + |
| 2000-09-15 | | Mitsubishi Heavy Industries | MU-2B, MU-2B-10, MU-2B-15, MU-2B-20, MU-2B-25, + |
| 2000-10-06 | | MD Helicopters Inc | Rotorcraft: MD900 |
| 2000-10-07 | | Eurocopter Deutschland | Rotorcraft: EC 135 |
| 2000-10-08 | | Eurocopter France | Rotorcraft: SA-365N1, AS-365N2, and SA-366G1 |

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| **Biweekly 2000-11** | | | |
| 99-15-04 R1 | R1 | The New Piper Aircraft, Inc. | PA-46-310P and PA-46-350P |
| 2000-10-05 | | Eurocopter France | Rotorcraft: SE.3160, SA.316B, SA.316C, SA.319B, + |
| 2000-10-08 | COR | Eurocopter France | Rotorcraft: SA-365N1, AS-365N2, and SA-366G1 |
| 2000-10-09 | | Eurocopter France | Rotorcraft: AS350B, BA, B1, B2, B3, D, And AS355E, +, |
| 2000-10-10 | S 98-14-01 | Eurocopter France | Rotorcraft:AS-350B, BA, B1, B2, and D, AS-355E, F, +, |
| 2000-10-13 | | Eurocopter France | Rotorcraft: SA-365N, SA-365N1, AS-365N2, + |
| 2000-10-14 | | Bell Helicopter Textron | Rotorcraft: 222, 222B, 222U, and 230 |
| 2000-10-22 | | Revo, Incorporated | Lake LA-4, Lake LA-4A, Lake LA-4P, Lake LA-4-200, + |
| 2000-11-52 | E | Sikorsky Aircraft Corp. | Rotorcraft: S-76 Series |
| **Biweekly 2000-12** | | | |
| 2000-11-04 | | Commander Aircraft | 114TC |
| 2000-11-05 | | Air Tractor Incorporated | AT-301, AT-401, and AT-501 |
| 2000-11-14 | | Pilatus Aircraft Ltd. | PC-12 AND PC-12/45 |
| 2000-11-16 | S 97-17-03 | Ayres Corporation | S-2R, S2R-R1820, S2R-T34, SR2-T15, S2R-G1, + |
| 2000-11-17 | S 98-10-04 | Eurocopter France | Rotorcraft: SA-365N1, AS-365N2, and SA-366G1 |
| 2000-11-18 | S 99-21-24 | Eurocopter France | Rotorcraft: SA-365C, C1, C2, and N1, AS-365N2 and + |
| 2000-11-51 | E | Teledyne Continental Motors | Engine: (TCM) O-300 Series, IO-360 Series, + |
| 2000-12-03 | | Eurocopter France | Rotorcraft: AS332L2 |
| **Biweekly 2000-13** | | | |
| 2000-12-09 | | Sikorsky Aircraft | Rotorcraft: S-76A |
| **Biweekly 2000-14** | | | |
| 99-05-13 | Withdrawal | Raytheon Aircraft | 17, 18, 19, 23, 24, 33, 35, 36/A36, A36TC/B36TC, 45, 50, + |
| 2000-13-06 | S 2000-05-16 | Sikorsky Aircraft | Rotorcraft: S-61 |
| 2000-13-08 | S 98-15-25 | Eurocopter Deutschland | Rotorcraft: EC 135 |
| 2000-14-08 | | New Piper Aircraft | PA-42, PA-42-720, PA-42-720R, and PA-42-1000 |
| 2000-14-51 | E | Air Tractor | AT-501, AT-502, and AT-502A |
| **Biweekly 2000-15** | | | |
| 2000-09-15 | R1 | Mitsubishi Heavy Industries | MU-2B, MU-2B-10, MU-2B-15, MU-2B-20, MU-2B-25, + |
| 2000-14-14 | | BFGoodrich | Appliance: Main brake assemblies |
| 2000-14-16 | S 99-06-15 | Bell Helicopter | Rotorcraft: 407 |
| 2000-15-03 | | Stemme GMBH | Glider: S10-V and S10-VT |
| 2000-15-52 | E, S 2000-08-52 | Bell Helicopter | Rotorcraft: 204B, 205A, 205A-1, 205B, and 212 |

**MITSUBISHI HEAVY INDUSTRIES, LTD.**
**AIRWORTHINESS DIRECTIVES**
**SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS**

**REVISION Issued July 2000**

**2000-09-15 R1 MITSUBISHI HEAVY INDUSTRIES, LTD.:** Amendment 39-11819; Docket No. 97-CE-21-AD; Revises AD 2000-09-15, Amendment 39-11724.

(a) **What airplanes are affected by this AD?** This AD applies to all serial numbers of the following Mitsubishi airplane models, certificated in any category: MU-2B, MU-2B-10, MU-2B-15, MU-2B-20, MU-2B-25, MU-2B-26, MU-2B-26A, MU-2B-30, MU-2B-35, MU-2B-36, MU-2B-36A, MU-2B-40, MU-2B-60

(b) **Who must comply with this AD?** Anyone who wishes to operate any of the above airplanes on the U.S. Register must comply with this AD.

(c) **What problem does this AD address?** The actions specified by this AD are intended to assist in preventing departure from controlled flight while operating in icing conditions.

(d) **What actions must I accomplish to address this problem?** Within 12 calendar months after July 24, 2000 (the effective date of this AD), you must incorporate the following modifications:

(1) Install a pneumatic deice monitoring system. You must use the procedures contained in Test Instrumentation, Inc. Document No. MU2-5001, Rev. E., dated May 21, 1997, and attachment; and Mitsubishi Heavy Industries, Ltd., MU-2 Service Bulletin (SB) No. 232, dated July 2, 1997.

(2) Install a trim-in-motion alerting system and automatic autopilot disconnect system. Use the procedures contained in the following:

(i) Test Instrumentation, Inc. Document No. MU2-1001, Rev. C, dated June 15, 1997, and attachment, or Test Instrumentation, Inc. Document No. MU2-1001, Rev. D, dated December 17, 1997, and attachment; and

(ii) Test Instrumentation, Inc. Document No. MU2-4001, Rev. C, dated June 30, 1997, and attachment, or Test Instrumentation, Inc. Document No. MU2-4001, Rev. F, dated July 14, 1998, and attachment; and

(iii) Mitsubishi MU-2 SB No. 231, dated July 2, 1997.

(3) Install an auto-ignition (re-light) system. Use the procedures contained in the following:

(i) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 226, which incorporates the following pages:

| Pages | Revision Level | Date |
|---|---|---|
| 2 through 11, 13 through 23, 27 through 57, 59, and 61 through 93. | A | January 13, 1997 |
| 1, 12, 24, 25, 26, 58, and 60. | B | October 27, 1997 |

(ii) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 086/74-002, dated November 15, 1995.

(e) **Can I comply with this AD in any other way?** You may use an alternative method of compliance or adjust the compliance time if:

(1) Your alternative method of compliance provides an equivalent level of safety; and

(2) The Manager of one of the following approves your alternative. Submit your request through an FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager:

(i) Small Airplane Directorate, FAA, 901 Locust, Room 301, Kansas City, Missouri 64106;

(ii) Los Angeles Aircraft Certification Office, FAA, 3960 Paramount Boulevard, Lakewood, California 90712; or

(iii) Fort Worth Airplane Certification Office, FAA, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0150.

Note: This AD applies to each airplane 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 airplanes 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 (e) 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 you have not eliminated the unsafe condition, specific actions you propose to address it.

(f) **Where can I get information about any already-approved alternative methods of compliance?** Contact one of the following:

(1) Small Airplane Directorate, FAA, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4132; facsimile: (816) 329-4090;

(2) Los Angeles Aircraft Certification Office, FAA, 3960 Paramount Boulevard, Lakewood, California 90712; telephone: (562) 627-5222; facsimile: (562) 627-5228; or

(3) Fort Worth Airplane Certification Office, FAA, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0150; telephone: (817) 222-5147; facsimile: (817) 222-5960.

(g) **What if I need to fly the airplane to another location to comply with this AD?** The FAA can issue a special flight permit under sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your airplane to a location where you can accomplish the requirements of this AD.

(h) **Are any service bulletins incorporated into this AD by reference?**

(1) You must accomplish the actions required by this AD in accordance with the service bulletins specified below:

(i) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 231, dated July 2, 1997;

(ii) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 232, dated July 2, 1997;

(iii) Test Instrumentation, Inc. Document No. MU2-1001, Rev. C, dated June 15, 1997, and attachment;

(iv) Test Instrumentation, Inc. Document No. MU2-4001, Rev. C, dated June 30, 1997, and attachment;

(v) Test Instrumentation, Inc. Document No. MU2-5001, Rev. E, dated May 21, 1997, and attachment; and

(vi) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 226, which incorporates the following pages:

| Pages | Revision Level | Date |
|---|---|---|
| 2 through 11, 13 through 23, 27 through 57, 59, and 61 through 93. | A | January 13, 1997 |
| 1, 12, 24, 25, 26, 58, and 60. | B | October 27, 1997 |

(vii) Test Instrumentation, Inc. Document No. MU2-1001, Rev. D, dated December 17, 1997, and attachment;

(viii) Test Instrumentation, Inc. Document No. MU2-4001, Rev. F, dated July 14, 1998, and attachment; and

(ix) Mitsubishi Heavy Industries, Ltd., MU-2 SB No. 086/74-002, dated November 15, 1995.

(2) The Director of the Federal Register approved this incorporation by reference under 5 U.S.C. 552(a) and 1 CFR part 51.

(3) You can get copies from Mitsubishi Heavy Industries America, Inc., 15303 Dallas Parkway, suite 685, LB-77, Addison, Texas 75001-4692. You can look at copies at FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

(i) **When does this amendment become effective?** This amendment becomes effective on July 24, 2000.

FOR FURTHER INFORMATION CONTACT: Contact one of the following for questions or more information related to this subject:

- Mr. Scott Sedgwick, Aerospace Engineer, Small Airplane Directorate, FAA, 901 Locust, Room 301, Kansas City, Missouri 64106, telephone: (816) 329-4132; facsimile: (816) 329-4090;
- Mr. Carl Fountain, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, 3960 Paramount Boulevard, Lakewood, California 90712; telephone: (562) 627-5222; facsimile: (562) 627-5228; or
- Ms. Alma Ramirez-Hodge, Aerospace Engineer, FAA, Airplane Certification Office, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0150; telephone: (817) 222-5147; facsimile: (817) 222-5960.

Issued in Kansas City, Missouri, on July 7, 2000.

Michael Gallagher, Manager, Small Airplane Directorate, Aircraft Certification Service.

# BFGOODRICH
# AIRWORTHINESS DIRECTIVES
# APPLIANCE
# SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

**2000-14-14 BFGOODRICH**: Amendment 39-11824. Docket 2000-NM-210-AD.

Applicability: Model BFGoodrich main brake assemblies having part number (P/N) 2-1598-1 or P/N 2-1600-1, as installed on Airbus Model A319 and A320 series airplanes, certificated in any category.

NOTE 1: This AD applies to each airplane 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 airplanes 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 (e) 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: Required as indicated, unless accomplished previously.

To detect and correct thermal oxidation of the main brake assemblies, which could result in deterioration of the main landing gear (MLG) brakes, and consequent reduced braking performance, accomplish the following:

Initial and Repetitive Inspections

(a) Within 10 days after the effective date of this AD, or within 500 flight cycles after replacement of any brake assembly, whichever occurs later: Perform an inspection to determine the length of the wear indicator pins of each main brake assembly of the MLG, in accordance with the Accomplishment Instructions of BFGoodrich Service Bulletin 2-1598-32-2 or 2-1600-32-3, both dated June 16, 2000, as applicable. Repeat the inspection thereafter for each brake assembly as specified by paragraph (a)(1), (a)(2), (a)(3), or (a)(4), as applicable.

(1) If the length of both wear indicator pins is greater than 2.00 inches, repeat the inspection thereafter at intervals not to exceed 500 flight cycles.

(2) If the length of the shortest wear indicator pin is between 2.00 and 1.50 inches, repeat the inspection thereafter at intervals not to exceed 250 flight cycles.

(3) If the length of the shortest wear indicator pin is between 1.49 and 1.0 inches, repeat the inspection thereafter at intervals not to exceed 100 flight cycles.

(4) If the length of the shortest wear indicator pin is between 0.31 and 0.99 inches, repeat the inspection thereafter at intervals not to exceed 10 days.

(5) If the length of the shortest wear indicator pin is less than 0.31 inches, no further action is required by this paragraph until the brake is replaced.

Follow-on Inspections and Corrective Actions

(b) During any inspection required by paragraph (a) of this AD, if the length of the shortest wear indicator pin measures between 0.31 and 0.70 inches: Prior to further flight, perform a one-time special detailed inspection of the rotor disks located in the center of the heat sinks of the main brake assemblies of the MLG to detect the level of oxidation on the main brake assemblies in accordance with the Accomplishment Instructions of BFGoodrich Service Bulletin 2-1598-32-2 or 2-1600-32-3, both dated June 16, 2000, as applicable. The inspection required by this paragraph is required only the first time the length of the shortest wear indicator pin measures between 0.31 and 0.70 inches.

(1) If no oxidation is detected, or if oxidation within the limits specified in the applicable service bulletin is detected on any brake assembly, continue the inspections required by paragraph (a) of this AD.

(2) If any oxidation exceeding the limits specified in the applicable service bulletin is detected on any brake assembly, prior to further flight, replace the brake assembly with a new brake assembly in accordance with the applicable service bulletin. Within 500 flight cycles following such replacement, continue the inspections required by paragraph (a) of this AD.

NOTE 2: For the purposes of this AD, a special detailed inspection is defined as: "An intensive examination of a specific item(s), installation, or assembly to detect damage, failure, or irregularity. The examination is likely to make extensive use of specialized inspection techniques and/or equipment. Intricate cleaning and substantial access or disassembly procedures may be required."

(c) During any inspection required by paragraph (a) of this AD, if the length of the shortest wear indicator pin measures 0.30 inches or less: Prior to further flight, perform a one-time special detailed inspection of the rotor disks located in the center of the heat sinks of the main brake assemblies of the MLG to detect the level of oxidation on the main brake assemblies in accordance with the Accomplishment Instructions of BFGoodrich Service Bulletin 2-1598-32-2 or 2-1600-32-3, both dated June 16, 2000, as applicable. The inspection required by this paragraph is required only the first time the length of the shortest wear indicator pin measures 0.30 inches or less.

(1) If no oxidation is detected, or if oxidation within the limits specified in the applicable service bulletin is detected on any brake assembly, no further action is required by this AD until the brake is replaced in accordance with the FAA-approved maintenance program. Within 500 flight cycles following such replacement, continue the inspections required by paragraph (a) of this AD.

(2) If any oxidation exceeding the limits specified in the applicable service bulletin is detected on any brake assembly, prior to further flight, replace the brake assembly with a new brake assembly in accordance with the applicable service bulletin. Within 500 flight cycles following such replacement, continue the inspections required by paragraph (a) of this AD.

**Spares**

(d) As of the effective date of this AD, no person shall install on any airplane a BFGoodrich main brake assembly having P/N 2-1598-1 or P/N 2-1600-1 if the wear indicator pin measures 0.70 inches or less, unless an inspection to detect oxidation of the brake assembly has been accomplished in accordance with paragraph 3.A.(3) of the Accomplishment Instructions of BFGoodrich Service Bulletin 2-1598-32-2 or 2-1600-32-3, both dated June 16, 2000, as applicable.

**Alternative Methods of Compliance**

(e) 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, International Branch, ANM-116, FAA, Transport Airplane Directorate. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, International Branch, ANM-116.

NOTE 3: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the International Branch, ANM-116.

**Special Flight Permits**

(f) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

**Incorporation by Reference**

(g) Except as provided by paragraph (c)(1) of this AD, the inspections and replacement actions shall be done in accordance with BFGoodrich Service Bulletin 2-1598-32-2, dated June 16, 2000, or BFGoodrich Service Bulletin 2-1600-32-3, dated June 16, 2000; as applicable. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from BFGoodrich Aerospace Wheel & Brake Systems Division, P.O. Box 340, Troy, Ohio, 45373. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Effective Date

(h) This amendment becomes effective on August 7, 2000.

FOR FURTHER INFORMATION CONTACT: Norman B. Martenson, Manager, International Branch, ANM-116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2110; fax (425) 227-1149.

Issued in Renton, Washington, on July 13, 2000.
Donald L. Riggin, Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

## BELL HELICOPTER TEXTRON CANADA
## AIRWORTHINESS DIRECTIVES
## SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

**2000-14-16 BELL HELICOPTER TEXTRON CANADA:** Amendment 39-11827. Docket No. 2000-SW-10-AD. Supersedes AD 99-06-15, Amendment 39-11111, Docket No. 99-SW-16-AD.

Applicability: Model 407 helicopters, certificated in any category.

**NOTE 1**: This AD applies to each helicopter identified in the preceding applicability provision, regardless of whether it has been otherwise modified, altered, or repaired in the area subject to the requirements of this AD. For helicopters 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: Required as indicated, unless accomplished previously.

To prevent the tail rotor blades from striking the tailboom, separation of the aft section of the tailboom with the tail rotor gearbox and vertical fin, and subsequent loss of control of the helicopter, accomplish the following:

(a) Before further flight:

(1) Install a stop that limits the maximum distance that the left pedal can travel in accordance with Part I of the Accomplishment Instructions in Bell Helicopter Textron Canada Technical Bulletin 407-98-13, dated December 12, 1998 (TB).

(2) Adjust the rigging of the directional controls in accordance with Part II of the Accomplishment Instructions in the TB.

(3) Install the airspeed limitation placard shown in Figure 1 of this AD so that it completely covers and obscures the airspeed limitation placard, P/N 407-070-201-103. Ensure that the replacement placard is at least 2 1/16-inches tall and 3 9/16-inches long.

| **407 AIRSPEED LIMITATIONS -KNOTS- IAS** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **OAT** | **PRESSURE ALTITUDE FT X 1000** | | | | | | | | | | |
| **C°** | **0** | **2** | **4** | **6** | **8** | **10** | **12** | **14** | **16** | **18** | **20** |
| **52** | **98** | **93** | **88** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **40** | **100** | **95** | **91** | **86** | **81** | **76** | **-** | **-** | **-** | **-** | **-** |
| **20** | **100** | **100** | **95** | **90** | **85** | **80** | **76** | **71** | **66** | **61** | **-** |
| **0** | **100** | **100** | **100** | **95** | **90** | **85** | **80** | **75** | **70** | **65** | **60** |
| **-20** | **100** | **100** | **100** | **100** | **95** | **90** | **85** | **80** | **75** | **70** | **65** |
| **-40** | **97** | **93** | **88** | **83** | **79** | **74** | **70** | **65** | **61** | **-** | **-** |
| **MAXIMUM AUTOROTATION VNE 100 KIAS** | | | | | | | | | | | |

**FIGURE 1**

(4) Install a redline at a Vne of 100 KIAS on all airspeed indicators. Remove or obscure any previously installed lines or arcs above 100 KIAS. If the redline is installed on the instrument glass, also install a slippage mark on the glass and on the instrument case.

(5) Add the following statement to the Limitations section of the Rotorcraft Flight Manual (RFM):

When operating at an airspeed of 60 to 100 KIAS, maintain yaw trim within one ball diameter of the centered position of the turn and bank (slip) indicator, and avoid sudden or large directional control inputs in flight.

(6) Mark the airspeed limitations placard in Figure 1-3 in the RFM to indicate that it has been superseded by this AD, and insert a copy of this AD into the RFM. Also, mark the airspeed indicator in Figure 1-5 of the RFM to indicate a Vne of 100 KIAS.

(7) This AD revises the limitations section of BHTC Model 407 RFM by replacing sheet 1 of Figure 1-3 in the RFM with Figure 1 of this AD, revising sheet 3 of Figure 1-5 of the RFM, and adding an operational limitation for allowable yaw trim and directional control input.

(8) Report any uncommanded right yaw, uncommanded movement of the pedals during flight, or tail rotor blade contact with the tailboom within 24 hours of the occurrence to the Manager, Regulations Group, telephone (817) 222-5111. Reporting requirements have been approved by the Office of Management and Budget and assigned OMB control number 2120-0056.

(b) Before further flight after January 31, 2001:

(1) Remove and replace the existing tail rotor with tail rotor installation, P/N 407-012-100-109, in accordance with Part II of Bell Helicopter Textron Technical Bulletin 407-99-17, dated April 15, 1999.

(2) Modify the vertical fin and horizontal stabilizer in accordance with Bell Helicopter Textron Technical Bulletin No. 407-96-2, Revision A, dated March 11, 1997.

(3) Install the tail rotor airspeed-actuated pedal stop kit, install the new airspeed limitation decals, and remove the temporary instrument markings and RFM changes in accordance with the Accomplishment Instructions in Parts I, II, and III of Bell Helicopter Textron Alert Service Bulletin 407-99-33, Revision A, dated March 10, 2000.

(c) Accomplishing the requirements of paragraph (b) of this AD is terminating action for the requirements of this AD.

(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, Regulations Group, Rotorcraft Directorate, FAA. Operators shall submit their requests through an FAA Principal Maintenance Inspector, who may concur or comment and then send it to the Manager, Regulations Group.

**NOTE 2:** Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Regulations Group.

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

(f) The modifications shall be done in accordance with Parts I and II of the Accomplishment Instructions in Bell Helicopter Textron Canada Technical Bulletin 407-98-13, dated December 12, 1998; Part II of Bell Helicopter Textron Technical Bulletin 407-99-17, dated April 15, 1999; Bell Helicopter Textron Technical Bulletin No. 407-96-2, Revision A, dated March 11, 1997; and Parts I, II, and III of Bell Helicopter Textron Alert Service Bulletin 407-99-33, Revision A, dated March 10, 2000. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Bell Helicopter Textron Canada, 12,800 Rue de l'Avenir, Mirabel, Quebec JON1LO, telephone (800) 463-3036, fax (514) 433-0272. Copies may be inspected at the FAA, Office of the Regional Counsel, Southwest Region, 2601 Meacham Blvd., Room 663, Fort Worth, Texas; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) This amendment becomes effective August 29, 2000.

**NOTE 3:** The subject of this AD is addressed in Transport Canada (Canada) AD CF-98-36R7, dated February 1, 2000.

**FOR FURTHER INFORMATION CONTACT:**

Sharon Miles, Aviation Safety Engineer, FAA, Rotorcraft Directorate, Regulations Group, Fort Worth, Texas 76193-0111, telephone (817) 222-5122, fax (817) 222-5961.

Issued in Fort Worth, Texas, on July 13, 2000.

Henry A. Armstrong, Manager, Rotorcraft Directorate, Aircraft Certification Service.

## STEMME GMBH & CO. KG
### AIRWORTHINESS DIRECTIVES
### SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

**2000-15-03 STEMME GMBH & CO. KG:** Amendment 39-11832; Docket No. 99-CE-25-AD.

(a) **What sailplanes are affected by this AD?** This AD applies to Models S10-V and S10-VT sailplanes, all serial numbers, certificated in any category.

(b) **Who must comply with this AD?** Anyone who wishes to operate any of the above sailplanes on the U.S. Register must comply with this AD.

(c) **What problem does this AD address?** The actions of this AD are intended to prevent certain propeller blade suspension forks from cracking, which could result in the loss of a propeller blade during flight with possible lateral imbalance and loss of thrust.

(d) **What actions must I accomplish to address this problem?** To address this problem, you must accomplish the following:

| ACTION | WHEN | PROCEDURES |
|---|---|---|
| (1) Removal, exchange, and reinstallation:<br>(i) Remove from the sailplane any propeller blade suspension fork that is not part number (P/N) 10AP-V88.<br>(ii) Exchange (through the manufacturer) this propeller blade suspension fork for a propeller blade suspension fork that is P/N 10AP-V88.<br>(iii) Install the improved design propeller blade suspension fork (P/N 10AP-V88) on the sailplane. | All actions within 10 hours time-in-service (TIS) after August 4, 2000 (the effective date of this AD). | (1) Accomplish each action accordingly, as follows:<br>(i) Removal: In accordance with the instructions in the maintenance manual.<br>(ii) Exchange: In accordance with the instructions in Stemme Service Bulletin No. A31-10-051, Amendment-Index: 05.a, dated December 6, 1999.<br>(iii) Installation: In accordance with the instructions in the maintenance manual. |
| (2) Modify the propeller gearbox suspension. | Within 10 hours TIS after August 4, 2000 (the effective date of this AD). | In accordance with the instructions in Stemme Service Bulletin No. A31-10-051, Amendment-Index: 05.a, dated December 6, 1999. |
| (3) Dynamically balance the propeller. | Prior to further flight after the installation and modification required in paragraphs (d)(1)(i), (d)(1)(ii), (d)(1)(iii), and (d)(2) of this AD. | In accordance with the instructions in Stemme Procedural Instruction A17-10AP-V/2-E "Dynamic balancing of the Stemme S10 powered glider propeller in the S10-V and S10-VT models." |

| ACTION | WHEN | PROCEDURES |
|---|---|---|
| (4) Do not install a propeller blade suspension fork that is not P/N 10AP-V88 on any affected sailplane. | As of August 4, 2000 ( the effective date of this AD). | Not Applicable. |

(e) **Can I comply with this AD in any other way?**

(1) You may use an alternative method of compliance or adjust the compliance time if:

(i) Your alternative method of compliance provides an equivalent level of safety; and

(ii) The Manager, Small Airplane Directorate, approves your alternative. Submit your request through an FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Small Airplane Directorate.

(2) Alternative methods of compliance that were approved in accordance with AD 98-15-24 are not considered approved in accordance with this AD.

Note: This AD applies to each sailplane 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 sailplanes 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 (e) 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 you have not eliminated the unsafe condition, specific actions you propose to address it.

(f) **Where can I get information about any already-approved alternative methods of compliance?** Contact Mr. Mike Kiesov, Aerospace Engineer, FAA, Small Airplane Directorate, 1201 Walnut, suite 900, Kansas City, Missouri 64106; telephone: (816) 426-6934; facsimile: (816) 426-2169.

(g) **What if I need to fly the sailplane to another location to comply with this AD?** The FAA can issue a special flight permit under sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your sailplane to a location where you can accomplish the requirements of this AD.

(h) **Are any service bulletins incorporated into this AD by reference?**

(1) Actions required by this AD must be done as follows:

(i) Modification: In accordance with Stemme Service Bulletin No. A31-10-051, Amendment-Index: 05.a, dated December 6, 1999; and

(ii) Balancing: In accordance with Stemme Procedural Instruction A17-10AP-V/2-E "Dynamic balancing of the Stemme S10 powered glider propeller in the S10-V and S10-VT models."

(2) The Director of the Federal Register approved this incorporation by reference under 5 U.S.C. 552(a) and 1 CFR part 51.

(3) You can get copies from Stemme GmbH & Co. KG, Gustav-Meyer-Allee 25, D-13355 Berlin, Germany; telephone: 49.33.41.31.11.70; facsimile: 49.33.41.31.11.73.

(4) You can look at copies at FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

(i) **When does this amendment become effective?** This amendment becomes effective on August 4, 2000.

FOR FURTHER INFORMATION CONTACT: Mr. Mike Kiesov, Aerospace Engineer, FAA, Small Airplane Directorate, 1201 Walnut, suite 900, Kansas City, Missouri 64106; telephone: (816) 426-6934; facsimile: (816) 426-2169.

Issued in Kansas City, Missouri, on July 17, 2000.
Marvin R. Nuss, Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

## BELL HELICOPTER TEXTRON INC.
## AIRWORTHINESS DIRECTIVES
## SMALL AIRCRAFT, ROTORCRAFT, GLIDERS, BALLOONS, & AIRSHIPS

**2000-15-52 BELL HELICOPTER TEXTRON INC.**: Docket No. 2000-SW-28-AD. Supersedes Emergency AD 2000-08-52, Docket No. 2000-SW-20-AD, and AD 98-24-15, Amendment 39-10900, Docket No. 97-SW-20-AD.

**Applicability:** Model 204B, 205A, 205A-1, 205B, and 212 helicopters, with main rotor mast (mast), part number (P/N) 204-011-450-001, -007, -105, -113, or -119, or main rotor trunnion (trunnion), P/N 204-011-105-001 or -103, installed, certificated in any category.

**NOTE 1**: This AD applies to each helicopter identified in the preceding applicability provision, regardless of whether it has been otherwise modified, altered, or repaired in the area subject to the requirements of this AD. For helicopters 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 (i) 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:** Required as indicated, unless accomplished previously.

**NOTE 2:** This AD has new requirements which must be complied with even if AD's 98-24-15 and 2000-08-52 have already been accomplished. This AD requires the recalculation of accumulated mast and trunnion RIN and increases the RIN factors for masts and trunnions installed on certain helicopter models. This AD also expands the S/N applicability for the one-time special inspection of the mast.

To prevent failure of a mast or trunnion, separation of the main rotor system, and subsequent loss of control of the helicopter, accomplish the following:

(a) Before further flight, determine the accumulated Retirement Index Number (RIN) in accordance with the Instructions in Appendix 1 for the mast and Appendix 2 for the trunnion. If the helicopter model installation history or hours time-in-service (TIS) of the mast or trunnion is unknown, remove the mast or trunnion from service and replace it with an airworthy mast or trunnion. If the mast has been installed on certain military helicopters (BHTI-manufactured Model HH-1K, TH-1F, TH-1L, UH-1A, UH-1B, UH-1C, UH-1D, UH-1E, UH-1F, UH-1G, UH-1H, UH-1L, UH-1M, UH-1N, and UH-1P; and Southwest Florida Aviation SW204, SW204HP, SW205, or SW205A-1) or restricted category helicopters (Firefly Aviation Helicopter Services (previously Erickson Air Crane Co.); Garlick Helicopters, Inc.; Hawkins and Powers Aviation, Inc.; International Helicopters, Inc.; Tamarack Helicopters, Inc. (previously Ranger Helicopter Services, Inc.); Robinson Air Crane, Inc.; Williams Helicopter Corporation (previously Scott Paper Co.); Smith Helicopters; Southern Helicopter, Inc.; Southwest Florida Aviation; Utah State University; Western International Aviation, Inc.; and U.S. Helicopter, Inc.) and you cannot verify that hub springs have not been installed, remove the mast from service and replace it with an airworthy mast.

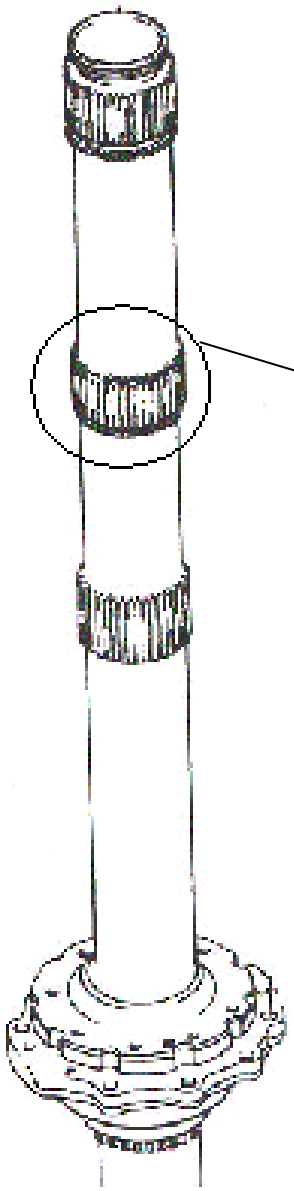
(b) Before further flight, replace any mast, P/N 204-011-450-113 or 119, that has accumulated 240,000 or more RIN with an airworthy mast. Before further flight, replace any mast, P/N 204-011-450-001, -007, or -105, that has accumulated 265,000 or more RIN with an airworthy mast.

(c) Before further flight, replace any trunnion, P/N 204-011-105-103, that has accumulated 240,000 or more RIN with an airworthy trunnion. Before further flight, replace any trunnion, P/N 204-011-105-001, that has accumulated 265,000 or more RIN with an airworthy trunnion.

(d) Before reaching 100,000 RIN, inspect the upper and lower snap ring grooves in the damper clamp splined area of any mast with serial number (S/N) 00000 through 52720, S/N 61433 through 61444, and S/N 61457 through S/N 61465 (regardless of prefix) for:

(1) A minimum radius of 0.020 inches around the entire circumference (see Figures 1 through 3), using a 100x or higher magnification. If any snap ring groove radius is less than 0.020 inches, replace the mast with an airworthy mast prior to exceeding **100,000 RIN**.

(2) A burr, using a 200x or higher magnification. If a burr is found in any snap ring groove/spline intersection, replace the mast with an airworthy mast prior to exceeding **170,000 RIN.**



View A

Inspect area for:

- At 100x minimum magnification
  Minimum radius of 0.020 at the snap ring groove/spline intersection
- At 200x minimum magnification
  Burrs in the snap ring groove

See view A-A for detail

Figure 1

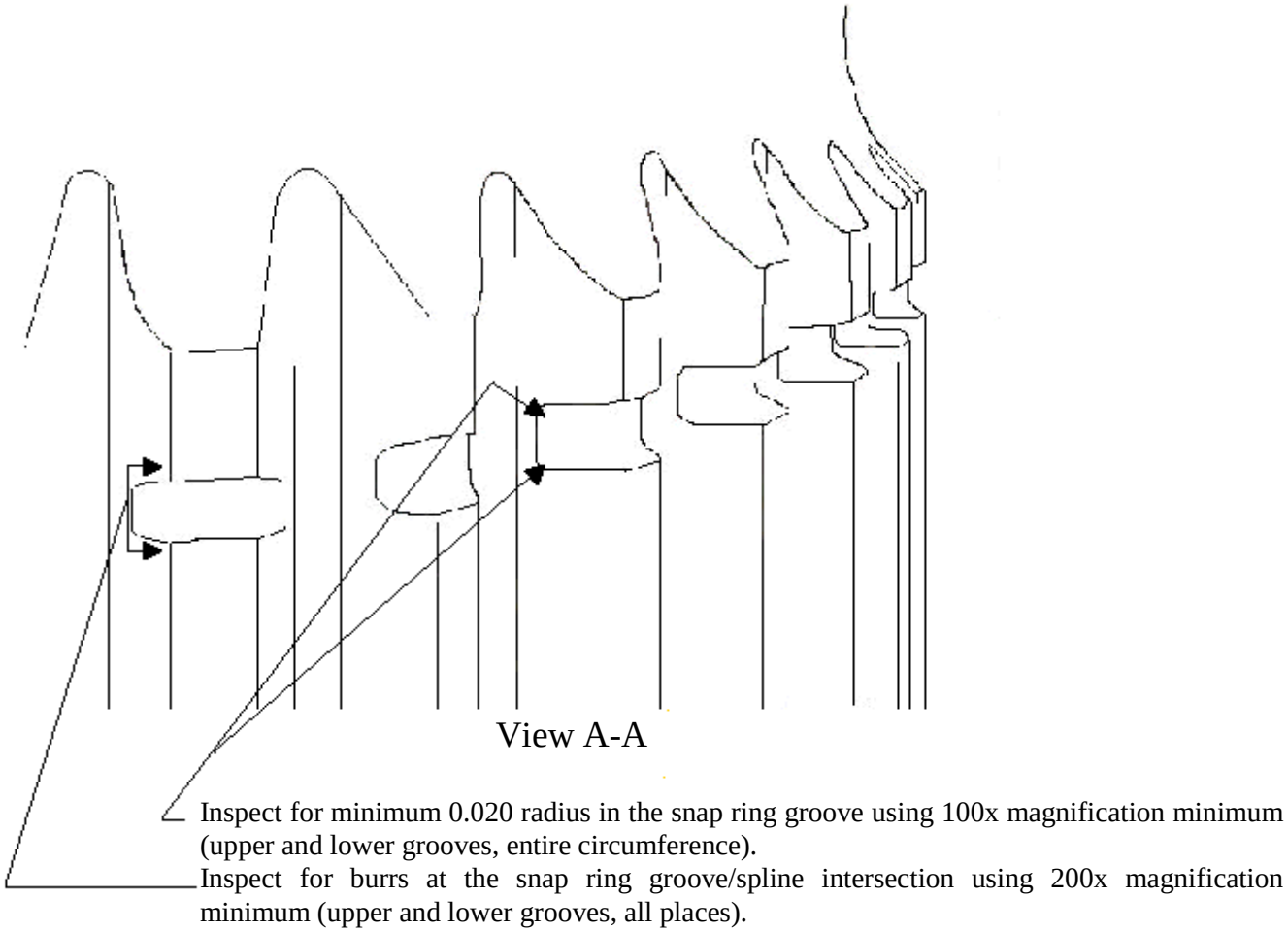
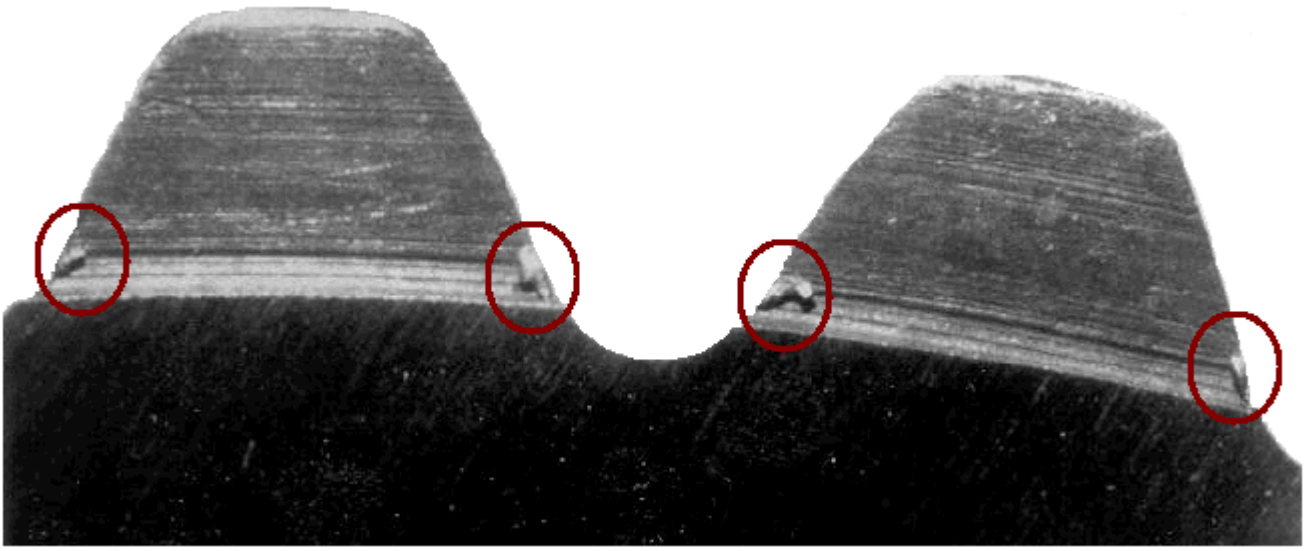



Figure 2
Snap Ring Groove/Spline Intersection



**Cutaway View Looking Down from Inside Snap Ring Groove**
Typical Burrs at Snap Ring Groove/Spline Intersection
Burrs are to be Inspected at 200x Minimum Magnification

Figure 3
Typical Burr at Snap Ring Groove

(e) Continue to calculate the accumulated RIN for the mast by multiplying all takeoff and external load lifts by the RIN factors defined in columns (D) and (G) of Table 1 of Appendix 1.

(f) Continue to calculate the accumulated RIN for the trunnion by multiplying all takeoff and external load lifts by the RIN factors defined in columns (D) and (G) of Table 1 of Appendix 2.

(g) Before further flight, revise the Airworthiness Limitations section of the maintenance manuals for the masts and trunnions in accordance with Figure 4.

**Mast and Trunnion Life Limits**

| **Mast** Part Number | Hours TIS Life Limit | RIN Life Limit | | **Trunnion** Part Number | Hours TIS Life Limit | RIN Life Limit |
|---|---|---|---|---|---|---|
| | | | | | | |
| 204-011-450-001 | 6,000 | 265,000 | | 204-011-105-001 | 15,000 | 265,000 |
| | | | | | | |
| 204-011-450-007 | 15,000 | 265,000 | | 204-011-105-103 | 13,000 | 240,000 |
| | | | | | | |
| 204-011-450-105 | 15,000 | 265,000 | | | | |
| | | | | | | |
| 204-011-450-113 | 13,000 | 240,000 | | | | |
| | | | | | | |
| 204-011-450-119 | 13,000 | 240,000 | | | | |
| | | | | | | |

Figure 4

(h) Within 10 days after completing the inspections required by this AD, provide the information contained on the AD inspection report, sample format, contained in Appendix 3 and send it to the Manager, Rotorcraft Certification Office, Federal Aviation Administration, Fort Worth, Texas, 76193-0170, USA. Reporting requirements have been approved by the Office of Management and Budget and assigned OMB control number 2120-0056.

(i) 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, Rotorcraft Certification Office, FAA. Operators shall submit their requests through an FAA Principal Maintenance Inspector, who may concur or comment and then send it to the Manager, Rotorcraft Certification Office.

**NOTE 3:** Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Manager, Rotorcraft Certification Office.

(j) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the helicopter to a location where the requirements of this AD can be accomplished.

(k) Emergency AD 2000-15-52, issued July 25, 2000, becomes effective upon receipt.

FOR FURTHER INFORMATION CONTACT: Jurgen Priester, Aviation Safety Engineer, FAA, Rotorcraft Directorate, Rotorcraft Certification Office, Fort Worth, Texas 76193-0170, telephone (817) 222-5159, fax (817) 222-5783.

Issued in Fort Worth, Texas on July 25, 2000.
Mark R. Schilling, Acting Manager, Rotorcraft Directorate, Aircraft Certification Service.

## Appendix 1 to AD 2000-15-52

## Instructions for Calculating Mast RIN

**Definition of Retirement Index Number:**

The overall **fatigue life** of a main rotor mast is a function of the number of cycles of torque, lift, and bending loads applied to it during the various modes of operation. The mast experiences both high cycle fatigue and low cycle fatigue during operation.

The **high cycle fatigue life** of the mast is a function of high frequency but relatively low level cyclic loads, which are primarily induced by rotor r.p.m. The high cycle fatigue life limit for the mast is defined in terms of hours TIS because rotor r.p.m. is basically a constant value.

The **low cycle fatigue life** of the mast is a function of the number of less frequent but relatively high level cyclic loads experienced primarily during takeoffs and external load lifts. The low cycle fatigue life limit for the mast is expressed in terms of the accumulated Retirement Index Number (RIN).

The **accumulated RIN** is defined as the total number of load cycles experienced (since new) by the mast multiplied by a **RIN factor** to account for the difference in torque levels applied to the same mast when installed in different helicopter models. The level of torque applied to the mast is directly proportional to the transmission output horsepower. The manufacturer's established mast **RIN life limit** is based on the measured number of cycles to failure of masts (in laboratory tests) at various levels of constant torque, lift, and bending loads which are representative of the expected operating environment.

**Calculation of Retirement Index Number:**

There are two methods for calculating the accumulated RIN, depending on the available service history information for the mast. In some cases, one method will be used for a portion of the mast service history, and the other method will be used for another portion of the mast service history. Both methods require knowledge of all the helicopter models in which the mast was installed.

**Calculation of RIN when Number of Takeoffs and External Load Lifts is Known (Reference Table 1):**

If the total number of takeoffs and the total number of external load lifts for the mast are known, the accumulated RIN must be calculated by multiplying each takeoff and each external load lift by a RIN factor determined to be appropriate for the torque (horsepower) of the helicopter model in which the mast is installed.

Table 1 of Appendix 1 is a worksheet for calculating the accumulated mast RIN when the number of takeoffs and external load lifts is known.

The RIN factor for each external load lift is twice that specified for each takeoff. This is because two torque events are experienced during a typical external load lift.

Using Table 1, calculate accumulated RIN as follows:

1. Enter the total number of takeoffs for the particular mast model/helicopter model combination in column (C).
2. Multiply the value entered in column (C) by the RIN factor listed in column (D), and enter the result in column (E). This is the total accumulated RIN due to takeoffs.

3. Enter the total number of external load lifts for the particular mast model/helicopter model combination in column (F).
4. Multiply the value entered in column (F) by the RIN factor listed in column (G), and enter the result in column (H). This is the accumulated RIN due to external load lifts.
5. Add the values from column (E) and column (H) and enter the result in column (I). This is the total accumulated RIN to date for the mast for the particular mast model/helicopter model combination.
6. Add the accumulated RIN subtotals for the various mast model/helicopter combinations in column (I) and enter the result in the space provided. This is the total accumulated RIN for the mast.

**Calculation of RIN when Exact Number of Takeoffs and External Load Lifts is Unknown (Reference Tables 2 and 3):**

If either the exact total number of takeoffs or the exact total number of external load lifts for the mast model/helicopter model combination is unknown, then the accumulated RIN must be calculated by multiplying the (unfactored) hours TIS by a RIN conversion factor based on the torque (horsepower) of the helicopter model in which it was installed. The resultant factored hours TIS is then multiplied by a RIN conversion factor retained from AD 98-24-15 to establish a baseline accumulated RIN count. The FAA has determined that the factors used to establish the factored hours in earlier ASB's as well as the RIN conversion factors specified in AD 98-24-15 are inadequate. Consequently, this AD (2000-15-52) requires that the baseline accumulated RIN count be further multiplied by an additional RIN adjustment factor.

Tables 2 and 3 of Appendix 1 are worksheets for calculating the accumulated mast RIN when the exact number of takeoffs and external load lifts is unknown. Using Tables 2 and 3, calculate accumulated mast RIN as follows:

1. Enter the (unfactored) hours TIS for the particular mast model/helicopter model combination in column (C) of Table 2.
2. Using service history for the mast, select the appropriate Frequency of Event Hour Factor from column (E) of Table 2 based on the total number of takeoffs + external load lifts per hour shown in column (D) of Table 2.
3. Multiply the value for (unfactored) hours TIS entered in column (C) by the appropriate value in column (E) for Frequency of Event Hour Factor as determined in step 2 above. Enter the result in column (F) of Table 2. This is the total FACTORED hours TIS for the particular mast model/helicopter model combination.
4. Enter the value for FACTORED hours TIS from column (F) of Table 2 into column (C) of Table 3.
5. Using Table 3, multiply the value for FACTORED hours TIS in column (C) by the appropriate RIN conversion factor listed in column (D), by the appropriate RIN adjustment factor in column (E) of Table 3, and enter the result in column (F) of Table 3. This is the accumulated RIN to date for the particular mast model/helicopter model combination.
6. Add the accumulated RIN subtotals for the various mast model/helicopter model combinations in column (F) of Table 3 and enter the result in the space provided. This is the total accumulated RIN for the mast.

## Sample Mast RIN Calculation

Given the following known service history for the mast:

Mast Model -007 was first installed on a BHTI Model 204B helicopter for 1000 hours TIS and experienced an unknown number of takeoffs and external load lifts. The mast was then removed and subsequently installed on a BHTI Model 205A helicopter for 1500 hours TIS. It is known that the helicopter was used primarily for passenger carrying for the first 1000 hours of operation on this model. The exact number of takeoffs and external load lifts is unknown, but it is known that the helicopter averaged less than 20 takeoffs per hour, with no external load lifts. It was subsequently used for heavy lift operation for the remaining 500 hours of operation on this model, averaging between 20 and 44 external load lifts during this period of time. The mast was then removed and installed on a BHTI Model 212 helicopter for a total of 1500 hours TIS with accurate records indicating that it experienced 1000 takeoffs and 2000 external load lifts.

Calculate the total accumulated RIN to date since new for the mast as follows:

**Accumulated RIN while installed in BHTI Model 204B:**

Calculate factored flight hours from Table 2 as follows:

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
= (column C) x (column E)
= (1000) x (3)
= 3000

Then using Table 3, calculate the accumulated RIN as follows:

= (factored hours TIS) x (RIN conversion factor) x (RIN adjustment factor)
= (column C) x (column D) x (column E)
= (3000 ) x (20) x (1)

= 60,000 RIN

**Accumulated RIN while installed in BHTI Model 205A:**

Calculate factored flight hours from Table 2 as follows:

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
(for first 1000 hrs.) = (column C) x (column E)
= (1000) x (1)
= 1000

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
(for next 500 hrs) = (column C) x (column E)
= (500) x (2)
= 1000

Then using Table 3, calculate the accumulated RIN as follows:

= (factored hours TIS) x (RIN conversion factor) x (RIN adjustment factor)
= (column C) x (column D) x (column E)
= (1000) x (20) x (10) + (1000) x (20) x (10)
= 200,000 + 200,000
= 200,000 + 200,000
= 400,000 RIN

**Accumulated RIN while installed in BHTI Model 212:**

Calculate the accumulated RIN from Table 1 and the given number of takeoff and lifts as follows:

Accumulated RIN = (number of takeoffs x RIN factor per takeoff) + (number of lifts x RIN Factor per lift)

= (column C) x (Column D) + (Column F) x (Column G)
= (1,000) x (5) + (2,000) x (10)
= 25,000 RIN

Therefore, the total accumulated RIN to date for the mast is the sum of the subtotals from Tables 1 and 3 for the period of time the mast was installed on the BHTI Model 204B, 205A, and 212 helicopters:

**Total accumulated mast RIN** = 60,000 + 400,000 + 25,000
= **485,000**

Please note that the recalculated total accumulated RIN for this sample mast would have exceeded the 265,000 allowable RIN life. This mast would therefore be removed from service.

The values for the sample problem are shown in bold italics in Tables 1 - 3 for illustration purposes.

**Mast RIN Calculation Based on Takeoffs and External Load Lifts**

| Mast A/C Model Installation | Mast P/N 204-011-450 | Number Of Takeoffs | RIN Factor Per Takeoff | Total Takeoff RIN | Number of External Load Lifts | RIN Factor Per External Load Lift | Total Lift RIN | Accumulated RIN |
|---|---|---|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C)** | **(D)** | **(E) =(C) x (D)** | **(F)** | **(G)** | **(H) =(F) x (G)** | **(I) =(E) + (H)** |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-001 | | 10 | | | 20 | | |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-007 | | 2 | | | 4 | | |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-105 | | 2 | | | 4 | | |
| 204B (>1100 T.O. hp SLS) | All | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-450-007 | | 5 | | | 10 | | |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-450-105 | | 5 | | | 10 | | |
| 205A/A-1 (>1250 T.O. hp SLS) | All | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| 205B (≤1290 T.O. hp SLS) | 204-011-450-007 | | 6 | | | 12 | | |
| 205B (≤1290 T.O. hp SLS) | 204-011-450-105 | | 6 | | | 12 | | |
| 205B (>1290 T.O. hp SLS) | All | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| 212 (≤1290 T.O. hp SLS) | 204-011-450-007 | ***1000*** | 5 | ***5000*** | ***2000*** | 10 | ***20,000*** | ***25,000*** |
| 212 (≤1290 T.O. hp SLS) | 204-011-450-105 | | 5 | | | 10 | | |
| 212 (>1290 T.O. hp SLS) | -007 or –105 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| 212 (≤1350 T.O. hp SLS) | 204-011-450-113 | | 6 | | | 12 | | |
| 212 (≤1350 T.O. hp SLS) | 204-011-450-119 | | 6 | | | 12 | | |
| Restricted Category or Military TIS with (≤700 T.O. hp SLS) | 204-011-450-001 | | 1.25 | | | 2.5 | | |
| | 204-011-450-007 | | 0.25 | | | 0.5 | | |
| | 204-011-450-105 | | 0.25 | | | 0.5 | | |
| Restricted Category or Military TIS with (≤1000 T.O. hp SLS) | 204-011-450-001 | | 7.5 | | | 15 | | |
| | 204-011-450-007 | | 1.5 | | | 3 | | |
| | 204-011-450-105 | | 1.5 | | | 3 | | |
| Restricted Category or Military TIS with (≤1100 T.O. hp SLS) | 204-011-450-001 | | 15 | | | 30 | | |
| | 204-011-450-007 | | 3 | | | 6 | | |
| | 204-011-450-105 | | 3 | | | 6 | | |
| Restricted Category or Military TIS with (≤1290 T.O. hp SLS) | 204-011-450-001 | | Not Approved | | | Not Approved | | Not Approved |
| | 204-011-450-007 | | 6 | | | 12 | | |
| | 204-011-450-105 | | 6 | | | 12 | | |
| Restricted Category or Military TIS with (>1290 T.O. hp SLS) | 204-011-450-001 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | 204-011-450-007 | | | | | | | |
| | 204-011-450-105 | | | | | | | |
| **Total RIN=** | | | | | | | | ***25,000*** |

*Contact FAA at (817) 222-5159 Appendix 1 - Table 1

**Calculation of Mast Factored Hours Time-in-Service**

| Mast A/C Model Installation | Mast P/N 204-011-450 | Unfactored Hours TIS on Model | Frequency Of Events Per Hour | Frequency of Event Hour Factor | FACTORED Hours TIS On Model |
|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C)** | **(D)** | **(E)** | **(F) = (C) x (E)** |
| | | | | | |
| 204B | 204-011-450-001, -007, | | 1.0-20.00 | 1.00 | |
| | or -105 | | 20.01-44.00 | 2.00 | |
| | | | 44.01-69.00 | 3.00 | |
| | | | Greater than 69.00 | Contact FAA* | |
| | | ***1,000*** | Unknown | 3.00 | ***3,000*** |
| | | | | | |
| 205A/A-1 | 204-011-450-007,-105, | ***1,000*** | 1.0-20.00 | 1.00 | ***1,000*** |
| | -113, or -119 | ***500*** | 20.01-44.00 | 2.00 | ***1,000*** |
| | | | 44.01-69.00 | 3.00 | |
| | | | Greater than 69.00 | Contact FAA* | |
| | | | Unknown | 3.00 | |
| | | | | | |
| 205B | 204-011-450-007,-105 | | 1.0-5.00 | 1.00 | |
| | | | 5.01-8.00 | 1.50 | |
| | | | 8.01-12.00 | 2.00 | |
| | | | 12.01-18.00 | 3.00 | |
| | | | 18.01-32.00 | 5.00 | |
| | | | 32.01-48.00 | 7.00 | |
| | | | 48.01-62.00 | 9.00 | |
| | | | Greater than 62.00 | Contact FAA* | |
| | | | Unknown | 9.00 | |
| | | | | | |
| 212 | 204-011-450-007,-105, | | 1.0-5.00 | 1.00 | |
| | -113, or -119 | | 5.01-8.00 | 1.50 | |
| | | | 8.01-12.00 | 2.00 | |
| | | | 12.01-18.00 | 3.00 | |
| | | | 18.01-32.00 | 5.00 | |
| | | | | | |
| | | | 32.01-48.00 | 7.00 | |
| | | | 48.01-62.00 | 9.00 | |
| | | | Greater than 62.00 | Contact FAA* | |
| | | | Unknown | 9.00 | |

*Contact FAA at (817) 222-5159 Appendix 1 - Table 2 (1st page of 2)

**Calculation of Mast Factored Hours Time-in-Service**

| Mast A/C Model Installation | Mast P/N 204-011-450 (without a hub spring) | Unfactored Hours TIS on Model | Frequency Of Events Per Hour | Frequency of Event Hour Factor | FACTORED Hours TIS On Model |
|---|---|---|---|---|---|
| (A) | (B) | (C) | (D) | (E) | (F) = (C) x (E) |
| Restricted Category TIS (≤700 hp) | 204-011-450-007 | | 1.0-37.00 | 1.00 | |
| | or –105 | | 37.01-46.00 | 1.25 | |
| | | | 46.01-55.00 | 1.50 | |
| | | | 55.01-63.00 | 1.75 | |
| | | | Greater than 63.00 | Contact FAA* | |
| | | | Unknown | 1.75 | |
| Restricted Category TIS (≤1000 hp) | 204-011-450-007 | | 1.0-7.00 | 1.00 | |
| | or -105 | | 7.01-13.00 | 2.00 | |
| | | | 13.01-18.00 | 3.00 | |
| | | | 18.01-30.00 | 5.00 | |
| | | | 30.01-41.0 | 7.00 | |
| | | | 41.01-52.00 | 9.00 | |
| | | | 52.01-63.00 | 11.00 | |
| | | | Greater than 63.00 | Contact FAA* | |
| | | | Unknown | 11.00 | |
| Restricted Category TIS (≤1100 hp) | 204-011-450-007 | | 1.0-5.00 | 1.00 | |
| | or -105 | | 5.01-7.00 | 2.00 | |
| | | | 7.01-10.00 | 3.00 | |
| | | | 10.01-16.00 | 5.00 | |
| | | | 16.01-24.0 | 7.50 | |
| | | | 24.01-31.00 | 10.00 | |
| | | | 31.01-46.00 | 15.00 | |
| | | | 46.01-61.00 | 20.00 | |
| | | | Greater than 61.00 | Contact FAA* | |
| | | | Unknown | 20.00 | |
| Restricted Category TIS (≤1290 hp) | 204-011-450-007 | | 1.0-5.00 | 2.10 | |
| | or -105 | | 5.01-7.00 | 4.00 | |
| | | | 7.01-10.00 | 6.00 | |
| | | | 10.01-15.00 | 9.00 | |
| | | | 15.01-19.00 | 12.00 | |
| | | | 19.01-25.00 | 16.00 | |
| | | | 25.01-31.00 | 20.00 | |
| | | | 31.01-46.00 | 30.00 | |
| | | | 46.01-60.00 | 40.00 | |
| | | | Greater than 60.00 | Contact FAA* | |
| | | | Unknown | 40.00 | |
| Military TIS | 204-011-450-001, | | | | |
| (≤700 hp SLS) | -007, or -105 | | All | 1.00 | |
| (≤1000 hp SLS) | | | All | 3.00 | |
| (≤1100 hp SLS) | | | All | 6.00 | |
| (≤1290 hp SLS) | | | All | 12.00 | |

*Contact FAA at (817) 222-5159 Appendix 1 - Table 2 (continued - 2nd page of 2)

**Mast RIN Calculation Based on Hours Time-in-Service**

| Mast A/C Model Installation | Mast P/N 204-011-450 | FACTORED Hours TIS On Model | RIN FACTOR Per AD 98-24-15 | RIN Adjustment Per AD 2000-15-52 | Accumulated RIN |
|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C) (From Table 2 of Appendix I)** | **(D)** | **(E)** | **(F)** =(C) x (D) x (E) |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-001 | | 50 | 1 | |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-007 | ***3000*** | 20 | 1 | ***60,000*** |
| 204B (≤1100 T.O. hp SLS) | 204-011-450-105 | | 20 | 1 | |
| 204B (>1100 T.O. hp SLS) | All | Contact FAA* | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-450-007 | ***2000*** | 20 | 10 | ***400,000*** |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-450-105 | | 20 | 10 | |
| 205A/A-1 (>1250 T.O. hp SLS) | All | Contact FAA* | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 205B (≤1290 T.O. hp SLS) | 204-011-450-007 | | 20 | 1 | |
| 205B (≤1290 T.O. hp SLS) | 204-011-450-105 | | 20 | 1 | |
| 205B (>1290 T.O. hp SLS) | All | Contact FAA* | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 212 (≤1290 T.O. hp SLS) | 204-011-450-007 | | 20 | 1 | |
| 212 (≤1290 T.O. hp SLS) | 204-011-450-105 | | 20 | 1 | |
| 212 (>1290 T.O. hp SLS) | -007 or –105 | | Contact FAA* | Contact FAA* | Contact FAA* |
| 212 (≤1350 T.O. hp SLS) | 204-011-450-113 | | 21.2 | 1.2 | |
| 212 (≤1350 T.O. hp SLS) | 204-011-450-119 | | 21.2 | 1.2 | |
| 212 (>1350 T.O. hp SLS) | -113 or –119 | Contact FAA* | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| Restricted Category or Military TIS with (≤1290 T.O. hp SLS) | 204-011-450-001 | | 50 | 1 | |
| | 204-011-450-007 | | 20 | 1 | |
| | 204-011-450-105 | | 20 | 1 | |
| Restricted Category or Military TIS with (>1290 T.O. hp SLS) | 204-011-450-001 | Contact FAA* | Contact FAA* | Contact FAA* | Contact FAA* |
| | 204-011-450-007 | | | | |
| | 204-011-450-105 | | | | |
| **Total RIN=** | | | | | ***460,000*** |

Contact FAA at (817) 222-5159 Appendix 1 - Table 3

## Appendix 2 to AD 2000-15-52

## Instructions for Calculation of Trunnion RIN

**Definition of Retirement Index Number:**

The overall **fatigue life** of a main rotor trunnion is a function of the number of cycles of torque, lift, and bending loads applied to it during the various modes of operation. The trunnion experiences both high cycle fatigue and low cycle fatigue during operation.

The **high cycle fatigue life** of the trunnion is a function of high frequency but relatively low level cyclic loads, which are primarily induced by rotor r.p.m. The high cycle fatigue life limit for the trunnion is defined in terms of hours TIS because rotor r.p.m. is basically a constant value.

The **low cycle fatigue life** of the trunnion is a function of the number of less frequent but relatively high level cyclic loads experienced primarily during takeoffs and external load lift operations. The low cycle fatigue life limit for the trunnion is expressed in terms of the accumulated Retirement Index Number (RIN).

The **accumulated RIN** is defined as the total number of load cycles experienced (since new) by the trunnion multiplied by a **RIN factor** to account for the difference in torque levels applied to the same trunnion when installed in different helicopter models. The level of torque applied to the trunnion is directly proportional to the transmission output horsepower. The manufacturer's established trunnion **RIN life limit** is based on the measured number of cycles to failure of trunnions (in laboratory tests) at various levels of constant torque, lift, and bending loads, which are representative of the expected operating environment.

**Calculation of Retirement Index Number:**

There are two methods for calculating the accumulated RIN, depending on the available service history information for the trunnion. In some cases, one method will be used for a portion of the trunnion service history, and the other method will be used for another portion of the trunnion service history. Both methods require knowledge of all the helicopter models in which the trunnion was installed.

**Calculation of RIN when Number of Takeoffs and External Load Lifts is Known Reference Table 1):**

If the total number of takeoffs and the total number of external load lifts for the trunnion are known, the accumulated RIN must be calculated by multiplying each takeoff and each external load lift by a RIN factor determined to be appropriate for the torque (horsepower) of the helicopter model in which the trunnion is installed.

Table 1 of Appendix 2 is a worksheet for calculating the accumulated trunnion RIN when the number of takeoffs and external load lifts is known.

The RIN factor for each external load lift is twice that specified for each takeoff. This is because two torque events are experienced during a typical external load lift.

Using Table 1, calculate accumulated RIN as follows:

1. Enter the total number of takeoffs for the particular trunnion model/helicopter model combination in column (C).
2. Multiply the value entered in column (C) by the RIN factor listed in column (D), and enter the result in column (E). This is the total accumulated RIN due to takeoffs.
3. Enter the total number of external load lifts for the particular trunnion model/helicopter model combination in column (F).

4. Multiply the value entered in column (F) by the RIN factor listed in column (G), and enter the result in column (H). This is the accumulated RIN due to external load lifts.
5. Add the values from column (E) and column (H) and enter the result in column (I). This is the total accumulated RIN to date for the trunnion for the particular trunnion model/helicopter model combination.
6. Add the accumulated RIN subtotals for the various trunnion model/helicopter combinations in column (I) and enter the result in the space provided. This is the total accumulated RIN for the trunnion.

**Calculation of RIN when Exact Number of Takeoffs and External Load Lifts is Unknown (Reference Tables 2 and 3):**

If either the exact total number of takeoffs or the exact total number of external load lifts for the trunnion model/helicopter model combination is unknown, then the accumulated RIN must be calculated by multiplying the (unfactored) hours TIS by a RIN conversion factor based on the torque (horsepower) of the helicopter model in which it was installed. The resultant factored hours TIS is then multiplied by a RIN conversion factor retained from AD 98-24-15 to establish a baseline accumulated RIN count. The FAA has determined that the factors used to establish the factored hours in earlier ASB's as well as the RIN conversion factors specified in AD 98-24-15 are inadequate. Consequently, this AD (2000-15-52) requires that the baseline accumulated RIN count be further multiplied by an additional RIN adjustment factor.

Tables 2 and 3 of Appendix 2 are worksheets for calculating the accumulated trunnion RIN when the exact number of takeoffs and external load lifts is unknown. Using Tables 2 and 3, calculate accumulated trunnion RIN as follows:

1. Enter the (unfactored) hours TIS for the particular trunnion model/helicopter model combination in column (C) of Table 2.
2. Using service history for the trunnion, select the appropriate Frequency of Event Hour Factor from column (E) of Table 2 based on the total number of takeoffs + external load lifts per hour shown in column (D) of Table 2.
3. Multiply the value for (unfactored) hours TIS entered in column (C) by the appropriate value in column (E) for Frequency of Event Hour Factor as determined in step 2 above. Enter the result in column (F) of Table 2. This is the total FACTORED hours TIS for the particular trunnion model/helicopter model combination.
4. Enter the value for FACTORED hours TIS from column (F) of Table 2 into column (C) of Table 3.
5. Using Table 3, multiply the value for FACTORED hours TIS in column (C) by the appropriate RIN conversion factor listed in column (D), by the appropriate RIN adjustment factor in column (E) of Table 3, and enter the result in column (F) of Table 3. This is the accumulated RIN to date for the particular trunnion model / helicopter model combination.
6. Add the accumulated RIN subtotals for the various trunnion model / helicopter model combinations in column (F) of Table 3 and enter the result in the space provided. This is the total accumulated RIN for the trunnion.

## Sample Trunnion RIN Calculation

Given the following known service history for the trunnion:

Trunnion Model -001 was first installed on a BHTI Model 204B helicopter for 1000 hours TIS, and experienced an unknown number of takeoffs and external load lifts. The trunnion was then removed and subsequently installed on a BHTI Model 205A helicopter for 1500 hours TIS. It is known that the helicopter was used primarily for passenger carrying for the first 1000 hours of operation on this model. The exact number of takeoffs and external load lifts is unknown, but it is known that the helicopter averaged less than 20 takeoffs per hour, with no external load lifts. It was subsequently used for heavy lift operation for the remaining 500 hours of operation on this model, averaging between 20 and 44 external load lifts during this period of time. The trunnion was then removed and installed on a model 212 helicopter for a total of 1500 hours TIS with accurate records indicating that it experienced 1000 takeoffs and 2000 external load lifts.

Calculate the total accumulated RIN to date since new for the trunnion as follows:

**Accumulated RIN while installed in BHTI Model 204B:**

Calculate factored flight hours from Table 2 as follows:

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
= (column C) x (column E)
= (1000) x (3)
= 3000

Then using Table 3, calculate the accumulated RIN as follows:

= (factored hours TIS) x (RIN conversion factor) x (RIN adjustment factor)
= (column C) x (column D) x (column E)
= (3000 ) x (20) x (1)

= 60,000 RIN

**Accumulated RIN while installed in BHTI Model 205A:**

Calculate factored flight hours from Table 2 as follows:

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
(for first 1000 hrs) = (column C) x (column E)
= (1000) x (1)
= 1000

Factored Flight Hours = (unfactored flight hours) x (frequency of event hour factor)
(for next 500 hrs) = (column C) x (column E)
= (500) x (2)
= 1000

Then using Table 3, calculate the accumulated RIN as follows:

= (factored hours TIS) x (RIN conversion factor) x (RIN adjustment factor)
= (column C) x (column D) x (column E)
= (1000 ) x (20) x (10) + (1000) x (20) x (10)
= 200,000 + 200,000
= 200,000 + 200,000
= 400,000 RIN

**Accumulated RIN while installed in BHTI Model 212:**

Calculate the accumulated RIN from Table 1 and the given number of takeoff and lifts as follows:

Accumulated RIN = (number of takeoffs x RIN factor per takeoff) + (number of lifts x RIN Factor per lift)

= (column C) x (Column D) + (Column F) x (Column G)

= (1,000) x (5) + (2,000) x (10)

= 25,000 RIN

Therefore, the total accumulated RIN to date for the trunnion is the sum of the subtotals for the period of time the trunnion was installed on the BHTI Model 204B, 205A, and 212 helicopters:

**Total accumulated trunnion RIN** = 60,000 + 400,000 + 25,000
= **485,000**

Please note that the recalculated total accumulated RIN for this sample trunnion would have exceeded the 265,000 allowable RIN life. This trunnion would therefore be removed from service.

The values for the sample problem are shown in bold italics in Tables 1-3 for illustration purposes.

**Trunnion RIN Calculation Based on Takeoffs and External Load Lifts**

| Trunnion A/C Model Installation | Trunnion P/N | Number Of Takeoffs | RIN Factor Per Takeoff | Total Takeoff RIN | Number Of External Load Lifts | RIN Factor Per External Load Lift | Total Lift RIN | Accumulated RIN |
|---|---|---|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C)** | **(D)** | **(E) = (C) x (D)** | **(F)** | **(G)** | **(H) = (F) x (G)** | **(I) = (E) + (H)** |
| 204B (≤1100 T.O. hp SLS) | 204-011-105-001 | | 2 | | | 4 | | |
| 204B (>1100 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | | | | | | | | |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-105-001 | | 5 | | | 10 | | |
| 205A/A-1 (>1250 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | | | | | | | | |
| 205B (≤1290 T.O. hp SLS) | 204-011-105-001 | | 6 | | | 12 | | |
| 205B (>1290 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | | | | | | | | |
| 212 (≤1290 T.O. hp SLS) | 204-011-105-001 | ***1000*** | 5 | 5000 | ***2000*** | 10 | ***20,000*** | ***25,000*** |
| 212 (>1290 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| 212 (≤1350 T.O. hp SLS) | 204-011-105-103 | | 6 | | | 12 | | |
| 212 (>1350 T.O. hp SLS) | 204-011-105-103 | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | | | | | | | | |
| Restricted Category Or Military TIS with: | 204-011-105-001 | | | | | | | |
| (≤700 T.O. hp SLS) | | | 0.25 | | | 0.5 | | |
| (≤1000 T.O. hp SLS) | | | 1.5 | | | 3 | | |
| (≤1100 T.O. hp SLS) | | | 3 | | | 6 | | |
| (≤1290 T.O. hp SLS) | | | 6 | | | 12 | | |
| (>1290 T.O. hp SLS) | | | Contact FAA* | | | Contact FAA* | | Contact FAA* |
| | | | | | | | | |
| Total RIN= | | | | | | | | ***25,000*** |

*Contact FAA at (817) 222-5159 Appendix 2 - Table 1

**Calculation of Trunnion Factored Hours Time-in-Service**

| Trunnion A/C Model Installation | Trunnion P/N | Unfactored Hours TIS on Model | Frequency Of Events Per Hour | Frequency of Event Hour Factor | FACTORED Hours TIS On Model |
|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C)** | **(D)** | **(E)** | **(F) = (C) x (E)** |
| 204B | 204-011-105-001 | | 1.0-20.00 | 1.00 | |
| | | | 20.01-44.00 | 2.00 | |
| | | | 44.01-69.00 | 3.00 | |
| | | | Greater than 69.00 | Contact FAA | |
| | | ***1000*** | Unknown | 3.00 | ***3000*** |
| | | | | | |
| | | | | | |
| | | | | | |
| 205A/A-1 | 204-011-105-001 | ***1000*** | 1.0-20.00 | 1.00 | ***1000*** |
| | | ***500*** | 20.01-44.00 | 2.00 | ***1000*** |
| | | | 44.01-69.00 | 3.00 | |
| | | | Greater than 69.00 | Contact FAA | |
| | | | Unknown | 3.00 | |
| | | | | | |
| | | | | | |
| | | | | | |
| 205B | 204-011-105-001 | | 1.0-5.00 | 1.00 | |
| | | | 5.01-8.00 | 1.50 | |
| | | | 8.01-12.00 | 2.00 | |
| | | | 12.01-18.00 | 3.00 | |
| | | | 18.01-32.00 | 5.00 | |
| | | | 32.01-48.00 | 7.00 | |
| | | | 48.01-62.00 | 9.00 | |
| | | | Greater than 62.00 | Contact FAA | |
| | | | Unknown | 9.00 | |
| | | | | | |
| | | | | | |
| | | | | | |
| 212 | 204-011-105-001 | | 1.0-5.00 | 1.00 | |
| | or, -103 | | 5.01-8.00 | 1.50 | |
| | | | 8.01-12.00 | 2.00 | |
| | | | 12.01-18.00 | 3.00 | |
| | | | 18.01-32.00 | 5.00 | |
| | | | 32.01-48.00 | 7.00 | |
| | | | 48.01-62.00<br>Greater than 62.00 | 9.00<br>Contact FAA | |
| | | | Unknown | 9.00 | |

*Contact FAA at (817) 222-5159 Appendix 2-Table 2 (1st page of 2)

**Calculation of Trunnion Factored Hours Time-in-Service**

| Trunnion A/C Model Installation | Trunnion P/N 204-011-105-001 (without a hub spring) | Unfactored Hours TIS on Model | Frequency of Events Per Hour | Frequency of Event Hour Factor | FACTORED Hours TIS On Model |
|---|---|---|---|---|---|
| (A) | (B) | (C) | (D) | (E) | (F) = (C) x (E) |
| Restricted Category TIS (≤700 hp) | 204-011-105-001 | | 1.0-37.00 | 1.00 | |
| | | | 37.01-46.00 | 1.25 | |
| | | | 46.01-55.00 | 1.50 | |
| | | | 55.01-63.00 | 1.75 | |
| | | | Greater than 63.00 | Contact FAA* | |
| | | | Unknown | 1.75 | |
| Restricted Category TIS (≤1000 hp) | 204-011-105-001 | | 1.0-7.00 | 1.00 | |
| | | | 7.01-13.00 | 2.00 | |
| | | | 13.01-18.00 | 3.00 | |
| | | | 18.01-30.00 | 5.00 | |
| | | | 30.01-41.0 | 7.00 | |
| | | | 41.01-52.00 | 9.00 | |
| | | | 52.01-64.00 | 11.00 | |
| | | | Greater than 64.00 | Contact FAA* | |
| | | | Unknown | 11.00 | |
| Restricted Category TIS (≤1100 hp) | 204-011-105-001 | | 1.0-5.00 | 1.00 | |
| | | | 5.01-8.00 | 2.00 | |
| | | | 8.01-10.00 | 3.00 | |
| | | | 10.01-16.00 | 5.00 | |
| | | | 16.01-24.0 | 7.50 | |
| | | | 24.01-31.00 | 10.00 | |
| | | | 31.01-46.00 | 15.00 | |
| | | | 46.01-61.00 | 20.00 | |
| | | | Greater than 61.00 | Contact FAA* | |
| | | | Unknown | 20.00 | |
| Restricted Category TIS (≤1290 hp) | 204-011-105-001 | | 1.0-5.00 | 2.10 | |
| | | | 5.01-7.00 | 4.00 | |
| | | | 7.01-10.00 | 6.00 | |
| | | | 10.01-15.00 | 9.00 | |
| | | | 15.01-19.00 | 12.00 | |
| | | | 19.01-25.00 | 16.00 | |
| | | | 25.01-31.00 | 20.00 | |
| | | | 31.01-46.00 | 30.00 | |
| | | | 46.01-60.00 | 40.00 | |
| | | | Greater than 60.00 | Contact FAA* | |
| | | | Unknown | 40.00 | |
| Military TIS with: (≤700 hp SLS) (≤1000 hp SLS) (≤1100 hp SLS) (≤1290 hp SLS) | 204-011-105-001 | | | | |
| | | | All | 1.00 | |
| | | | All | 3.00 | |
| | | | All | 6.00 | |
| | | | All | 12.00 | |

*Contact FAA at (817) 222-5159 Appendix 2-Table 2 (continued – 2nd page of 2)

**Trunnion RIN Calculation Based on Hours Time-in-Service**

| Trunnion A/C Model Installation | Trunnion P/N | FACTORED Hours TIS On Model | RIN Factor Per AD 98-24-15 | RIN Adjustment Per AD 2000-15-52 | Accumulated RIN |
|---|---|---|---|---|---|
| **(A)** | **(B)** | **(C)** (From Table 2 of Appendix 2) | **(D)** | **(E)** | **(F)** = (C) x (D) x (E) |
| 204B (≤1100 T.O. hp SLS) | 204-011-105-001 | ***3000*** | 20 | 1 | ***60,000*** |
| 204B (>1100 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 205A/A-1 (≤1250 T.O. hp SLS) | 204-011-105-001 | ***2000*** | 20 | 10 | ***400,000*** |
| 205A/A-1 (>1250 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 205B (≤1290 T.O. hp SLS) | 204-011-105-001 | | 20 | 1 | |
| 205B (>1290 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| 212 (≤1290 T.O. hp SLS) | 204-011-105-001 | | 20 | 1 | |
| 212 (>1290 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | Contact FAA* | Contact FAA* |
| 212 (≤1350 T.O. hp SLS) | 204-011-105-103 | | 21.2 | 1.2 | |
| 212 (>1350 T.O. hp SLS) | 204-011-105-103 | | Contact FAA* | Contact FAA* | Contact FAA* |
| | | | | | |
| Restricted Category or Military TIS with (≤1290 T.O. hp SLS) | 204-011-105-001 | | 20 | 1 | |
| | | | | | |
| | | | | | |
| | | | | | |
| Restricted Category or Military TIS with (>1290 T.O. hp SLS) | 204-011-105-001 | | Contact FAA* | Contact FAA* | Contact FAA* |
| **Total RIN=** | | | | | ***460,000*** |

*Contact FAA at (817) 222-5159 Appendix 2 - Table 3

## APPENDIX 3 to AD 2000-15-52

## AD COMPLIANCE INSPECTION REPORT
## P/N 204-011-450-001/-007/-105/-113/-119 MAIN ROTOR MAST

**Provide the following information and mail or fax it to:**

Manager, Rotorcraft Certification Office
Federal Aviation Administration
Fort Worth, Texas, 76193-0170, USA
Fax: (817) 222-5783

**Operator Name:**

**Aircraft Registration No:**

**Helicopter Model:**

**Helicopter S/N:**

**Mast P/N:**

**Mast S/N:**

**Mast RIN:**

**Mast Total TIS:**

**INSPECTION RESULTS**
**Were any radii during inspection of this mast determined to be less than 0.020 inches? If yes, what was the dimension measured?**
**Was a burr found in the inspected snap ring grooves?**
**Were cracks noted during the inspection?**
**Who performed this inspection?**
**Provide any other comments?**