LUFTFARTSVERKET
Luftfartsinspektionen

LUFTVÄRDIGHETSDIREKTIV (LVD)

A. Helikopter
Robinson
LVD Nr 2569-R1
Upphäver LVD 2569

Sektion 2. Utlandstillverkad flygmateriel

TITEL: **Kontroll av främre "flexplate"**

GÄLLER: Modell R22 med installerad främre flexplate P/N A947-1 eller A193-1.

ÅTGÄRD: Utför åtgärder angivna i bifogad kopia av FAA AD 94-11-01. Se även bifogad kopia av FAA brev daterat 6 december 1994 för alternativ metod för åtgärd som även accepteras av LFV.

Not:
Eventuell sprickförekomst skall rapporteras till Luftfartsinspektionen, lämpligen på gul störningsrapport, L-1541-1. Detta ersätter rapport till FAA enligt AD 94-11-01 para B(1).

TID FÖR ÅTGÄRD: Inom 25 flygtimmar om ej tidigare utfört.

UNDERLAG: FAA AD 94-11-01
Robinson Helicopter Company R22 Maintenance Manual Change 14, daterad 14 mars 1994 eller senare utgåva.

REFERENS: FAA AD 94-11-01 och LFV skrivelse L9405-813-31203 daterad 20 maj 1994 och sänd till ägare/brukare.

UTGIVNINGS-DATUM: 1995-02-09

LFS: 1995:8

Åtgärd enligt LVD utgör nödvändig förutsättning för ifrågavarende flygmateriels luftvärdighet. Referens BCL M 1.11. Anteckning om åtgärd, som vidtagits i enlighet med LVD, skall införas i teknisk journal för berörd flygmateriel med hänvisning till ifrågavarande LVD-nummer. Angivet underlag refererar till senaste gällande revision/utgåva. LVD utges i luftfartsverkets författningssamlingar LFS.

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PRIORITY LETTER AIRWORTHINESS DIRECTIVE

FLIGHT STANDARDS SERVICE
REGULATORY SUPPORT DIVISION
P.O. BOX 26460
OKLAHOMA CITY, OKLAHOMA 73125-0460

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

DATE: May 18, 1994
94-11-01

This priority letter Airworthiness Directive (AD) is prompted by three accidents reported by the airworthiness authority of Australia involving failure of the forward flexplate (flexplate), part number A947-1, located between the main rotor gearbox and clutch assembly. In one accident, the flexplate fractured during normal cruise flight releasing several fragments, some of which punctured the fuel tank. A metallurgical report issued by the airworthiness authority of Australia suggests that the failures resulted from fatigue cracking that initiated at areas of intergranular pitting corrosion on the edge of the flexplates. The FAA has determined that any crack is an unsafe condition and should be corrected. This condition, if not corrected, could result in failure of the flexplate, loss of power to the main rotor system, and subsequent loss of control of the helicopter.

The Federal Aviation Administration (FAA) has reviewed Robinson Helicopter Company R22 Service Bulletin (SB) #73, dated March 14, 1994, that describes procedures for removing, inspecting, repairing, and reinstalling the flexplate, and found these procedures are inadequate for ensuring safety. The FAA is issuing this AD to require a sensitive dye penetrant inspection and to require more frequent visual inspections than specified by SB #73, dated March 14, 1994.

Since an unsafe condition has been identified that is likely to exist or develop on other helicopters of this same type design, this AD requires an initial dye penetrant inspection of the flexplate on all Model R22 helicopters, and repetitive visual inspections of the flexplate on helicopters that have been in service 2 years or 500 hours' time-in-service, or helicopters with less than 2 years and less than 500 hours' time-in-service that have cracks as determined by the initial dye penetrant inspection.

Pursuant to the authority of the Federal Aviation Act of 1958, delegated to me by the Administrator, the following Priority Letter AD 94-11-01, applicable to Robinson Helicopter Company Model R22 helicopters, is issued and is effective immediately upon receipt.

94-11-01 ROBINSON HELICOPTER COMPANY: Priority Letter issued on May 18, 1994. Docket No. 94-SW-04-AD.

Applicability: Model R22 helicopters, equipped with forward flexplate (flexplate), part number (P/N) A947-1, (with bonded washers), or P/N A193-1 (without bonded washers), certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

To prevent failure of the flexplate, failure of the main rotor drive, and subsequent loss of control of the helicopter, accomplish the following:

(a) Within the next 25 hours' time-in-service (TIS) after the effective date of this airworthiness directive (AD), accomplish the following:

(1) With the clutch disengaged, support the forward end of the clutch shaft, part number (P/N) A166-1, remove the flexplate, P/N A947-1 or P/N A193-1, and record the shim locations for use during reinstallation.

(i) Replace any flexplate that does not have eight bonded washers (two per arm) with an airworthy flexplate, P/N A947-1 E.

(ii) For those flexplates that have eight bonded washers (two per arm), comply with the following:

(A) Remove all coating down to bare metal from the outer edges of the flexplate to approximately 0.125 inches inward, but in no case within 0.50 inches of the bonded washers, using Scotch Brite or 600 grit sand paper. Do not use a chemical paint stripper since it may adversely affect the adhesive that bonds the washers to the flexplate.

(B) Inspect the outer edges of the flexplate for cracks, avoiding the bonded washers, using a dye penetrant inspection method in accordance with Appendix I of this AD. If the dye penetrant contacts the bonded washers, remove the solution from the bonded washers within 1 minute since longer exposure may adversely affect the adhesive.

(1) If a crack is found, replace the flexplate with an airworthy flexplate, P/N A947-1 E. Report a description of the crack, the helicopter's total TIS, and operating conditions to the Propulsion Manager, Los Angeles Aircraft Certification Office, FAA.

(2) If no crack is found, paint the bare edge area of the flexplate with an even coat of zinc-chromate or epoxy primer. Do not paint the bare metal surface of the bonded washers.

(C) Reinstall the flexplate and ensure sheave and clutch shaft angle are properly aligned in accordance with the applicable maintenance manual.

(b) If the inspection in paragraph (a) of this AD revealed no cracks, and the helicopter has less than 2 years and less than 450 hours' TIS, no further action is required by this AD until the flexplate has been in service for 2 years or 450 hours' TIS. Upon reaching 2 years or 450 hours' TIS, accomplish the inspection required by paragraph (d) within the next 50 hours' TIS.

(c) If the inspection in paragraph (a) of this AD revealed cracks, or the helicopter has been in service 2 or more years or 450 or more hours' TIS, within the next 50 hours' TIS, accomplish the repetitive visual inspection required by paragraph (d) of this AD.

(d) After complying with paragraphs (b) and (c), thereafter, at intervals not to exceed 50 hours' TIS from the last inspection, accomplish the following visual inspection:

(1) Remove the flexplate in accordance with the applicable maintenance manual.

(2) Clean the flexplate using a solvent (e.g., methyl-ethyl ketone or naphtha).

(3) Inspect the flexplate for nicks, cracks, or corrosion using a 10-power or higher magnifying glass, paying close attention to the edges of the flexplate.

(i) If a crack is found, replace the flexplate with an airworthy flexplate, P/N A947-1 E, in accordance with the applicable maintenance manual. Report a description of the crack, total TIS, and operating conditions to the Propulsion Manager, Los Angeles Aircraft Certification Office, FAA.

(ii) If a nick or corrosion is found, repair the flexplate in accordance with the applicable maintenance manual.

(iii) Paint any bare edges of the flexplate with an even coat of zinc-chromate or epoxy primer. Do not paint the bare metal surface of the bonded washers.

(iv) If any nick or corrosion cannot be repaired within the rework limits specified in the applicable maintenance manual, replace the flexplate with an airworthy flexplate, P/N A947-1 E, in accordance with the applicable maintenance manual. Report a description of the corrosion, total TIS, and operating conditions to the Propulsion Manager, Los Angeles Aircraft Certification Office, FAA.

(4) Reinstall the flexplate and ensure sheave and clutch shaft are properly aligned in accordance with the applicable maintenance manual.

NOTE: Robinson Helicopter Company R22 Maintenance Manual, Change 14, dated March 14, 1994, pertains to this AD.

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used when approved by the Manager, Los Angeles Aircraft 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, Los Angeles Aircraft Certification Office.

NOTE: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Los Angeles Aircraft Certification Office.

(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 helicopter to a location where the requirements of this AD can be accomplished.

(g) Priority Letter AD 94-11-01, issued May 18, 1994, becomes effective upon receipt.

FOR FURTHER INFORMATION CONTACT: Ms. Elizabeth Bumann, Aerospace Engineer, Los Angeles Aircraft Certification Office, Propulsion Branch, FAA, 3229 E. Spring Street, Long Beach, California 90806-2425, telephone (310) 988-5265, fax (310) 988-5210.

APPENDIX I

DYE PENETRANTS

Several dye penetrant type inspection kits are now available that will reveal the presence of surface cracks or defects and subsurface flaws that extend to the surface of the part being inspected. These penetrant type inspection methods are considered acceptable, provided the part being inspected has been thoroughly cleaned, all areas are readily accessible for viewing, and the manufacturer's recommendations as to the method of application are closely followed.

a. **Cleaning.** An inspection is initiated by first cleaning the surface to be inspected of dirt, loose scale, oil, and grease. Precleaning may usually be accomplished by vapor degreasing or with volatile cleaners. Use a volatile cleaner as it will evaporate from the defects before applying the penetrant dye. Sand blasting is not as desirable a cleaning method, since surface indications may be obscured. It is not necessary to remove anodic films from parts to be inspected, since the dye readily penetrates such films. Special procedures for removing the excess dye should be followed.

b. **Application of Penetrant.** The penetrant is applied by brushing, spraying, or by dipping and allowing to stand for a minimum of 2 minutes. Dwell time may be extended up to 15 minutes, depending upon the temperature of the part and fineness of the defect or surface condition. Parts being inspected should be dry and heated to at least 70° F., but not over 130° F. Very small indications require increased penetration periods.

c. **Removal of Dye Penetrant.** Surplus penetrant is usually removed by application of a special cleaner or remover, or by washing with plain water and allowing the part to dry. Water rinse may also be used in conjunction with the remover, subject to the manufacturer's recommendations.

d. **Application of Developer.** A light and even coat of developer is applied by spraying, brushing, or dipping. When dipping, avoid excess accumulation. Penetrant that has penetrated into cracks or other openings in the surface of the material will be drawn out by the developer resulting in a bright red indication. Some idea of the size of the defect may be obtained after experience by watching the size and rate of growth of the indication.

U.S. Department of Transportation
Federal Aviation Administration

TRANSPORT AIRPLANE DIRECTORATE
AIRCRAFT CERTIFICATION SERVICE
LOS ANGELES AIRCRAFT CERTIFICATION OFFICE
3960 PARAMOUNT BOULEVARD
LAKEWOOD, CALIFORNIA 90712-4137

TO: R22 Owners and Service Centers

This is a copy of the FAA correspondence authorizing compliance with SB-75 as an alternate method of compliance with AD94-11-01.

DEC 06 1994

Mr. Frank Robinson
Robinson Helicopter Company
2901 Airport Drive
Torrance, CA 90505

Reference: Your letter dated December 2, 1994

Dear Mr. Robinson:

Alternative Method of Compliance for
Priority Letter AD 94-11-01
R22 Forward Flexplate

We have reviewed your request for an alternate method of compliance to install flexplate P/N A947-1, Revision E, as a terminating action to the repetitive visual inspections required by paragraph (d) of the subject AD, and find it acceptable. This approval is limited only to the installation of a current production flexplate, Revision E or F.

This letter authorizes approval for an alternate method of compliance in accordance with paragraph (e) of the subject AD. If you have any questions, please contact Ms. Elizabeth Bumann at (310) 627-5265.

Sincerely,

for Gilbert L. Thompson
Manager, Los Angeles Aircraft
Certification Office