

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

**[Docket No. FAA-2011-0588; Directorate Identifier 2010-SW-074-AD;
Amendment 39-16717; AD 2011-12-10]**

RIN 2120-AA64

Airworthiness Directives; Robinson Helicopter Company Model (Robinson) R22, R22 Alpha, R22 Beta, R22 Mariner, R44, and R44 II Helicopters

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD) for the specified Robinson model helicopters that currently requires a visual inspection for skin separation along the leading edge of blade skin aft of the skin-to-spar bond line on the lower surface of each main rotor blade (blade) and in the tip cap area. The existing AD also requires a "tap test" for detecting a separation or void in both bonded areas and repainting any exposed area of the blades. If any separation or void is detected, the AD requires, before further flight, replacing the blade. Thereafter, before each flight, the existing AD also requires checking for any exposed (bare) metal along the skin-to-spar bond line on the lower surface of each blade near the tip. If any bare metal is found, that AD requires an inspection by a qualified mechanic. This amendment contains the same requirements but expands the applicability to include all serial-numbered model helicopters and limits the applicability to specific blade part numbers. This amendment also requires a repetitive inspection of the blade and any necessary rework. This amendment is prompted by a fatal accident in Israel. We have also included responses to comments objecting to the recording requirements in the current AD relating to the pilot checks before each flight and to comments that the burden of the before-each-flight pilot check exceeds the benefit. We have concluded that a check before the first flight of each day is sufficient for aviation safety. The actions specified by this AD are intended to provide more specific AD actions, to relieve the burdens associated with the before-each-flight check by changing it to a daily check, to detect blade skin debond, and to prevent blade failure and subsequent loss of control of the helicopter.

DATES: Effective July 5, 2011.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 5, 2011.

We must receive comments on this AD by August 16, 2011.

ADDRESSES: Use one of the following addresses to comment on this AD.

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.
- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

You may get the service information identified in this AD from Robinson Helicopter Company, 2901 Airport Drive, Torrance, CA 90505, telephone (310) 539-0508, fax (310) 539-5198, or at <http://www.robinsonheli.com/servletlib.htm>.

Examining the Docket: You may examine the docket that contains the AD, any comments, and other information on the Internet at <http://www.regulations.gov>, or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Operations office (telephone (800) 647-5527) is located in Room W12-140 on the ground floor of the West Building at the street address stated in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Eric D. Schrieber, Aviation Safety Engineer, telephone (562) 627-5348, fax (562) 627-5210 (regarding Model R22 helicopters), or Fred Guerin, Aviation Safety Engineer, telephone (562) 627-5232, fax (562) 627-5210 (regarding Model R44 helicopters).

SUPPLEMENTARY INFORMATION: On December 17, 2007, we issued AD 2007-26-12, Amendment 39-15314 (73 FR 397, January 3, 2008). That AD requires a one-time visual inspection for skin separation along the leading edge of the blade skin aft of the skin-to-spar bond line on the lower surface of each blade and in the tip cap area. That AD also requires a "tap test" for detecting a separation or void in both bonded areas. That AD also requires repainting any exposed area of the blades and replacing the blade before further flight if any separation or void occurs. Thereafter, the AD requires, before each flight, checking for any exposed (bare) metal along the skin-to-spar bond line on the lower surface of each blade near the tip. If any bare metal is found, a mechanic must visually inspect the area, perform a "tap test," remove both blade tip covers, and inspect the area. That AD was prompted by 11 reports of blade debond, some occurring in flight and some found during routine maintenance. Blades that develop a debond at the tip may continue to debond causing failure of the blade. This condition most often results from erosion of the protective layer of paint that exposes the edge of the skin, which allows the skin to erode and eventually peel back. In one of the reported incidents, the debond was caused by corrosion from the lower surface of the aluminum tip cap, which is bonded to the inside of the blade tip. The corrosion caused bubbles under the skin but no peeling back of the skin from the spar. The condition was found during inspection and not in flight. The condition, if not corrected, could result in blade failure and subsequent loss of control of the helicopter.

Since issuing AD 2007-26-12, a fatal accident due to blade delamination occurred in Israel. The accident investigation revealed that the operator was in possession of both the United States AD and the service information but apparently failed to follow the United States AD requirements and the service information. However, due to the severity of the unsafe condition, we have determined that modification of the AD requirements is necessary to further aid in correcting the unsafe condition by performing the checks and inspections to prevent further fatalities.

We have reviewed the following Robinson service information:

- Letter titled "Additional Information Regarding Main Rotor Blade Skin Debonding," dated May 25, 2007, discussing blade skin debonding;

- Rotorcraft Flight Manual (RFM) changes to the Normal Procedures Section 4 and Systems Description Section 7, revised April 20, 2007, for each applicable model helicopter containing a "caution" about skin-to-spar bond line erosion;
- One Service Letter with two different Nos.: R22 SL-56B and R44 SL-32B, revised April 30, 2010, specifying proper inspection and protection (refinishing) of bonded areas; and
- Service Bulletins SB-103, dated April 30, 2010, for the Model R22, and SB-72, dated April 30, 2010, for the Model R44 helicopters specifying proper inspection and protection (refinishing) of bonded areas for certain affected blades.

Although not required by this AD, Robinson has developed replacement blades, part number C016-7, for the Model R44 helicopter, and part number A016-6 for the Model R22 helicopter. The FAA may require installing these replacement blades in a future AD.

Also, since issuing AD 2007-26-12, we have received various comments from 32 commenters and have given due consideration to each one. We have identified 13 unique issues and addressed those issues as follows:

Twenty-six commenters state that requiring a maintenance logbook entry before each flight to document the blade check for the exposed skin-to-spar bonded area on the lower surface of each blade is unnecessary and burdensome. The commenters also state that the requirement does not add to safety, will require keeping the maintenance logbook in the aircraft, and will "visually pollute" the logbook distracting from seeing real maintenance trends.

Upon reconsideration, we agree that making a logbook entry at each preflight check may not be necessary. Therefore, we are replacing the "before each flight" check and maintenance logbook entry with a daily "before the first flight of each day" check and logbook entry. A "caution" to check for paint erosion on the lower surface of the blade along the skin-to-spar bond line will be a part of the pre-flight check section of the revised FAA-approved RFM. We do not agree that maintenance logbook entries "pollute the logbook" and distract from seeing real maintenance trends. Operators may make the entries on a separate maintenance record sheet and keep that record sheet as an appendix to the logbook.

Seventeen commenters state that requiring logbook entries during each preflight effectively prohibits student pilots from performing these visual checks and restricts them from flying cross-country flights.

We agree that preflight entries into the logbook will prohibit student pilots from flying solo cross-country flights. Changing the logbook entry requirement from pre-flight to daily will allow the student's flight instructor or a mechanic to make the required logbook entry before the days cross country activity. This will allow the student to fly solo on cross-country flights.

Six commenters state that either the AD is unclear as to whether a pilot or a mechanic should do the checks or that the visual check is difficult without a ladder to see the blade closely.

The FAA agrees that the AD is not specific as to whether a pilot or a mechanic may do the daily check. The "Daily or Preflight Check" section of the FAA-Approved RFM is intended to facilitate the paint erosion check by the pilot, and the pilot or a mechanic may perform the check before each flight. The FAA does not agree that a ladder is required to perform this check. When viewing the blade, the requirement is to look at the lower surface of the blade in the area of the bond line for missing paint. This detail should be obvious to any one with normal vision from several feet away.

One commenter states that if this issue is due to a manufacturing problem, the FAA should mandate that Robinson pay to replace the blades.

We do not believe that this blade debond is due to a manufacturing problem. This debond issue appears to be due to the basic design and maintenance, and the actions taken in AD 2007-26-12 have been shown to detect and to prevent the debond problem. However, reliance on continued inspections is an inadequate long term solution. We are considering a subsequent AD to terminate the inspection requirement by mandating the replacement of these rotor blades.

One commenter suggests that Robinson send out kits for abrasion resistant tape to fix the erosion problem.

We do not agree that blade tape will resolve the unsafe condition even though tape is designed to provide longer resistance to erosion than paint. The same unsafe condition exists with both.

Two commenters state this problem was known for 10 months before the AD's release and should not be an immediately adopted rule (IAR). Also, the commenters state more information was made available before issuing the AD to change the requirements.

We agree that we were aware of the safety concern even though the AD had not been issued. We do not agree that the AD should not have been an IAR. As stated in the preamble to the AD, the "very short time intervals" required by the AD made notice and the opportunity for prior public comment impracticable and justified issuing the IAR. The AD was issued after considering all known information pertaining to the safety concern.

Two commenters state that the AD applies to helicopter serial numbers rather than blade serial numbers, which could result in missed initial checks if the blades from helicopters addressed by the AD are reinstalled on helicopters not subject to the AD.

We agree and are revising the "Applicability" section to apply to certain part-numbered blades instead of certain serial-numbered helicopters. This will also result in different part-numbered blades not being affected by this AD.

One commenter states that repainting of the blade is difficult, burdensome, expensive, and increases downtime.

We do not consider repainting of the blade costly relative to the safety risk. Inspecting and maintaining the integrity of the spar-to-blade bond line with paint corrects the unsafe condition that could result from erosion of the bond between the spar and the blade skin, which could cause failure of the blade.

Five commenters state the Pilot's Operating Handbook has been updated to include the visual inspections outlined in the AD.

We recognize the preflight check exists in the FAA Approved RFM, and we expect pilots and operators to monitor the erosion on the blades when they make this check before each flight.

One commenter states the AD is not applicable to blades that are not eroded, and many operators can fly 2,200 hours without exposing the bond line. The commenter asks why they are subject to this AD since their blades are not eroded.

We agree that blades that are not eroded will not have this debond condition, and if they continue to be noneroded, many operators can fly 2,200 hours without exposing the bond line. Erosion of the paint is dependent upon the amount of erosive particles in the air and varies widely from one flight environment to another. Since there is no limitation on which environment a helicopter may be operated, checks are necessary to maintain an awareness of the condition of the paint at the bond line. In addition to the environmental concerns, we have determined that some bonded end caps experience corrosion where they contact the lower skin, and with both factors at work, checking all blades is warranted.

One commenter states the order of the inspection should be reversed to do the inspection immediately and then do a check every 10 to 20 hours.

We do not agree that it should be reversed. The 10-hour time before the first inspection is common practice to allow for AD action implementation if there is an acceptably low risk of failure in those 10 hours. Additionally, that time is granted to allow enough time for remotely located helicopters to fly to an appropriate maintenance base. Performing and recording a check before the first flight of each day, instead of every 10 to 20 hours, is a better way to allow the pilot to monitor any erosion trend that may occur. This way, the operator will be aware if the bond line is near exposure and plan accordingly.

One commenter states the AD requires repainting any exposed bare metal on the blade and asks what if the bare metal is elsewhere than the bond line.

We agree that only the exposed area of the bond line needs to be painted. The incorporated Robinson Service Bulletin refers to the Service Letter that specifies the area of inspection and repaint.

The Australian Civil Aviation Safety Authority gave an oral comment to the FAA that instead of using a 1965 or later U.S. quarter dollar coin to perform the tap test, they would like to require alternate tools.

The FAA agrees that an equivalent and appropriate tool other than a 1965 or later U.S. quarter dollar may be used, and we included in the AD a statement that other equivalent and appropriate tools may be used for the inspection.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require adopting the rule. This AD supersedes AD 2007-26-12 to revise the applicability to include all serial-numbered helicopters and to limit the applicability to specify part-numbered blades and to require the following:

- Before the first flight of each day, visually checking for any bare metal skin-to-spar joint area on the lower surface of each blade. An owner/operator (pilot) holding at least a private pilot certificate may perform this visual check and must enter compliance into the aircraft maintenance records in accordance with 14 CFR 43.11 and 91.417(a)(2)(v).
- If you find any bare metal in the area of the skin-to-spar bond line, before further flight, inspecting the blade by following the requirements of this AD.
- At specified intervals, inspecting each blade for corrosion, a separation, a void, a gap, or a dent.
- Before further flight, refinishing any exposed area of a blade.
- Before further flight, replacing any unairworthy blade with an airworthy blade.

Accomplish the actions by following specified portions of the service bulletins described previously.

The short compliance time involved is required because the previously described critical unsafe condition can adversely affect the controllability and structural integrity of the helicopter. Therefore, visually checking for any bare metal is required before further flight, and this AD must be issued immediately. The 100-hour inspection is required based upon the utilization rate of the helicopters because some operators could fly 100 hours within 30 days. Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

We estimate that this AD will affect 2,690 helicopters on the U.S. registry. We also estimate the following:

- Time to perform the before flight each day is negligible.
- 3 work hours to inspect 2 blades and
- 10 work hours to replace each unairworthy blade, with an estimated 10 blades to be replaced (based on reports of 10 affected blades in the past 2 years) at an average labor rate of \$85 per work hour.
- Required parts will cost about \$18,130 for a Model R22 blade and about \$24,800 for a Model R44 blade.

We estimate an average of 7 recurrent annual or 100-hour inspections before blade retirement. Based on these figures, we estimate the total cost of the AD on U.S. operators to be \$5,024,800. This figure includes \$4,801,650 to inspect all the blades 7 times; plus \$94,900 to replace 5 of the Model R22 blades; plus \$128,250 to replace 5 of the Model R44 blades.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety, and we did not precede it by notice and an opportunity for public comment. We invite you to send any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number "FAA-2011-0588; Directorate Identifier 2010-SW-074-AD" at the beginning of your comments. We specifically invite comments on the overall

regulatory, economic, environmental, and energy aspects of the AD. We will consider all comments received by the closing date and may amend the AD in light of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive concerning this AD. Using the search function of the docket Web site, you can find and read the comments to any of our dockets, including the name of the individual who sent the comment. You may review the DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-78).

Regulatory Findings

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

For the reasons discussed above, I certify that the regulation:

1. Is not a "significant regulatory action" under Executive Order 12866;
2. Is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
3. Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared an economic evaluation of the estimated costs to comply with this AD. See the AD docket to examine the economic evaluation.

Authority for This Rulemaking

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

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

List of Subjects in 14 CFR Part 39

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

Adoption of the Amendment

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

PART 39—AIRWORTHINESS DIRECTIVES

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

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

§ 39.13 [Amended]

2. The FAA amends § 39.13 by removing Airworthiness Directive (AD) 2007-26-12, Amendment 39-15314 (73 FR 400; January 3, 2008), Directorate Identifier 2007-SW-04-AD; and by adding a new AD to read as follows:



2011-12-10 Robinson Helicopter Company: Amendment 39-16717; Docket No. FAA-2011-0588, Directorate Identifier 2010-SW-074-AD. Supersedes AD 2007-26-12, Amendment 39-15314, Docket No. FAA-2007-0378, Directorate Identifier 2007-SW-04-AD.

Applicability: Model R22, R22 Alpha, R22 Beta, and R22 Mariner helicopters, with main rotor blade (blade), part number (P/N) A016-4; and Model R44 and R44 II helicopters, with blade, P/N C016-2 or C016-5, certificated in any category.

Compliance: Required as indicated.

To detect blade skin debond and prevent blade failure and subsequent loss of control of the helicopter, do the following:

(a) Before the first flight of each day, visually check for any exposed (bare metal) skin-to-spar joint area on the lower surface of each blade. The actions required by this paragraph may be performed by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD in accordance with 14 CFR 43.9(a)(1)-(4) and 14 CFR 91.417(a)(2)(v). The record must be maintained as required by 14 CFR 91.417, 121.380, or 135.439. This authorization is an exception to our standard maintenance regulations.

(b) If you find any bare metal in the area of the skin-to-spar bond line, before further flight, inspect the blade by following the requirements of paragraph (d) of this AD.

(c) Within 10 hours time-in-service (TIS), unless done previously, and at intervals not to exceed 100 hours TIS or at each annual inspection, whichever occurs first, inspect each blade for corrosion, a separation, a gap, or a dent by following the Compliance Procedure, paragraphs 1 through 6 and 8, of Robinson R22 Service Bulletin SB-103, dated April 30, 2010 (SB103) for the R22 series helicopters, and Robinson R44 Service Bulletin SB-72, dated April 30, 2010 (SB72), for the R44 series helicopters. Although the Robinson service information limits the magnification to 10 x, a higher magnification is acceptable for this inspection. Also, an appropriate tap test tool which provides similar performance, weight, and consistency of tone may be substituted for the "1965 or later United States Quarter-dollar coin," which is specified in the Compliance Procedure, paragraph 2, of SB-72 and SB-103.

(d) Before further flight, refinish any exposed area of a blade by following the Compliance Procedure, paragraphs 2 through 6, of Robinson R22 Service Letter SL-56B and R44 Service letter SL-32B, dated April 30, 2010, for both the R22 and R44 series helicopters.

(e) Before further flight, replace any unairworthy blade with an airworthy blade.

Note: The Robinson letter titled "Additional Information Regarding Main Rotor Blade Skin Debonding," dated May 25, 2007, which is not incorporated by reference, contains additional information about the subject of this AD. This document is available at <http://www.robinsonheli.com>.

(f) To request a different method of compliance or a different compliance time for this AD, follow the procedures in 14 CFR 39.19. Send your request to the Manager, Los Angeles Aircraft Certification Office, FAA, Airframe Branch, 3960 Paramount Blvd., Lakewood, California 90712, regarding Model R22 helicopters ATTN: Eric D. Schrieber, Aviation Safety Engineer, telephone (562) 627-5348, fax (562) 627-5210, or regarding Model R44 helicopters Attn: Fred Guerin, Aviation Safety Engineer, telephone (562) 627-5232, fax (562) 627-5210.

(g) Special flight permits will not be issued.

(h) The Joint Aircraft System/Component (JASC) Code is: 6210 Main Rotor Blades.

(i) The inspections shall be done following the specified portions of Robinson R22 Service Bulletin SB-103, dated April 30, 2010, or R44 Service Bulletin SB-72, dated April 30, 2010, as appropriate for each model helicopter. Repaint the exposed area of a blade by following Robinson R22 Service letter SL-56B and R44 Service Letter SL-32B (combined in one document), dated April 30, 2010. The Director of the Federal Register approved this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Robinson Helicopter Company, 2901 Airport Drive, Torrance, CA 90505, telephone (310) 539-0508, fax (310) 539-5198, or at <http://www.robinsonheli.com/servletlib.htm>. 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 National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(j) This amendment becomes effective on July 5, 2011.

Issued in Fort Worth, Texas, on June 2, 2011.

Kim Smith,
Manager, Rotorcraft Directorate,
Aircraft Certification Service.