



**[4910-13-P]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2015-4007; Directorate Identifier 2015-SW-064-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; Various Model 234 and Model CH-47D Helicopters**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for various Model 234 and Model CH-47D helicopters. This proposed AD would require inspections of the pitch housing and revising the pitch housing retirement life. This proposed AD is prompted by reports of cracking in the pitch housing lugs. The proposed actions are intended to detect and prevent an unsafe condition on these products.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments by any of the following methods:

- **Federal eRulemaking Docket:** Go to <http://www.regulations.gov>. Follow the online instructions for sending your comments electronically.
- **Fax:** 202-493-2251.
- **Mail:** Send comments to the U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590-0001.

- Hand Delivery: Deliver to the “Mail” address between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-4007; or in person at the Docket Operations Office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the economic evaluation, the Special Airworthiness Information Bulletin (SAIB), any comments received, and other information. The street address for the Docket Operations Office (telephone 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

For service information identified in this proposed AD, contact Boeing Helicopters, The Boeing Company, 1 S. Stewart Avenue, Ridley Park, PA 19078, telephone 610-591-2121, and Columbia Helicopters, Inc. (Columbia), 14452 Arndt Road NE, Aurora OR 97002, telephone (503) 678-1222, fax (503) 678-5841, or at <http://www.colheli.com>. You may review the referenced service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy, Room 6N-321, Fort Worth, TX 76177.

**FOR FURTHER INFORMATION CONTACT:** Kathleen Arrigotti, Aerospace Engineer, Seattle Aircraft Certification Office, Transport Airplane Directorate, FAA, 1601 Lind Avenue SW, Renton, Washington 98057; telephone (425) 917-6426; email [Kathleen.Arrigotti@faa.gov](mailto:Kathleen.Arrigotti@faa.gov).

**SUPPLEMENTARY INFORMATION:**

## **Comments Invited**

We invite you to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should send only one copy of written comments, or if comments are filed electronically, commenters should submit only one time.

We will file in the docket all comments that we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, we will consider all comments we receive on or before the closing date for comments. We will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. We may change this proposal in light of the comments we receive.

## **Discussion**

We propose to adopt an AD for helicopters with a pitch housing part number (P/N) 145R2075-11, 145R2075-12, 145R2075-13, 145R2075-14, 145R2075-15, 145R2075-16, 234R2075-1, or 234R2075-2 installed. These pitch housings are installed on Model 234 and Model CH-47D helicopters. The type certificate (TC) holder for Model 234 helicopters is Columbia (type certificate previously held by Boeing Defense & Space Group), and the type certificate holders for Model CH-47D helicopters currently include Columbia, Billings Flying Service, Inc., and Tandem Rotor, LLC. We are not

limiting this proposed AD to the type certificate holders listed above because we expect additional type certificate holders of helicopters that are subject to this same unsafe condition.

This proposed AD is prompted by reports of cracking in the pitch housing lugs. In November 2007, Boeing reported the failure of an aft rotor pitch housing lower lug on a Model CH-47 helicopter operated by the Japanese Ground Self Defense Force. On March 26, 2009, a Model 234 helicopter also experienced a failure because of a crack on an aft rotor pitch housing lower lug. In both cases, the cracking was located on the lead side of the lower vertical pin lug and had initiated in the bore. The crack grew outward by fatigue, initiated by fretting damage.

Those incidents prompted the FAA to issue SAIB SW-11-03, dated October 22, 2010. The SAIB recommends that all owners and operators of Columbia Model 234 helicopters perform repetitive ultrasonic inspections of the lugs. At that time, there were no civil Model CH-47D helicopters in service.

On March 20, 2015, we received a report of lateral vibration on a Model 234 helicopter that prompted an immediate landing. A subsequent investigation found that a crack in an aft pitch housing upper lug resulted in the lateral vibrations. The pitch housing had accumulated 11,733 hours time-in-service (TIS). The crack was determined to be caused by fatigue and attributed to underestimated load conditions in the original life limit calculations. This cracking differed from the cracking described in the SAIB because the cracking initiated at the outer surface of the pitch housing lug and grew inward toward the bore.

To correct this unsafe condition, we propose to require repetitive eddy current and

ultrasonic inspections of the pitch housing. Based on the proximity of the most recent inward-growing crack to the outward cracks described in the SAIB, we propose to require ultrasonic inspections of the pitch housing, as recommended in the SAIB. Boeing, the original manufacturer of both model helicopters, developed service information for the SAIB ultrasonic inspections, which we would require in this proposed AD. Due to the rapid growth rate, an effective eddy current inspection must detect an inward-growing crack of no more than 0.10 inch. This proposed AD would require, for Columbia helicopters, the eddy current inspection method specified in Columbia's service information. Because the other TC holders have not developed service instructions, we propose to require the eddy current inspection procedures for all other helicopters be submitted to the Seattle or Denver Aircraft Certification Offices for approval.

We are also proposing to require removing the pitch housing from service when it accumulates a total of 8,200 hours TIS. Forward pitch housings on Model CH-47D helicopters have no life limit and the aft pitch housing already has a life limit of 8,200 hours TIS. For Model 234 helicopters, the forward pitch housing has a life limit of 12,547 hours TIS and the aft pitch housing has a life limit of 19,077 hours TIS. This proposed AD would establish or reduce these life limits to 8,200 hours TIS for both forward and aft pitch housings, regardless of the model helicopter.

The actions specified by this proposed AD are intended to detect and prevent a crack in a pitch housing lug. This condition could result in loss of a rotor blade and consequent loss of helicopter control.

## **FAA's Determination**

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of these same type designs.

## **Related Service Information Under 1 CFR part 51**

We reviewed Boeing Service Bulletin 145R2075-62-0001, Revision 1, dated September 27, 2011, which specifies updated life limits for the forward and aft pitch housings and revised overhaul and ultrasonic inspection procedures for various military Model CH-47 and 234 helicopters.

We also reviewed Columbia Helicopters, Inc., Alert Service Bulletin No. 234-62-A0012, Revision 2, dated March 1, 2016, for Model 234 helicopters; and Alert Service Bulletin No. 47D-62-A0002, Revision 0, dated March 1, 2016, for Model CH-47D helicopters. This service information specifies procedures for performing repetitive eddy current inspections, visual inspections, and ultrasonic inspections and for reducing the life limit of the pitch housing assemblies.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

## **Proposed AD Requirements**

This proposed AD would require:

Before further flight, removing from service any pitch housing P/N 145R2075-11, 145R2075-12, 145R2075-13, 145R2075-14, 145R2075-15, 145R2075-16, 234R2075-1, and 234R2075-2 that has accumulated 8,200 hours total time-in-service (TIS).

Before the pitch housing accumulates 200 hours TIS after the effective date of this proposed AD and thereafter at intervals not to exceed 200 hours TIS, ultrasonic inspecting the pitch housing for a crack and replacing any cracked pitch housing. Within 400 hours TIS or before the pitch housing accumulates 4,000 hours total TIS, whichever occurs later, and thereafter at intervals not to exceed 500 hours TIS, eddy current inspecting the pitch housing for a crack and replacing any cracked pitch housing.

For Columbia helicopters, this eddy current inspection would be performed in accordance with the Columbia service information. For all other helicopters, this proposed AD would require that the method for the eddy current inspection be approved by the Manager, Seattle Aircraft Certification Office (ACO) or Manager, Denver ACO.

#### **Differences Between this Proposed AD and the Service Information**

The service information provides different life limits for the forward and aft pitch housings, while this proposed AD would require a life limit of 8,200 hours TIS for all pitch housings. The service information requires either an ultrasonic inspection or a dye penetrant inspection as part of the overhaul procedures. The service information specifies different compliance times for the inspections than what would be required by this proposed AD.

#### **Costs of Compliance**

We estimate that this proposed AD would affect 15 helicopters of U.S. Registry and that labor costs would average \$85 per work-hour. Based on these estimates, we expect the following costs:

- An eddy current inspection would require 4 work-hours for a total cost of \$340 per helicopter and \$5,100 for the U.S. fleet, per inspection cycle.

- An ultrasonic inspection would require 4 work-hours for a total cost of \$340 per helicopter and \$5,100 for the U.S. fleet, per inspection cycle.
- Replacing a pitch housing would require 8 work-hours and parts would cost \$13,000, for a total cost of \$13,680 per helicopter.

### **Authority for This Rulemaking**

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

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

### **Regulatory Findings**

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would 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, I certify that this proposed AD:

1. Is not a “significant regulatory action” under Executive Order 12866;
2. Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979);
3. Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction; and
4. 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 proposed AD and placed it in the AD docket.

#### **List of Subjects in 14 CFR Part 39**

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

#### **The Proposed Amendment**

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

#### **PART 39 - AIRWORTHINESS DIRECTIVES**

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

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

#### **§ 39.13 [Amended]**

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

**Various Model 234 and Model CH-47D Helicopters** Docket No. FAA-2015-4007;  
Directorate Identifier 2015-SW-64-AD.

#### **(a) Applicability**

This AD applies to Model 234 and Model CH-47D helicopters, regardless of type certificate holder, with a pitch housing assembly (pitch housing) part number (P/N) 145R2075-11, 145R2075-12, 145R2075-13, 145R2075-14, 145R2075-15, 145R2075-16, 234R2075-1, or 234R2075-2 installed, certificated in any category.

**(b) Unsafe Condition**

This AD defines the unsafe condition as a crack in a pitch housing lug. This condition could result in loss of a rotor blade and consequent loss of helicopter control.

**(c) Comments Due Date**

We must receive comments by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

**(d) Compliance**

You are responsible for performing each action required by this AD within the specified compliance time unless it has already been accomplished prior to that time.

**(e) Required Actions**

(1) Before further flight, remove from service any pitch housing P/N 145R2075-11, 145R2075-12, 145R2075-13, 145R2075-14, 145R2075-15, 145R2075-16, 234R2075-1, and 234R2075-2 that has accumulated 8,200 hours total time-in-service (TIS).

(2) Before the pitch housing accumulates 200 hours TIS after the effective date of this AD and thereafter at intervals not to exceed 200 hours TIS, ultrasonic inspect the pitch housing for a crack in accordance with Attachment 1, paragraphs F and H through K, of Boeing Service Bulletin 145R2075-62-0001, Revision 1, dated September 27, 2011. If there is a crack, replace the pitch housing before further flight.

(3) Within 400 hours TIS or before the pitch housing has accumulated 4,000

hours total TIS, whichever occurs later, and thereafter at intervals not to exceed 500 hours TIS:

(i) For Columbia Helicopters, Inc., Model 234 and CH-47D helicopters, eddy current inspect the pitch housing for a crack by following paragraphs 3.C.(1) and 3.C.(2) of Columbia Helicopters, Inc., Alert Service Bulletin No. 234-62-A0012, Revision 2, dated March 1, 2016, or Alert Service Bulletin No. 47D-62-A0002, Revision 0, dated March 1, 2016, as applicable to your model helicopter. If there is a crack, replace the pitch housing before further flight.

(ii) For all other helicopters, eddy current inspect the pitch housing for a crack. If there is a crack, replace the pitch housing before further flight. The eddy current inspection must be accomplished using a method approved by the Manager, Seattle Aircraft Certification Office (ACO) or Manager, Denver ACO. For a repair method to be approved as required by this AD, the Manager's approval letter must specifically refer to this AD.

**(f) Alternative Methods of Compliance (AMOCs)**

(1) For operators of helicopters with type certificates issued by the Denver Aircraft Certification Office, the manager of the Denver Aircraft Certification Office, FAA, may approve AMOCs for this AD. Send your proposal to: Greg Johnson, Senior Aerospace Engineer, Denver Aircraft Certification Office, 26805 East 68th Avenue, Denver, CO 80249; phone: 303-342-1083; fax: 303-342-1088; e-mail: Gregory.Johnson@faa.gov.

(2) All other AMOC requests should be sent to the Manager, Seattle Aircraft Certification Office, FAA. Send your proposal to: Kathleen Arrigotti, Aerospace

Engineer, Seattle Aircraft Certification Office, Transport Airplane Directorate, FAA,  
1601 Lind Avenue SW, Renton, Washington 98057; telephone (425) 917-6426; email 9-  
ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(3) For operations conducted under a 14 CFR part 119 operating certificate or under 14 CFR part 91, subpart K, we suggest that you notify your principal inspector, or lacking a principal inspector, the manager of the local flight standards district office or certificate holding district office before operating any aircraft complying with this AD through an AMOC.

**(g) Additional Information**

Special Airworthiness Information Bulletin SW-11-03, dated October 22, 2010 (SAIB), which is not incorporated by reference, contains additional information about the subject of this AD. You may view the SAIB on the internet at <http://www.regulations.gov> in the AD Docket.

**(h) Subject**

Joint Aircraft Service Component (JASC) Code: 6220, Main Rotor Head.

Issued in Fort Worth, Texas, on March 1, 2017.

Scott A. Horn,

Acting Manager, Rotorcraft Directorate,  
Aircraft Certification Service.

[FR Doc. 2017-04735 Filed: 3/13/2017 8:45 am; Publication Date: 3/14/2017]