



**DATE:** September 25, 2015  
**AD #:** 2015-20-51

This Emergency Airworthiness Directive (AD) 2015-20-51 is being sent to owners and operators of Model UH-12-series helicopters, with a main rotor blade (MRB) fork, part number 52110-3, with a serial number 11502P through 11537P, or 11551P through 11579P, excluding 11577P, certificated in any category.

### **Background**

This Emergency AD was prompted by a pilot report of severe lateral vibrations on a Model UH-12D helicopter. After that incident, the operator of the helicopter discovered a crack in the main rotor blade (MRB) fork at the tension-torsion (TT) retention pin holes. The operator then inspected the rest of its UH-12 fleet and discovered another helicopter with a cracked MRB fork. The preliminary investigation suggests the failure of the forks may be a production issue with certain batches of forks. However, the investigation into the root cause of the failure of the forks is on-going. The crack in one of the forks was not detectable by the dye-penetrant inspection required by AD 86-17-02, Amendment 39-5367 (51 FR 28062, August 5, 1986), which addresses a similar unsafe condition. Accordingly, this Emergency AD requires a one-time magnetic particle inspection of the MRB fork at the TT retention pin hole. If there is a crack, this Emergency AD requires replacing the fork before further flight. This Emergency AD also requires reporting certain information to the FAA to enable us to obtain better insight into the cause of the cracking. These Emergency AD actions are intended to detect a crack in the MRB fork and prevent blade separation and subsequent loss of control of the helicopter. This Emergency AD does not supersede or affect the requirements in AD 86-17-02.

### **FAA's Determination**

We are issuing this Emergency AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop on other helicopters of the same type designs.

### **Related Service Information**

We reviewed a Hiller customer letter, dated September 18, 2015, that states that failure of a main rotor fork may result in catastrophic loss of life and loss of the helicopter. Hiller further urges its customers to immediately comply with its preliminary service bulletin. The Hiller Aircraft Corporation ("Hiller") Preliminary Service Bulletin has three different numbers: UH12-E Service Bulletin 51-10; UH-12 A, B, C Series Service Bulletin 91; and Turbine Hiller Service Bulletin 21-560; and is dated September 18, 2015 (Preliminary SB). The Preliminary SB reports that an operator found two main rotor forks, part number 52110-3, with circumferential cracks radiating from the tension torsion pin hole. According to the Preliminary SB, these forks had 751 and 782 hours time-in-service. The first cracked fork was found after the pilot reported increasingly severe vibrations during flight. The second cracked fork was found on a helicopter undergoing other maintenance. The operator reported that the crack on one of the forks was not detectable using visible dye penetrant but

was detectable using florescent penetrant. The Preliminary SB consequently calls for a visual and magnetic particle inspection of the entire fork, and a second magnetic particle inspection and cadmium plating after any repair or rework. If cracks are found in the fork, the Preliminary SB calls for replacement of the TT pin and a florescent penetrant inspection of the main rotor hub. The Preliminary SB also specifies reporting the results of the inspections to Hiller.

### **Emergency AD Requirements**

This Emergency AD requires, before further flight, performing a one-time magnetic particle inspection of the fork for a crack at the MRB pin holes. If there is a crack, we require replacing the MRB fork with an MRB fork that has been inspected per the requirements of this Emergency AD or with an airworthy MRB fork that is not listed in the applicability paragraph of this Emergency AD. Also required, within 10 days, is reporting certain information to the Manager of the Los Angeles Aircraft Certification Office.

### **Differences Between This Emergency AD and the Service Information**

We require a one-time magnetic particle inspection of a 1-inch strip around the edge of each MRB fork TT retention pin hole. The Preliminary SB requires a visual inspection and a magnetic particle inspection of the fork. If there is a crack, we require replacing the MRB fork, while the Preliminary SB requires replacing the TT pin and a florescent penetrant inspecting the main rotor hub.

### **Interim Action**

We consider this Emergency AD to be an interim action. The inspection report that is required by this Emergency AD will enable us to obtain better insight into the cause of the cracking and eventually to develop final action to address this unsafe condition. Once final action has been identified, we might consider further rulemaking.

### **Costs of Compliance**

We estimate that this AD will affect 64 MRB forks installed on helicopters of U.S. Registry and that labor costs average \$85 a work-hour. Based on these estimates we expect the following costs.

- Magnetic particle inspecting each affected MRB fork will require 3 work hours for a labor cost of \$255. No parts are needed for a total U.S. fleet cost of \$16,320.
- Reporting the information requested in Appendix 1 requires 1/12 work-hour for a labor cost of about \$7 per MRB fork and \$455 for the U.S. fleet.
- If required, a replacement fork costs \$14,003.

### **Paperwork Reduction Act**

A federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a current valid OMB control number. The control number for the collection of information required by this Emergency AD is 2120-0056. The paperwork cost associated with this Emergency AD has been detailed in the Costs of Compliance section of this document and includes time for reviewing instructions, as well as completing and reviewing the collection of information. Therefore, all

reporting required by this Emergency AD is mandatory. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at 800 Independence Ave., SW, Washington, DC 20591; ATTN: Information Collection Clearance Officer, AES-200.

### **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.

### **Adoption of the Emergency Airworthiness Directive (AD)**

We are issuing this Emergency AD under 49 U.S.C. Sections 106(g), 40113, and 44701 according to the authority delegated to me by the Administrator.

2015-20-51 **Model UH-12-Series Helicopters:** Directorate Identifier 2015-SW-067-AD.

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

This Emergency AD applies to Model UH-12-series helicopters, regardless of type certificate holder, with a main rotor blade (MRB) fork, part number 52110-3, with a serial number 11502P through 11537P, or 11551P through 11579P, excluding 11577P, certificated in any category.

#### **(b) Unsafe Condition**

This Emergency AD defines the unsafe condition as a crack in an MRB fork at the tension-torsion retention pin holes (pin holes). This condition, if not detected and corrected, could result in blade separation and subsequent loss of control of the helicopter.

#### **(c) Effective Date**

This Emergency AD is effective upon receipt.

#### **(d) Compliance**

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

#### **(e) Required Actions**

(1) Before further flight, unless done within the last 100 hours time-in-service, prepare the area for a one-time magnetic particle inspection by stripping any paint in the interior and exterior of each MRB fork. The inspection area is a 1-inch strip around the edge of each MRB pin hole. Magnetic particle inspect for a crack in the MRB fork at the pin holes, following the magnetic particle examination process and qualifications found in American Society for Testing and Material (ASTM) E1444 or equivalent. If there is a crack, replace the MRB fork with an MRB fork that has

been inspected per the requirements of this paragraph or with an airworthy MRB fork that is not listed in the applicability paragraph of this Emergency AD.

Note 1 to paragraph (e)(1) of this Emergency AD: This Emergency AD does not supersede or affect the requirements of AD 86-17-02, Amendment 39-5367 (51 FR 28062, August 5, 1986).

(2) Within 10 days after completing the magnetic particle inspection, report the information requested in Appendix 1 to this Emergency AD by mail to the Manager, Los Angeles Aircraft Certification Office, Federal Aviation Administration, ATTN: Nenita Odesa, 3960 Paramount Blvd., Lakewood, California 90712; by fax to (562) 627-5210; or email to [neneta.odesa@faa.gov](mailto:neneta.odesa@faa.gov).

**(f) Special Flight Permit**

A special flight permit may only be issued if the MRB fork has no visible crack.

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

(1) The Manager, Los Angeles Aircraft Certification Office (LAACO), FAA, may approve AMOCs for this Emergency AD. Send your proposal to: Nenita Odesa, Aviation Safety Engineer, LAACO, Transport Directorate, 3960 Paramount Blvd., Lakewood, California 90712; telephone (562) 627-5234; email [9-ANM-LAACO-AMOC-REQUESTS@faa.gov](mailto:9-ANM-LAACO-AMOC-REQUESTS@faa.gov).

(2) 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 Emergency AD through an AMOC.

**(g) Additional Information**

For further information contact: Nenita Odesa, Aviation Safety Engineer, LAACO, Transport Directorate, FAA, 3960 Paramount Blvd., Lakewood, California 90712; telephone (562) 627-5234; email [nenita.odesa@faa.gov](mailto:nenita.odesa@faa.gov).

**(h) Subject**

Joint Aircraft Service Component (JASC) Code: 6700 Rotor Flight Control.

## Appendix 1 to Emergency AD 2015-20-51

### Main Rotor Blade Fork Inspection (Sample Format)

Provide the following information to the Manager, Los Angeles Aircraft Certification Office, Federal Aviation Administration, ATTN: Nenita Odesa, 3960 Paramount Blvd., Lakewood, California 90712; by fax to (562) 627-5210; or email to [nenita.odesa@faa.gov](mailto:nenita.odesa@faa.gov).

Aircraft Registration No.:

Helicopter Model:

Helicopter Serial Number:

Helicopter Owner or Operator:

Contact Phone No.:

Main Rotor Blade Fork (MRB Fork) Part Number and Serial Number:

Total Hours Time-in-Service (TIS) on the MRB Fork:

Total Hours TIS on Helicopter:

Who Performed the Inspection:

Date and Location Inspection was Accomplished:

Crack Found? If yes, describe the crack size, location, orientation (provide a sketch or picture):

TIS since the last dye penetrant inspection (per AD 86-17-02):

Provide Any Other Comments:

Issued in Fort Worth, Texas, on September 25, 2015.

Lance T. Gant,  
Acting Manager, Rotorcraft Directorate,  
Aircraft Certification Service