



**DATE:** April 10, 2015  
**AD #:** 2015-08-51

This superseding emergency Airworthiness Directive (EAD) 2015-08-51 is being sent to owners and operators of Enstrom Helicopter Corporation (Enstrom) Model F-28A, 280, F-28C, F-28C-2, F-28C-2R, 280C, F-28F, F-28F-R, 280F, 280FX helicopters, all serial numbers; and Enstrom Model 480 helicopters with a serial number (S/N) 5001 through 5006; with a main rotor spindle (spindle), part number (P/N) 28-14282-11 or P/N 28-14282-13.

### **Background**

On February 12, 2015, we issued EAD 2015-04-51, which was prompted by a fatal accident. Preliminary results of the investigation indicated that the accident was caused by a crack in the spindle which resulted in the main rotor blade separating from the helicopter. The crack was discovered at the last thread of the spindle retention nut threads. While the investigation could not determine when the crack initiated, it was able to determine that the crack existed, undetected, for a significant amount of time before the separation. EAD 2015-04-51 required, before further flight, conducting a magnetic particle inspection (MPI) to determine if a crack exists in any spindle that has 5,000 or more hours time-in-service (TIS) or where the hours TIS of the spindle is not known. If there was a crack in the spindle, EAD 2015-04-51 required replacing it before further flight. EAD 2015-04-51 also required reporting the inspection results to the FAA within 72 hours.

Since we issued EAD 2015-04-51, inspection reports received by the FAA indicate approximately 20% of the spindles had evidence of cracks. The inspection reports include spindles with cracks at less than 5,000 hours TIS. With analysis of available data, we have determined the need to expand the applicability to include spindles with 1,500 or more hours TIS.

### **FAA's Determination**

We are issuing this EAD 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**

Enstrom has issued Service Directive Bulletin No. 0119, Revision 1, dated April 1, 2015, for all S/Ned Model F-28A, F-28C, F-28F, 280, 280C, 280F, and 280FX helicopters with a main rotor spindle, P/N 28-14282-11 and 28-14282-13. Enstrom has also issued Service Directive Bulletin No. T-050, Revision 1, dated April 1, 2015, for Model 480 helicopters, S/N 5001 through 5004 and 5006, and with a main rotor spindle, P/N 28-14282-13, except those aircraft modified with tension-torsion straps. Both service directives specify, for any spindle that has been in service more than 3,500 hours, within 5 hours TIS, sending the spindle to Enstrom for an MPI. For any spindle with less than 3,500 hours TIS, the service directives specify sending the spindle to Enstrom for an MPI at or before it reaches 3,500 hours TIS. The service directives also specify repeating the MPI every 300 hours for spindles with over 3,500 hours TIS.

## **EAD Requirements**

This EAD requires before further flight, conducting an MPI to determine if a crack exists in any spindle that has 1,500 or more hours TIS or where the hours TIS of the spindle is not known. If there is a crack in the spindle, this EAD requires replacing it before further flight. The MPI of the spindle must be conducted by a Level II or Level III inspector qualified in the MPI method in the Aeronautics Sector according to the EN4179 or NAS410 standard or equivalent. This EAD also requires, within 72 hours, reporting certain information to the FAA.

## **Costs of Compliance**

We estimate that this EAD affects 323 helicopters of U.S. Registry and that operators may incur the following costs to comply with this EAD. Inspecting the spindles will take about 15 work-hours per helicopter and reporting the required inspection information will take about 0.5 work-hour. We estimate an average labor rate of \$85 per work-hour, for a total cost of \$1,318 per helicopter and \$425,714 for the U.S. fleet. Replacing a spindle will cost \$8,164 for parts and no additional work-hours.

## **Differences Between This EAD and the Service Information**

This EAD requires that the MPI be conducted by a Level II or Level III inspector or equivalent and that the results of the MPI be reported to the FAA, whereas the service information specifies that the MPI be accomplished by or reported to Enstrom. This EAD requires an MPI on spindles with 1,500 or more hours TIS, whereas the service information specifies performing an initial MPI on spindles with 3,500 or more hours TIS. This EAD does not require a recurring inspection, whereas the service information specifies to repeat the MPI every 300 hours TIS for spindles with over 3,500 hours TIS. This EAD requires the MPI before further flight, whereas the service information specifies that it be accomplished within 5 hours TIS.

## **Interim Action**

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

## **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 EAD is 2120-0056. The paperwork cost associated with this EAD 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 EAD 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 (EAD)**

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

2015-08-51 **The Enstrom Helicopter Corporation (Enstrom):** Directorate Identifier 2015-SW-014-AD.

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

This EAD applies to Enstrom Model F-28A, 280, F-28C, F-28C-2, F-28C-2R, 280C, F-28F, F-28F-R, 280F, and 280FX helicopters, all serial numbers; and Enstrom Model 480 helicopters, serial numbers 5001 through 5006; with a main rotor spindle (spindle), part number (P/N) 28-14282-11 or 28-14282-13, installed, certificated in any category. This EAD applies to any helicopter that has a spindle with 1,500 or more hours time-in-service (TIS) or where the hours TIS of the spindle is not known.

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

This EAD defines the unsafe condition as a crack in the spindle, which, if not detected, could result in loss of a main rotor blade and subsequent loss of control of the helicopter.

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

This EAD is effective upon receipt.

#### **(d) Affected ADs**

This EAD supersedes EAD 2015-04-51, Directorate Identifier 2015-SW-002-AD, issued on February 12, 2015.

#### **(e) Compliance**

You are responsible for performing each action required by this EAD within the specified compliance time unless it has been accomplished on or after February 11, 2015.

#### **(f) Required Actions**

(1) Before further flight, conduct a magnetic particle inspection (MPI) of the spindle to determine if a crack exists, paying particular attention to the threaded portion of the spindle. The MPI of the spindle must be conducted by a Level II or Level III inspector qualified in the MPI in the Aeronautics Sector according to the EN4179 or NAS410 standard or equivalent. If there is a crack in the spindle, replace it with an airworthy spindle before further flight.

(2) Within 72 hours after accomplishing the MPI, report the information requested in Appendix 1 to this EAD by mail to the Manager, Chicago Aircraft Certification Office, Federal Aviation Administration, ATTN: Gregory J. Michalik, 2300 East Devon Ave., Des Plaines, IL, 60018; by fax to (847) 294-7834; or email to [gregory.michalik@faa.gov](mailto:gregory.michalik@faa.gov).

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

(1) The Manager, Chicago Aircraft Certification Office, FAA, may approve AMOCs for this EAD. Send your proposal to: Gregory J. Michalik, Senior Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 East Devon Ave., Des Plaines, IL, 60018; (847) 294-7135; email [gregory.michalik@faa.gov](mailto:gregory.michalik@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 EAD through an AMOC.

(3) Any AMOC approved previously in accordance with EAD 2015-04-51, dated February 12, 2015, is approved as an AMOC for the corresponding requirements in paragraph (f)(1) of this EAD.

**(h) Additional Information**

(1) For further information contact: Gregory J. Michalik, Senior Aerospace Engineer, Chicago Aircraft Certification Office, Small Airplane Directorate, FAA, 2300 East Devon Ave., Des Plaines, IL, 60018; (847) 294-7135; email [gregory.michalik@faa.gov](mailto:gregory.michalik@faa.gov).

(2) For a copy of the service information referenced in this AD, contact: Enstrom Helicopter Corporation, 2209 22<sup>nd</sup> Street, Menominee, MI; telephone (906) 863-1200; fax (906) 863-6821; or at [www.enstromhelicopter.com](http://www.enstromhelicopter.com).

**(i) Subject**

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

**Spindle Inspection (Sample Format)**

Provide the following information by mail to the Manager, Chicago Aircraft Certification Office, Federal Aviation Administration, ATTN: Gregory J. Michalik, 2300 East Devon Ave., Des Plaines, IL, 60018; by fax to (847) 294-7834; or email to gregory.michalik@faa.gov.

Aircraft Registration No.:

Helicopter Model:

Helicopter Serial Number:

Helicopter Owner or Operator:

Contact Phone No.:

Spindle Part Number and Serial Number:

Total Hours Time-in-Service (TIS) on Spindle:

Total Hours TIS on Helicopter (if hours TIS on spindle were not available):

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):

Provide Any Other Comments:

Issued in Fort Worth, Texas, on April 10, 2015.

Bruce E. Cain,

Acting Directorate Manager, Rotorcraft Directorate,  
Aircraft Certification Service.