



**DATE: October 3, 2013**

**AD #: 2013-20-51**

This emergency airworthiness directive (EAD) 2013-20-51 is being sent to owners and operators of Agusta S.p.A. (Type certificate currently held by AgustaWestland S.p.A) (Agusta) Model A109A, A109A II, A109C, A109E, A109K2, A109S, AW109SP, A119, and AW119 MKII helicopters.

### **Background**

This EAD was prompted by two incidents of cracking on the nuts that connect the flexible disc coupling (Thomas coupling) with the splined adapter on the tail rotor driveshaft. This EAD requires, before further flight, inspecting certain Thomas coupling nuts on the tail rotor drive shaft line for a crack and replacing all the nuts if any nut is cracked. Also this EAD requires replacing all affected Thomas coupling nuts within 10 hours time-in-service (TIS) or 30 days, whichever occurs first. These EAD actions are intended to prevent failure of the Thomas coupling, failure of the tail drive shaft, and subsequent loss of control of the helicopter.

### **Discussion**

The European Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Union, has issued EAD 2013-0225-E, effective September 21, 2013, to correct an unsafe condition for the Agusta Model A109A, A109AII, A109C, A109E, A109K2, A109LUH, A109S, AW109SP, A119, and AW119MKII helicopters. EASA advises that occurrences were reported of two in-service Model AW109SP helicopters where, during scheduled inspection of the tail rotor drive shaft line, a nut, part number (P/N) MS21042L4, that connects the Thomas coupling with the splined adapter was found cracked. Subsequent investigation identified that the cracks are the result hydrogen embrittlement resulting from a production deficiency at the Thomas coupling nut supplier.

### **FAA's Determination**

These helicopters have been approved by the aviation authority of Italy and are approved for operation in the United States. Pursuant to our bilateral agreement with Italy, EASA, its technical representative, has notified us of the unsafe condition described in their AD. We are issuing this EAD because we evaluated all information provided by EASA and determined the unsafe condition exists and is likely to exist or develop on other helicopters of these same type designs.

### **Related Service Information**

Agusta has issued the following service information:

- Alert Bollettino Tecnico (ABT) No. 109K-58 for all Model A109K2 helicopters;
- ABT No. 109-136, for all Model A109A, A109A II, and A109C helicopters;

- ABT No. 109EP-130, for Model A109E helicopters up to and including serial number (S/N) 11832, except S/N 11796, from 11808 to 11810, and from 11812 to 11829;
- ABT No. 109L-066 for all Model A109LUH helicopters;
- ABT No. 109S-055, for all Model A109S helicopters;
- ABT No. 109SP-069, for Model AW109SP helicopters up to including S/N 22316, except S/N 22284, 22286, 22307, and 22308; and
- ABT No. 119-061 for Model A119 and AW119 MKII helicopters up to and including S/N 14811, except S/N 14805 and 14807.

All the ABTs are dated September 20, 2013 and specify a one-time inspection of the Thomas coupling nuts, P/N MS21042L4. If any nut is cracked, the ABTs specify replacing all nuts with nuts, P/N NAS1805-4.

### **EAD Requirements**

This EAD requires, before further flight, visually inspecting each Thomas coupling nut, P/N MS2104L4, along the tail rotor drive shaft line for a crack. If any nut is cracked, replacing all the nuts with nuts, P/N NAS1805-4, is required before further flight. Replacing all nuts, P/N MS21042L4, with nuts, P/N NAS1805-4, is required within 10 hours TIS or 30 days, whichever occurs first. Finally, after the effective date of this EAD, installing a Thomas coupling nut, P/N MS21042L4, on any tail rotor drive shaft line is prohibited.

### **Differences between this EAD and the EASA AD**

This EAD differs from the EASA AD in that we include all model helicopters rather than limiting the applicability to specific serial-numbered helicopters and we do not include Model A109LUH helicopters as they do not have a U.S. type certificate.

### **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.

**(a) Applicability**

This EAD applies to the following Agusta S.p.A. (Type certificate currently held by AgustaWestland S.p.A) (Agusta) helicopters, with a tail rotor drive shaft flexible disc coupling (Thomas coupling) nut, part number (P/N) MS21042L4, certificated in any category:

- (i) Model A109A, A109A II, A109C, A109E, A109S, A109K2, AW109SP helicopters; and
- (ii) Model A119 and AW119 MKII helicopters.

**(b) Unsafe Condition**

This EAD defines the unsafe condition as a production deficiency in a certain Thomas coupling nut. This condition could result in failure of the Thomas coupling, failure of the tail drive shaft, and subsequent loss of control of the helicopter.

**(c) Effective Date**

This EAD is effective upon receipt.

**(d) Compliance**

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

**(e) Required Actions**

(1) Before further flight, using a borescope or light source and mirror, inspect each Thomas coupling nut for a crack. If any Thomas coupling nut is cracked, before further flight, replace all the Thomas coupling nuts with nuts, P/N NAS1805-4, torqueing each nut to 5.6 – 7.9 Nm.

(2) Within 10 hours time-in-service or 30 days, whichever occurs first, replace each Thomas coupling nut, P/N MS21042L4, with a nut, P/N NAS1805-4, torqueing each nut to 5.6 – 7.9 Nm.

(3) After the effective date of this EAD, do not install a nut, P/N MS21042L4, on any Thomas coupling.

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

(1) The Manager, Safety Management Group, FAA, may approve AMOCs for this EAD. Send your proposal to Gary Roach, Aviation Safety Engineer, Regulations and Policy Group, Rotorcraft Directorate, FAA, 2601 Meacham Blvd., Fort Worth, TX 76137; telephone (817) 222-5110; email gary.b.roach@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.

**(g) Additional Information**

(1) For further information contact: Gary Roach, Aviation Safety Engineer, Regulations and Policy Group, Rotorcraft Directorate, FAA, 2601 Meacham Blvd, Fort Worth, TX 76137; telephone: (817) 222-5110; email gary.b.roach@faa.gov.

(2) For a copy of the service information referenced in this AD, contact: Agusta Westland, Customer Support & Services, Via Per Tornavento 15, 21019 Somma Lombardo (VA) Italy, ATTN: Giovanni Cecchelli; telephone 39- 0331-711133; fax 39 0331 711180; or at <http://www.agustawestland.com/technical-bulletins>.

(3) The subject of this AD is addressed in European Aviation Safety Agency Emergency Airworthiness Directive 2013-0225-E, effective September 21, 2013.

**(h) Subject**

Joint Aircraft Service Component (JASC): 6400 Tail rotor system.

Issued in Fort Worth, Texas, on October 3, 2013.

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