


<b>EASA</b>	<b>EMERGENCY AIRWORTHINESS DIRECTIVE</b>
	<p><b>AD No.: 2009-0164-E</b></p> <p><b>Date: 29 July 2009</b></p> <p>Note: This Emergency Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.</p>
<p>This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].</p>	
<p><b>Type Approval Holder's Name:</b></p> <p>EUROCOPTER</p>	<p><b>Type/Model designation(s):</b></p> <p>AS 332 helicopters</p>
TCDS Number:	EASA.R.002
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2006-0349R1 dated 23 September 2008.
<b>ATA 62</b>	<b>Main Rotor – Main Rotor Head Spindles – Check / Replacement / Modification</b>
Manufacturer(s):	Eurocopter (formerly Eurocopter-France, Aérospatiale).
Applicability:	<p>Eurocopter AS 332 C, AS 332 C1, AS 332 L and AS 332 L1 helicopters, if a main rotor head (MRH) Spindle is installed with Part Number (P/N):</p> <ul style="list-style-type: none"> <li>- 332A31-1390-(all dash numbers)</li> <li>- 332A31-1398-(all dash numbers)</li> <li>- 332A31-1410-02, -03, -04, and -05</li> <li>- 332A31-1485-00, -05, and -06</li> </ul> <p>including those equipped with the (optional) main rotor blade folding system, incorporating lock supports, identified with the following P/N:</p> <ul style="list-style-type: none"> <li>- 332A31.1388.20, .21, .22, .23, .24 and .25</li> <li>- 332A32.1389.20, .21, .22, .23, .24 and .25</li> </ul>
Reason:	<p>In 2006, an AS 332 L helicopter experienced a failure of the lower material section on the leading edge of a MRH spindle yoke. Investigation showed that the crack growth which may lead to failure remains visible from the outside without disassembly. This condition, if not detected and corrected, could cause failure of one of the MRH spindle yokes, resulting in loss of the relevant main rotor blade.</p> <p>EASA initially issued Emergency AD 2006-0327-E, applicable to AS 332 and SA 330 helicopters, to address this issue, which required a repetitive check of the material section of MRH spindle yokes. That AD was subsequently superseded by Emergency AD 2006-0349-E, retaining the requirements of AD 2006-0327-E and in addition clarifying how to perform the repetitive checks on MRH units equipped</p>

	<p>with the optional main rotor blade folding system (hereafter referred to as folding option) and requiring a modification (i.e. MOD 332A080950) to certain lock supports of this optional equipment, that would ease the subsequent checks.</p> <p>Further analyses and tests revealed that the spindle yoke failure on the AS 332 L helicopter was due to the presence of grease on threads of the spindle tie bolt of the MRH flapping hinge assembly, despite the fact that the maintenance documentation specifies not to apply grease when tightening torque. It has been shown that remaining deposit of grease in an assembly for which a dry tightening torque is defined for the nut (self-locking Nylstop actually; hereafter referred to as spindle nut), induces a higher tightening load that results in additional static loads which, combined with the flight loads, explains the reported failure.</p> <p>However, the installation procedure for the similar design damper spindle on SA 330 helicopters actually requires that grease is applied on the pin threads and defines a tightening torque value compatible with this lubrication. Therefore, this type of assembly cannot introduce the additional static loads which caused the failure of the spindle yoke on the AS 332. For that reason, the SA 330 helicopters were no longer deemed to be affected by this unsafe condition. Consequently, AD 2006-0349-E was revised to delete the SA 330 helicopters and associated parts from the applicability, without changes to the technical requirements for AS 332 helicopters.</p> <p>Since AD 2006-0349R1 was published, it has been decided to prohibit, from 01 November 2009, flight with spindle nuts P/N ASNA0045-160BCL installed on MRH units fitted with spindles P/N 332A31-1410-(all dash numbers) and P/N 332A31-1485-(all dash numbers). A redesign, which allows installation of elastic stop nuts with grease applied, has been developed as MOD 0743312, which is available for in-service application by Eurocopter AS 332 (optional) Service Bulletin No. 62.00.74. After modification of a MRH per MOD 0743312, re-installation of the P/N ASNA0045-160BCL spindle nut is prohibited.</p> <p>In addition, another modification MOD 0743313 enables traceability of spindles whose integrity is confirmed, in which case the spindle must be re-identified by change of P/N. After installation on a helicopter of a MRH, equipped with four of these re-identified spindles (without the prohibited spindle nut P/N ASNA0045-160BCL), the repetitive checks of this AD are no longer required for that helicopter. For spindles P/N 332A31-1390-(all dash numbers) and P/N 332A31-1398-(all dash numbers), the repetitive checks of this AD must be retained, as there is no terminating action available for these parts at this time.</p> <p>For the reasons stated above, this new EASA AD retains the requirements of AD 2006-0349R1, which is superseded, requires the removal of and prohibits the (re)installation of spindle nut P/N ASNA0045-160BCL on MRH units fitted with spindles P/N 332A31-1410-(all dash numbers) and P/N 332A31-1485-(all dash numbers) and requires parts re-identification of certain spindles in accordance with MOD 0743313.</p>
Effective Date:	31 July 2009
Required Action(s) and Compliance Time(s):	<p>Required as indicated, unless accomplished previously:</p> <p><b>(1) Helicopters fitted with a MRH equipped with spindles P/N 332A31-1390-(all dash numbers) or P/N 332A31-1398-(all dash numbers):</b></p> <p>(1.1) On spindles <u>not fitted</u> with the folding option:</p> <p>Within 5 flight hours (FH) after October 24, 2006 [the effective date of EASA AD 2006-0327-E] and thereafter at intervals not exceeding 5 FH, inspect the material section (front face and edge) of the yokes, on the leading edge of the spindles for cracks, in accordance with the instructions of paragraph 2.B.2 of Eurocopter AS 332 Alert Service</p>

## Bulletin (ASB) 05.00.67 Revision 2 (the ASB).

(1.2) On spindles fitted with the folding option before embodiment of MOD 332A080950:

(1.2.1) Within 5 FH after the last check as required by AD 2006-0327-E or AD 2006-0349-E or AD 2006-0349R1, as applicable, or before next flight after the effective date of this AD, whichever occurs later, inspect the visible area of the edge of the material section of the yokes, on the leading edge of the spindles, for cracks, in accordance with the instructions of paragraphs 2.B.3.a.1 and 2.B.3.a.2 of the ASB, and thereafter at intervals not exceeding 5 FH, inspect in accordance with the instructions of paragraph 2.B.3.a.2 of the ASB until accomplishment of MOD 332A080950 as required by paragraph (1.2.2) of this AD.

(1.2.2) Within 110 FH after November 23, 2006 [the effective date of AD 2006-0349R1], modify the lock supports of the folding option in accordance with the instructions of paragraph 2.B.6 (MOD 332A080950) of the ASB.

(1.3) On spindles fitted with the folding option after embodiment of MOD 332A080950, within 5 FH after embodiment of MOD 332A080950 and thereafter at intervals not exceeding 5 FH, inspect the edge of the material section of the yokes, on the leading edge of the spindles, for cracks, in accordance with the instructions of paragraph 2.B.3.b of the ASB.

**(2) Helicopters fitted with a MRH equipped with spindles P/N 332A31-1410-02, -03, -04, -05 or P/N 332A31-1485-00, -05 or -06**

(2.1) On spindles not fitted with the folding option:

Within 10 FH after October 24, 2006 [the effective date of AD 2006-0327-E] and thereafter at intervals not exceeding 10 FH, inspect the material section (front face and edge) of the yokes on the leading edge of the spindles for cracks, in accordance with the instructions of paragraph 2.B.2 of the ASB.

(2.2) On spindles fitted with the folding option:

Within 10 FH after the last check as required by AD 2006-0327-E or AD 2006-0349-E or AD 2006-0349R1, as applicable, or before next flight after the effective date of this AD, whichever occurs later, and thereafter at intervals not exceeding 10 FH, inspect the edge of the material section of the yokes on the leading edge of the spindles for cracks, in accordance with the instructions of paragraph 2.B.4 of the ASB.

(2.3) Removal from service of MRH spindle nuts P/N ASNA0045-160BCL:

(2.3.1) After the effective date of this AD, do not install spindle nuts P/N ASNA0045-160BCL on MRH units equipped with spindles P/N 332A31-1410-(all dash numbers) or P/N 332A31-1485-(all dash numbers) that have been modified in production by MOD 0743312 or in-service by Eurocopter AS 332 Service Bulletin (SB) 62.00.74.

(2.3.2) Not later than 01 November 2009, remove spindle nuts P/N ASNA0045-160BCL from all MRH units equipped with spindles P/N 332A31-1410-02, -03, -04 and -05 and P/N 332A31-1485-00, -05 and -06 in accordance with the instructions of

paragraph 2.B.7 of the ASB.

- (2.4) On spindles P/N 332A31-1410-02, -03, -04 and -05 and P/N 332A31-1485-00, -05 and -06, installed on MRH units modified in production by MOD 0743312, or in-service by Eurocopter AS 332 SB 62.00.74, and with a spindle nut that has never been re-tightened since new or since last overhaul before embodiment of MOD 0743312 or Eurocopter AS 332 SB No. 62.00.74:

Not later than 01 November 2009, re-identify the spindle part number (MOD 0743313) in accordance with the instructions of paragraph 2.B.8 of the ASB. Spindle P/N re-identification on all four spindle assemblies making up the MRH unit installed on a helicopter, constitutes terminating action for the repetitive check requirements of paragraphs (2.1) or (2.2) of this AD, as applicable, for that helicopter.

**(3) Analysis of the check results:**

If, during any check as required by this AD, a crack is detected in the material section (front face and/or edge) of a spindle yoke, before next flight, remove and replace the spindle with a serviceable unit. Replacement of the spindle does not constitute terminating action for the repetitive check requirements of this AD.

**(4) Spares: Spindles, Spindle Nuts, MRH units and Folding Option Lock Supports:**

- (4.1) After the effective date of this AD, do not install a spindle, as identified by P/N in the Applicability of this AD and having logged flight hours since new or last overhaul, on any helicopter, unless it has been inspected in accordance with the instructions of paragraph 2.B.2 of the ASB.
- (4.2) After the effective date of this AD, do not install on a helicopter a MRH equipped with spindles P/N 332A31-1390-(all dash numbers) or P/N 332A31-1398-(all dash numbers) and fitted with folding option lock supports, unless the folding option lock supports have been modified in accordance with the instructions of paragraph 2.B.6 (MOD 332A080950) of the ASB.
- (4.3) After the effective date of this AD, do not install on a helicopter folding option lock supports as identified by P/N in the Applicability of this AD, unless they have been modified in accordance with the instructions of paragraph 2.B.6 (MOD 332A080950) of the ASB.
- (4.4) After the effective date of this AD, do not install on a helicopter a spindle P/N 332A31-1410-02, -03, -04 or -05 or P/N 332A31-1485-00, -05 or -06 or a MRH unit already equipped with such a spindle, unless this spindle fits on a MRH unit from which the spindle nuts P/N ASNA0045-160BCL have been removed as required by paragraph (2.3.2) of this AD.
- (4.5) After the effective date of this AD, do not install a new or overhauled spindle P/N 332A31-1410-02, -03, -04 or -05 or P/N 332A31-1485-00, -05 or -06 on a helicopter, unless it has been re-identified in accordance with the instructions of paragraph 2.B.8 of the ASB, as required by paragraph (2.4) of this AD.
- (4.6) After 01 November 2009, do not install spindle nuts P/N ASNA0045-160BCL in any MRH unit equipped with spindles P/N 332A31-1410-02, -03, -04 or -05 or P/N 332A31-1485-00, -05 or -06.

Ref. Publications:	<p>Eurocopter AS 332 ASB N° 05.00.67 Revision 2 dated 22 July 2009.</p> <p>Eurocopter AS 332 SB N° 62.00.74 dated 22 July 2009.</p> <p>The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.</p>
Remarks:	<ol style="list-style-type: none"> <li>1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.</li> <li>2. The safety assessment has requested not to implement the full consultation process and an immediate publication and notification.</li> <li>3. Enquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management &amp; Research Section, Certification Directorate, EASA; E-mail: <a href="mailto:ADs@easa.europa.eu">ADs@easa.europa.eu</a></li> <li>4. For any question concerning the technical content of the requirements in this AD, please contact: EUROCOPTER (STDI), Aéroport de Marseille Provence, 13725 Marignane Cedex, France Telephone: +33 (0) 4 42 85 97 97 - Fax +33 (0) 4 42 85 99 66 E-mail: <a href="mailto:Directive.technical-support@eurocopter.com">Directive.technical-support@eurocopter.com</a></li> </ol>