



Airworthiness Directive

AD No.: 2018-0263

Issued: 07 December 2018

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 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 [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EU) 2018/1139, Article 71 exemption].

Design Approval Holder's Name:

AIRBUS HELICOPTERS

Type/Model designation(s):

EC 155 helicopters

Effective Date: 21 December 2018

TCDS Number(s): EASA.R.105

Foreign AD: Not applicable

Supersedure: This AD supersedes EASA AD 2018-0052 dated 02 March 2018.

ATA 05 – Time Limits / Maintenance Checks – Main Gearbox Magnetic Plugs – Inspection ATA 63 – Main Rotor Drive – Planet Gear Assemblies – Replacement

Manufacturer(s):

Airbus Helicopters (formerly Eurocopter, Eurocopter France, Aerospatiale)

Applicability:

EC 155 B and EC 155 B1 helicopters, all manufacturer serial numbers.

Definitions:

For the purpose of this AD, the following definitions apply:

The ASB: Airbus Helicopters (AH) Alert Service Bulletin (ASB) EC155-05A034 Revision 5.

Affected part: Planet gear assemblies, type Y and Z, identified by Part Number (P/N) and serial number (s/n) as listed in the ASB.

Affected MGB: A main gearbox (MGB) equipped with an affected part.

Serviceable MGB: An MGB equipped with a planet gear assembly type Z, as defined in the ASB.

Groups: Group 1 helicopters are those that have an affected MGB installed. Group 2 helicopters are those that do not have an affected MGB installed.



Reason:

Prompted by an EC225 helicopter accident, the investigation revealed that this involved failure of a second stage planet gear of the MGB. It was determined that one of the two types of planet gear used in the epicyclic module of the MGB is subject to higher outer race contact pressures and therefore has a greater susceptibility to spalling and cracking. As one of a number of measures developed to ensure safe operation of the EC225/AS332 L2 fleet, this type of planet gear has been permanently removed from service. Subsequently, AH reviewed its entire range of helicopters in regard to this particular issue. Based on the results of that review, it was decided to implement precautionary measures also on EC 155 helicopters to improve the reliability of the installed MGB and AH issued original issue of AH ASB EC155-05A034 to provide the necessary instructions. Consequently, EASA issued AD 2017-0104, applicable also to SA 365 and AS 365 helicopters, to require repetitive inspections of the MGB magnetic plugs, identification of the planet gear assemblies installed in the MGB and, depending on findings, replacement of the planet gear assemblies.

After that AD was issued, EASA issued AD 2017-0116 (later revised), retaining the requirements of EASA AD 2017-0104, which was superseded, to require new identification of the affected planet gear assemblies using an improved method.

After EASA AD 2017-0116R1 was issued, investigation results determined that the method used to detect particles may not be efficient enough for some MGB configurations. Pending the development of a more effective detection method, it was decided to introduce repetitive inspections of the MGB oil filter, a one-time inspection for particles of the oil sump (MGB bottom housing) and to reduce the life limit of type Z planet gear assemblies.

Additionally, AH issued Revision 3 of Service Bulletin (SB) EC155-63-016 providing improved replacement and test instructions. EASA AD 2017-0116R1 was applicable to AS 365, SA 365 and EC 155 helicopters. Due to the complexity of required actions applicable to these different helicopters models and future possible developments, EASA decided to address the unsafe condition relevant to EC 155 helicopters and issued AD 2018-0052 requiring repetitive inspections of the MGB oil filter, a one-time inspection for particles of the MGB bottom housing (oil sump) and reducing the life limit of type Z planet gear assemblies. EASA AD 2017-0116R1 was revised accordingly to exclude EC 155 helicopters.

Since EASA AD 2018-0052 was issued, results of follow-on investigation determined that, additionally to one-time inspection for particles of the oil sump (MGB bottom housing), and pending the availability of more effective detection methods, introduction of repetitive inspections are necessary to ensure an adequate safety level for EC 155 helicopters. AH accordingly issued the ASB, as defined in this AD, to introduce the necessary instructions.

For the reasons described above, this AD partially retains the requirements of EASA AD 2018-0052, which is superseded, and additionally requires repetitive inspections of the MGB bottom housing, repetitive inspections of the MGB filter and, depending on findings, accomplishment of applicable corrective action(s).

This AD is still considered to be an interim action and further AD action may follow.



Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

Inspections:

- (1) For Group 1 helicopters equipped with a type Y affected part: Within 25 flight hours (FH) after 16 March 2018 [the effective date of EASA AD 2018-0052], inspect the MGB filter in accordance with the instructions of the ASB.
- (2) For Group 1 helicopters equipped with a type Y or Z affected part: Within 10 FH after 16 June 2017 [the effective date of EASA AD 2017-0104], and, thereafter at intervals not to exceed 10 FH, inspect the magnetic plugs of each affected MGB in accordance with the instructions of the ASB.
- (3) For Group 1 helicopters equipped with a type Z affected part: Accomplish the actions as required by paragraphs (3.1) and (3.2) of this AD in accordance with the instructions of the ASB.
 - (3.1) Within the compliance time defined in Table 1 of this AD, as applicable, and, thereafter at intervals no to exceed the values defined in Table 1 of this AD, inspect the MGB filter.

Table 1 – MGB filter inspection (see Note 1 of this AD)

FH Accumulated	Compliance Time	Repetitive Inspections
Less than 400 FH	Within 55 FH after the effective date of this AD	55 FH
400 FH or more	Within 25 FH after the effective date of this AD	25 FH

Note 1: Unless specified otherwise, the FH in Table 1 and Table 2 of this AD are those accumulated on the effective date of this AD by a type Z planet gear affected with the highest number of FH, since first installation in an MGB.

- (3.2) For type Z planet gear, which on the effective date of this AD accumulated less than 400 FH since new: Upon accumulation of 400 FH by a type Z planet gear since new, the repetitive inspection interval, as defined by paragraph (3.1) of this AD is reduced from 55 FH to 25 FH since the last inspection, as required by paragraph (3.1) of this AD.
- (3.3) Within the compliance time defined in Table 2 this AD, as applicable, and, thereafter at intervals no to exceed the value defined in Table 2 of this AD, accomplish inspections of the MGB bottom housing (oil sump).

Table 2 – MGB oil sump inspection (see Note 1 of this AD)

FH Accumulated	Compliance Time	Repetitive Inspections
Less than 400 FH	Before exceeding 400 FH	55 FH
400 FH or more	Within 55 FH after the effective date of this AD	



Corrective Action(s):

- (4) If, during any inspection as required by paragraph (1), (2) or (3) of this AD, as applicable, particles are detected, exceeding the criteria as defined in the ASB, before next flight, accomplish the applicable corrective action(s) in accordance with the instructions of the ASB.

Replacement of Planet Gear Assemblies:

- (5) For Group 1 helicopters: Depending on the type of planet gear assembly installed and its accumulated FH, within the compliance times specified in Table 3 of this AD, replace each affected MGB with a serviceable MGB as defined in, and in accordance with the instructions of the AH ASB EC155-05A034 Revision 3 (or later approved revisions), or replace the epicyclic reduction gear on the affected MGB in accordance with the instructions of Revision 3 of AH SB EC155-63-016.

Table 3 – MGB Planet Gear / Epicyclic Reduction Gear Replacement (see Note 2 of this AD)

Planet Gear Type assembly installed	FH Accumulated	Compliance Time
At least one type Y planet gear assembly is installed	Any	Within 50 FH after 16 June 2017 [the effective date of EASA AD 2017-0104] but not later than 30 June 2019
At least one type Z planet gear assembly is installed	Less than 1 800 FH	Before exceeding 1 800 FH
	1 800 FH or more	Within 600 FH after 16 March 2018 [the effective date of EASA AD 2018-0052]

Note 2: Unless specified otherwise, the FH in Table 3 of this AD are those accumulated on 16 March 2018 [the effective date of EASA AD 2018-0052] by the affected part with the highest number of FH, accumulated since first installation in an MGB.

- (6) Replacement of an MGB equipped with a type Y affected part with a serviceable MGB, as required by paragraph (5) of this AD, is an acceptable method to comply with the requirements of paragraph (1) of this AD.

Terminating Action:

- (7) None.

Parts Installation:

- (8) For Group 1 and Group 2 helicopters: From 16 June 2017 [the effective date of EASA AD 2017-0104], do not install on any helicopter a type Y planet gear assembly, and do not install an MGB equipped with a type Y planet gear assembly.

Credit:

- (9) Replacement of an affected MGB on a helicopter, before 16 March 2018 [the effective date of EASA AD 2018-0052] in accordance with the instructions of the AH ASB EC155-05A034 at original issue, or Revision 1, or Revision 2, is an acceptable method to comply with the requirements of paragraph (5) of this AD for that helicopter, provided that the installed MGB is a serviceable MGB in accordance with the instructions of Revision 1 (or later approved revisions) of the instructions of AH ASB EC155 05A034.



- (10) Modification of a helicopter, before 22 November 2017 [the effective date of EASA AD 2017-0116R1], by replacing the epicyclic reduction gear on the affected MGB of that helicopter in accordance with AH approved maintenance data, as defined in paragraph 1.E.2.a.5) of the AH ASB EC155-05A034 Revision 3 (or later approved revisions) is an acceptable method to comply with the requirements of paragraph (5) of this AD for that helicopter, provided that the additional maintenance work as defined in paragraph 1.E.2.a.5) of the instructions of Revision 2 of AH ASB EC155 05A034 has been accomplished, as applicable.
- (11) Modification of a helicopter before 16 March 2018 [the effective date of EASA AD 2018-0052] in accordance with the instructions of Revision 2 of AH SB EC155-63-016 is an acceptable method to comply with the requirements of paragraph (5) of this AD for that helicopter.
- (12) Inspections and corrective actions on a helicopter, accomplished before the effective date of this AD in accordance with the instructions of AH ASB EC155-05A034 Revision 3 or Revision 4, as applicable, are acceptable to comply with the initial requirements of this AD.

Ref. Publications:

AH ASB EC155-05A034 original issue dated 13 June 2017, or Revision 1 dated 30 June 2017, or Revision 2 dated 14 November 2017, or Revision 3 dated 02 March 2018, or Revision 4 dated 13 July 2018, or Revision 5 dated 04 December 2018.

AH SB EC155-63-016 Revision 2 dated 14 November 2017, or Revision 3 dated 02 March 2018.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the [EU aviation safety reporting system](#).
5. For any question concerning the technical content of the requirements in this AD, please contact: Airbus Helicopters – Aéroport de Marseille Provence, 13725 Marignane Cedex, France
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