EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2014-0172 **Date: 17 July 2014** Note: This Airworthiness Directive (PAD) 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.

This AD is issued in accordance with EU 748/2012, Part 21.A.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].

Design Approval Holder's Name:	**Type/Model designation(s):**
AGUSTAWESTLAND S.p.A.	AW139 helicopters

TCDS Number:	EASA.R.006
Foreign AD:	Not applicable
Supersedure:	This AD supersedes EASA AD 2014-0028 dated 30 January 2014.

ATA 30	**Ice and Rain Protection – Full Icing Protection System / Cable Inspection – Tail Rotor Distributor Replacement / Auto Transformer Rectifier Unit Replacement and Repetitive Check / AC Generator Control Unit Replacement**
Manufacturer(s):	AgustaWestland S.p.A. (formerly Agusta S.p.A.) and AgustaWestland Philadelphia Corporation (formerly Agusta Aerospace Corporation)
Applicability:	AW139 helicopters, all serial numbers, if equipped with Full Icing Protection System (FIPS).
Reason:	An event of arcing inside some components of the FIPS has been reported. The results of the subsequent technical investigation indicated that improper insulation of one of the main rotor electrical cables was the likely cause for this arcing. This condition, if not detected and corrected, could lead to other events of arcing, possibly resulting in fire and consequent damage to the helicopter and injury to occupants. To address this potential unsafe condition, AgustaWestland (AW) published Bollettino Tecnico (BT) 139-324, providing inspection instructions for affected in-service helicopters, and EASA issued AD 2013-0090 to require a one-time inspection of the main and tail rotor electrical cables and, depending on findings, accomplishment of applicable corrective actions. Since that AD was issued, the results of additional investigations prompted AW to revise BT 139-324 to introduce more refined insulation limits and to remove the inspection of tail rotor (TR) slip ring cables, Part Number (P/N) 4G6420V00151, or P/N 4G6420V00152. In addition, AW issued BT 139-330 including instructions to replace the Tail Rotor Distributor (TRD) with an improved part that has an increased dielectric strength.

	Consequently, EASA issued AD 2013-0124, which superseded EASA AD 2013-0090, partially retaining its requirements, also requiring installation of the improved TRD, and deleting the inspection of the TR slip ring cable. In addition, as an alternative to the main rotor electrical cable inspection, this AD allowed de-activation of the FIPS in accordance with the applicable helicopter Master Minimum Equipment List (MMEL). Subsequently, EASA issued AD 2013-0174, which superseded EASA AD 2013-0124, retaining its requirements, and amending the Applicability with inclusion of additional helicopter serial numbers. Since issuance of EASA AD 2013-0174, as additional corrective action, AW issued BT 139-339, providing instructions to replace the Auto Transformer Rectifier Unit (ATRU) with an improved part, incorporating increased resistance to voltage transients resulting from short circuit events on the output of the ATRUs. Moreover, AW issued BT 139-340 Revision A providing instructions to replace the AC Generator Control Unit (GCU) with a new AC GCU P/N, including modification of the wiring connections, to incorporate an improved voltage and current transient protection in case of short circuit events. Accomplishment of those actions was required with the issuance of EASA AD 2013-0298, which retained the requirements of EASA AD 2013-0174 and amended the Applicability by including additional helicopter serial numbers and required replacement of ATRU and AC GCU. In addition, for the improved ATRU, this AD required repetitive functional checks. Since EASA AD 2013-0298 was issued, a further event occurred on a helicopter equipped with FIPS and installing the old AC GCU (P/N 4G2420V00651). This led to the conclusion that the improved GCU must be installed within a shorter compliance time and AW revised BT 139-340 accordingly. With this revised BT, AW also provided an alternative method for the actions listed in BT 139-339 and BT 139-340. Consequently, EASA issued AD 2014-0028, retaining the requirements of EASA AD 2013-0298, which was superseded, and required replacement of the AC GCU within a shorter compliance time. Since that AD was issued, AW issued BT 139-339 Revision B to introduce, in Part II of the BT, a calendar interval and improved instructions for the ATRU functional check. For the reasons described above, this AD retains the requirements of EASA AD 2014-0028, which is superseded, and adds a calendar time interval (12 months) for the ATRU functional checks. In addition, this AD removes the requirement of a functional check, prior to installation of a repaired ATRU.
Effective Date:	31 July 2014
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: (1) Within the compliance times as specified in Table 1 of this AD, as applicable to helicopter S/N, accomplish an inspection and an insulation test of Main Rotor (MR) electrical cables P/N 3G9F12A01011, P/N 3G9F12A01012 (pre BT 139-259) or P/N 3G9F12A01311 (post BT 139-259), in accordance with the instructions of AW BT 139-324.

Table 1

Affected helicopters	Compliance time
Group A: S/N 31201 to S/N 31421 inclusive (incl.), and S/N 41201 to S/N 41277 incl.	Within 30 flight hours (FH) or 7 days, whichever occurs first after 25 April 2013 [the effective date of EASA AD 2013-0090]
Group B: S/N 31422 to S/N 31453 incl., S/N 31455, S/N 31462, S/N 31463, and S/N 41278 to S/N 41327 incl.	Within 30 FH or 7 days, whichever occurs first after 09 August 2013 [the effective date of EASA AD 2013-0174]

	(2) If, during the actions as required by paragraph (1) of this AD, any discrepancy is detected, before next flight, accomplish the applicable corrective actions in accordance with the instructions of AW BT 139-324. (3) From 25 April 2013 [the effective date of EASA AD 2013-0090] for Group A helicopters, or from 09 August 2013 [the effective date of EASA AD 2013-0174] for Group B helicopters, installation of any part as indicated in paragraph (1) is allowed, provided it is new, or it has passed the inspection and the insulation test as required by paragraph (1) of this AD, as applicable. (4) Within 90 days after 09 August 2013 [the effective date of EASA AD 2013-0174], replace the TRD Vendor P/N 3230-A1-1 (AW P/N 4G3060V00452) with an improved part in accordance with the instructions of AW BT 139-330. (5) From 09 August 2013 [the effective date of EASA AD 2013-0174], do not install a TRD Vendor P/N 3230-A1-1 (AW P/N 4G3060V00452) on any helicopter. (6) Within 300 FH or 6 months, whichever occurs first after 30 December 2013 [the effective date of EASA AD 2013-0298], replace each ATRU P/N 4G3060V00652 with an improved part, as defined in, and in accordance with the instructions of AW BT 139-339. (7) After modification of a helicopter as required by paragraph (6) of this AD, do not install an ATRU P/N 4G3060V00652 on that helicopter. (8) Within 25 FH or 30 days, whichever occurs first after 06 February 2014 [the effective date of EASA AD 2014-0028], replace each AC GCU P/N 4G2420V00651 with an improved part and modify the associated wiring connections in accordance with the instructions of AW BT 139-340. (9) After modification of a helicopter as required by paragraph (8) of this AD, do not install an AC GCU P/N 4G2420V00651 on that helicopter. (10) For helicopters modified as required by paragraph (6) of this AD, before the accumulation of 1 200 FH or 12 months by the ATRU since new or since repair (see Note 1), whichever occurs first, and, thereafter, at intervals not to exceed 1 200 FH or 12 months, whichever occurs first, accomplish a functional check in accordance with the instructions of AW BT 139-339 Revision B. Note 1: For the purpose of this AD, a repaired ATRU is one that has been delivered as serviceable by the ATRU manufacturer. No other company is authorized to carry out maintenance on the ATRU. (11) If, during any functional check as required by paragraph (10) of this AD, a discrepancy is detected, before next flight, replace the ATRU with a serviceable part, as defined in, and in accordance with the instructions of AW BT 139-339 Revision B. (12) As an alternative to the actions as required by paragraphs (1), (2), (4), (6), (8) of this AD, it is allowed to de-activate the FIPS and operate the helicopter in accordance with the provisions of the applicable helicopter MMEL. At any time after the FIPS has been de-activated, FIPS re-activation is possible, provided that, before next flight after FIPS re-activation, the following actions are accomplished concurrently: - the FIPS is inspected and tested as required by paragraph (1) of this AD, and, depending on findings, corrected as required by paragraph (2) of this AD, - an improved TRD is installed as required by paragraph (4) of this AD, - an improved ATRU is installed as required by paragraph (6) of this AD, - an improved AC GCU is installed as required by paragraph (8) of this AD.

	Following all these actions, the functional checks of the improved ATRU must be accomplished as required by paragraph (10) of this AD. Note 2: A Partial Removal kit allows a temporary de-installation of some FIPS components when the FIPS kit is not to be used, and their re-installation when necessary. (13) From 06 February 2014 [the effective date of EASA AD 2014-0028], for helicopters equipped with a Partial Removal kit P/N from 4G3000F00311 to 4G3000F00319 inclusive, FIPS re-installation is possible, provided that, before next flight after FIPS re-installation, and activation, the following actions are accomplished concurrently: - the FIPS is inspected and tested as required by paragraph (1) of this AD, and, depending on findings, corrected as required by paragraph (2) of this AD, - an improved TRD is installed as required by paragraph (4) of this AD, - an improved ATRU is installed as required by paragraph (6) of this AD, - an improved AC GCU is installed as required by paragraph (8) of this AD. Following all these actions, the functional checks of the improved ATRU must be accomplished as required by paragraph (10) of this AD. (14) Functional checks and, depending on findings, corrective actions accomplished before the effective date of this AD, in accordance with the instructions of AW BT 139-339 original issue or Revision A, are acceptable to comply with the initial requirements of paragraphs (10) and (11) of this AD. (15) From the effective date of this AD, installation on a helicopter of an ATRU P/N 4G3060V00653 (defined as improved ATRU) is allowed, provided that a functional check and, depending on findings, corrective actions are accomplished upon installation of the part, unless the part has not accumulated any FH since new, or since repair (see Note 1). Thereafter, accomplish functional checks as required by paragraph (10) of this AD.
Ref. Publications:	AgustaWestland BT 139-324, original issue dated 09 April 2013, or Revision A dated 04 June 2013. AgustaWestland BT 139-330, original issue dated 04 June 2013. AgustaWestland BT 139-339, original issue dated 11 October 2013, or Revision A dated 29 January 2014, or Revision B dated 23 May 2014. AgustaWestland BT 139-340, Revision A dated 12 December 2013 or Revision B dated 29 January 2014. The use of later approved revisions of these 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. This AD was posted on 16 June 2014 as PAD 14-099 for consultation until 14 July 2014. No comments were received during the consultation period. 3. Enquiries regarding this AD should be referred to the Safety Information Section, Executive Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact: AgustaWestland S.p.A., E-mail: aw139.mbx@agustawestland.com.