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AgustaWestland Products

SERVICE BULLETIN

N° 139-462

DATE: February 25, 2021 REV.: /

TITLE

ATA 25 - INSTALLATION OF ACTIVE NOISE REDUCTION HEADSET

REVISION LOG

First Issue

An appropriate entry should be made in the aircraft log book upon accomplishment. If ownership of aircraft has changed, please, forward to new owner.



1. PLANNING INFORMATION

A. EFFECTIVITY

All AW139 helicopters from S/N 31400 onwards and from S/N 41300 onwards.

B. COMPLIANCE

At Customer's option.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to perform the installation of kit active noise reduction headset P/N 4G2350F00113.

E. DESCRIPTION

The purpose of the kit active noise reduction headset P/N 4G2350F00113 is to provide the integration of the Active Noise Reduction Headsets provided by BOSE® with the AW139 ICS system, thus reducing the typical helicopter noise.

The Active Noise Reduction Headset system includes one power supply and three noise reduction headsets with related cable extensions, necessary to connect them to the helicopter.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.



G. MANPOWER

To comply with this Service Bulletin eighty (80) MMH are deemed necessary. MMH are based on hands-on time and can change with personnel and facilities available.

H. WEIGHT AND BALANCE

WEIGHT (Kg)		1.20
	ARM (mm)	MOMENT (Kgmm)
LONGITUDINAL BALANCE	3239	3886.8
LATERAL BALANCE	-106	-127.2

I. REFERENCES

1) PUBLICATIONS

Following Data Modules refer to AMP:

DATA MODULE

DATA N	<u>IODULE</u>	DESCRIPTION	<u>PART</u>
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance.	-
DM02	39-A-06-41-00-00A-010A-A	Access doors and panels - General data.	-
DM03	39-A-11-00-01-00A-720A-A	Decal – Install procedure	-
DM04	39-A-20-10-08-00A-622A-A	Electrical contacts - Crimp	-
DM05	39-A-20-10-09-00A-920A-A	Bonded studs - Replacement	-
DM06	39-B-25-18-01-00A-720A-K	Power supply - Install procedure	-
DM07	CSRP-A-51-42-00-00A-720A-D	Potted inserts - Install procedure	-

DESCRIPTION

2) ACRONYMS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
FH	Flight Hours
ITEP	Illustrated tool and equipment publication
LH	Leonardo Helicopters
MMH	Maintenance Man Hours



3) ANNEX

Annex A Active noise reduction system functional test.

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.



2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL NOTE	LOG P/N
1	4G2350F00113		KIT ACTIVE NOISE REDUCTION HEADSET	REF		-
2	3G5310A12912		ACTIVE NOISE REDUCTION STRUCTURAL PROVISION	REF		-
3	NAS1832-06-3		Insert	2		139-462L1
4	4G2350A00312		ACTIVE NOISE REDUCTION ELECTRICAL PROVISION	REF		-
5	3G9B01A30301	3G9B01A30301A1R	Active noise reduction headset C/A (B1A303)	1		139-462L1
6	3G9B01B45901	3G9B01B45901A1R	Active noise reduction headset C/A (B1B459)	1		139-462L1
7	AW001CL001-N6		Support	1		139-462L1
8	DCC-01	DE-59-20	Plug	2		139-462L1
9	A388A3E06C		Support	1		139-462L1
10	AW001CB02H		Clamp	1		139-462L1
11	NAS1149D0332J		Washer	1		139-462L1
12	NAS1190E3P5AK		Screw	1		139-462L1
13	999-8001-69-113	AW001WZ113	Headset extension assy	2		139-462L1
14	AL-15-1		Power supply	1		139-462L1
15	ED300PS23		Decal	1		139-462L1
16	MS35206-228		Screw	2		139-462L1
17	NAS1149DN616J		Washer	2		139-462L1
18	PPC-02-1		Headset extension assy	2		139-462L1
19	M39029/56-348		Electrical contact	1	•	139-462L1
20	M39029/56-351		Electrical contact	4	•	139-462L1
21	M39029/58-363		Electrical contact	2	-	139-462L1
22	M39029/63-368		Electrical contact	7		139-462L1
23	M39029/5-115		Electrical contact	4		139-462L1

Refer also to IPD for the spares materials required to comply with the AMP DMs referenced in the accomplishment instructions.

2) CONSUMABLES

The following consumable materials, or equivalent, are necessary to accomplish this Service Bulletin:

#	Spec./LHD code number	DESCRIPTION	Q.TY	NOTE	PART
24	MMM-A-132 Type 1, Class 3 199-05-002 Ty. II Cl. 2	Adhesive EA934NA (C057)	AR	(1)	-
25	MMM-A-132, Type 2, Class II 199-05-002, Type I, Class 2	Adhesive EA9309.3NA (C021)	AR	(1)	-
26	CCC-C-46	Soft lint-free cloth (C011)	AR	(1)	-
27	MIL-PRF-680, Type II	Cleaning solvent Ardrox 5503 (C010)	AR	(1)	-



#	Spec./LHD code number	DESCRIPTION	Q.TY	NOTE	PART
28	TT-N-95, Type II	Aliphatic Naphtha (C059)	Aliphatic Naphtha AR (C059)		-
29	ASTM D740, Type I	Methyl-Ethyl-Ketone AR (C005)		(1)	-
30	Commercial	Gloves	AR	(1)	-
31	P-C-451	Abrasive paper - 320 grit grade (C017)	AR	(1)	-
32	TT-T-548 / A-A-59107	Toluol (C040)	AR	(1)	-
33	TT-I-735, Grade A	Isopropyl alcohol (C039)	AR	(1)	-
34	A629A01HS	Cable-tie	AR		-
35	900004953	Lacing cord	AR		-
36	EN6049-006-32-5	Nomex Sleeve	AR		-

Refer also to AMDI for the consumable materials required to comply with the AMP DM referenced in the accomplishment instructions.

3) LOGISTIC MATRIX

In order to apply this Service Bulletin, the following Logistic P/N can be ordered in accordance with the applicable notes:

LOGISTIC P/N	Q.TY (PER HELO)	NOTE	PART
139-462L1	1		-

NOTE

(1) Item to be procured as local supply.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this Service Bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
37	110-6B	Electrical power supply (28 VDC) (BB-01-00)	1	(B1)	-
38	TALL5160M1A690B or equivalent	Bondimeter	1	(B2)	-
39	Commerical	DC Voltmeter Tester	1	(B2)	-
40	Commercial	Multimeter	1	(B2)	-
41	T1392330T1A691A	Bose aviation headset	1	(B2)	-
42	H10-13H	Headset type david clark mod. H10-13H	1	(B2)	-

Refer also to ITEP for the special tools required to comply with the AMP DM referenced in the accomplishment instructions.

SPECIAL TOOLS NOTE

(B1) P/N GB713-045-600 or GB713-045-700 may be supplied as valid alternatives.

(B2) Item to be procured as local supply.



C. INDUSTRY SUPPORT INFORMATION

Customization.

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3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTES

- a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.
- b) Shape the cables in order to prevent interference with the structure and the other existing installations, using where necessary suitable lacing cords.
- c) Exercise extreme care during drilling operations to prevent instruments, cables and hoses damage.
- d) After drilling, remove all swarf and sharp edges.
 Apply on bare metal a light film of primer unless the hole is used for ground connection.
- e) During the installation of bonding braids or components requiring grounding, clean the surface structure in order to obtain a good ground contact.
- f) Let adhesive cure at room temperature for at least24 hours unless otherwise specified.
- g) Exposed thread surface and nut must be protected using a layer of tectyl according to MIL-C-16173 grade I.
- h) All lengths are in mm.
- 1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
- In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figure 2, gain access to the area affected by the installation and perform the active noise reduction structural provision P/N 3G5310A12912 as described in the following procedure:
 - 2.1 With reference to Figure 2 view B-B and section C-C, temporarily locate support assy P/N 109-0321-61-101 and countermark positions of n°2 holes on upper forward panel.



- 2.2 With reference to Figure 2 view B-B and section C-C, drill n°2 holes Ø14.25÷14.38 in correspondence of previously marked position on upper forward panel.
- 2.3 In accordance with CSRP DM CSRP-A-51-42-00-00A-720A-D and with reference to Figure 2 view B-B and section C-C, install n°2 inserts P/N NAS1832-06-3 by means of EA934NA adhesive.
- In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 3 thru 5, perform the active noise reduction headset electrical provision P/N 4G2350A00312 as described in the following procedure:
 - 3.1 With reference to Figure 5, at location n°1, install support P/N AW001CL001-N6 by means of adhesive EA9309.3NA (C021).
 - 3.2 In accordance with AMP DM 39-A-20-10-09-00A-920A-A and with reference to Figure 5, at location n°2, install support P/N A388A3E06C by means of adhesive EA9309.3NA (C021) and install clamp P/N AW001CB02H by means of washer P/N NAS1149D0332J and screw P/N NAS1190E3P5AK.
 - 3.3 With reference to Figure 6 wiring diagram, remove the electrical connection of the cable assy B1A301 between the sectioning connector J131 and the circuit breaker panel connector PL1P3.

NOTE

Use braided tubing P/N A582A where chafing or contact between cable assemblies and structure may occur.

- 3.4 With reference to Figures 3 thru 5, lay down the following cable assemblies following the existing route unless otherwise indicated on the figures:
 - Active noise reduction headset C/A (B1A303) P/N 3G9B01A30301;
 - Active noise reduction headset C/A (B1B459) P/N 3G9B01B45901.

Secure the cables by means of previously installed fixing hardware, existing hardware and lacing cord P/N 900004953.

NOTE

Where necessary and in accordance with AMP DM 39-A-20-10-08-00A-622A-A crimp indicated electrical contacts on wires by means of proper crimping tool.

3.5 With reference to Figures 3, 5 and Figure 6 wiring diagram, perform the electrical connection of cable assy P/N 3G9B01A30301 (B1A303) between the sectioning connector J131, the circuit breaker panel connector PL1P3 and the power supply

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connector PS23P1. If necessary use the following electrical contacts:

- electrical contact P/N M39029/56-348 for J131 side;
- electrical contact P/N M39029/58-363 for PL1P3 side;
- electrical contact P/N M39029/63-368 for PS23P1 side.
- 3.6 With reference to Figures 3, 4, 5 and Figure 7 wiring diagram, perform the electrical connection of the cable assy P/N 3G9B01A30301 (B1A303) between co-pilot headset connector HT1J1, DC POWER GND terminal board TB209P1, sectioning connector J203 and power supply connector PS23P1. If necessary use the following electrical contacts:
 - n°2 electrical contacts P/N M39029/5-115 for HT1J1 side;
 - n°2 electrical contacts P/N M39029/56-351 for TB209P1 side;
 - electrical contact P/N M39029/56-351 for J203 side;
 - n°6 electrical contacts P/N M39029/63-368 for PS23P1 side.
- 3.7 With reference to Figures 3, 4 and 7 wiring diagram, perform the electrical connection of the cable assy P/N 3G9B01B45901 (B1B459) between pilot headset connector HT2J1, sectioning connector P203 and DC PWR GND terminal board TB208P1. If necessary, use the following electrical contacts:
 - n°2 electrical contacts P/N M39029/5-115 for HT2J1 side;
 - electrical contact P/N M39029/58-363 for P203 side;
 - electrical contact P/N M39029/56-351 for TB208P1 side.
- In accordance with AMP DM 39-B-25-18-01-00A-720A-K and with reference to Figure 1 detail A, install power supply P/N AL-15-1 by means of support assy P/N 109-0321-61-101, n°2 washers P/N NAS1149DN616J and n°2 screws P/N MS35206-228.
- 5. With reference to Figure 1 detail A, perform the electrical connection between the power supply P/N AL-15-1 and the connector PS23P1.
- In accordance with AMP DM 39-A-11-00-01-00A-720A-A and with reference to Figure 1, install decal P/N ED300PS23 in an area adjacent to power supply.

NOTE

Perform the following step 7 when headset P/N 034650 is installed, otherwise skip to step 8.

7. With reference to Figure 1, install n°2 headset extension assemblies P/N 999-8001-69-113.



NOTE

Perform the following step 8 when headset P/N A154A03 is installed, otherwise skip to step 9.

- 8. With reference to Figure 1, install n°2 headset extension assemblies P/N PPC-02-1.
- 9. Perform a pin-to-pin continuity check of all the electrical connections made.
- 10. In accordance with Annex A, perform the active noise reduction system functional test.
- 11. In accordance with weight and balance changes, update the Chart A (see Rotorcraft Flight Manual, Part II, section 6).
- 12. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
- 13. Send the attached compliance form to the following mail box:

engineering.support.lhd@leonardocompany.com

As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".





4G2350F00113 KIT ACTIVE NOISE REDUCTION HEADSET





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WIRING DIAGRAM ACTIVE NOISE REDUCTION HEADSET SHEET 1



3G2350W01511 WIRING DIAGRAM ACTIVE NOISE REDUCTION HEADSET







ANNEX A

ACTIVE NOISE REDUCTION SYSTEM FUNCTIONAL TEST



1 PRELIMINARY TESTS

1.1 TEST PREREQUISITES

- 1.1.1 Before all the test procedures verify that the External Power Bench is operative and set to the appropriate Voltage (28 VDC).
- 1.1.2 During the test with helicopter, the "IGN #1/2" and "START #1/2" breakers shall be pulled out.

1.2 ELECTRICAL SETTINGS

- 1.2.1 Verify that all the Electrical Power Distribution System Circuit Breakers are pushed in.
- 1.2.2 Verify that all the Avionic Devices Circuit Breakers are pushed in except the ICS CPLT circuit breaker and ANR circuit breaker (if installed).
- 1.2.3 The helicopter external power port shall be connected to the External Power Bench set to 28 VDC output.
- 1.2.4 Power up the External Power Bench before starting with the test procedure.

1.3 POWER SUPPLY AND BONDING CHECKS

- 1.3.1 Verify the NAV/COMM ICS CPLT circuit breaker is pulled out and disconnect the connectors HT1J1, HT2J1 and PS23P1.
- 1.3.2 Verify the grounding of the pins PS23P1-6, PS23P1-7, PS23P1-8 and PS23P1-9.
- 1.3.3 With the helicopter electrically powered push the NAV/COMM ICS CPLT circuit breaker in.
- 1.3.4 Verify that the voltage between the pins PS23P1-3 (+) and PS23P1-6 (-) is 28VDC.
- 1.3.5 Pull out the ICS CPLT Circuit Breaker and connect the PS23P1 connector.
- 1.3.6 Reconnect the pendant connectors HT1J1, HT2J1.
- 1.3.7 Verify the grounding of the pins HT1J1-E, HT2J1-E.
- 1.3.8 With the helicopter electrically powered push the NAV/COMM ICS CPLT circuit breaker in.
- 1.3.9 Verify that the voltage between the pins HT1J1-D (+) and HT1J1-E (-) is 15VDC.
- 1.3.10 Verify that the voltage between the pins HT2J1-D (+) and HT2J1-E (-) is 15VDC.
- 1.3.11 Verify for the connectors HT1J1 and HT2J1 that no other pin delivers 15VDC signals.



- 1.3.12 If the ANR system is installed in the cabin, verify that the ANR circuit breaker is pushed in and connect all the pendant (-114) for each cabin operator.
- 1.3.13 Verify for each LEMO connector in the cabin the grounding of the pin 1, the 28VDC signal between the pins 1(+) and 2(-) and that no other pin delvers 28VDC signal.

2 FUNCTIONAL TEST

2.1 **OPERATIVE TESTS**

- 2.1.1 With the helicopter powered on verify that the CPLT ICS circuit breaker is pushed in. If the ANR system is installed in the cabin verify that ANR circuit breaker is pushed in.
- 2.1.2 Connect all the Active Noise Reduction Headsets to the relevant connectors (cockpit and cabin is requested).
- 2.1.3 Verify that all the Operators can hear each other clearly with an enhanced intelligibility of the intercom Audio independently from External Noise Level.
- 2.1.4 Set the power switch on the Pilot Headset Control Module to off.
- 2.1.5 Talk into the Copilot and Maintenance headsets and verify that the communication is still clearly heard into the Pilot headset
- 2.1.6 Perform again steps 2.1.4 and 2.1.5 for Copilot and Maintenance headsets.
- 2.1.7 Set all the power switches to on.
 - 2.1.8 Pull out the CPLT ICS CB, and ANR CB if cabin ANR kit is installed on the helicopter, and verify that all the operators can hear each other clearly.
 - 2.1.9 If the helicopter under test has to install the A20 Bose headsets with cableP/N 327070-047444, perform the Bluetooth test below:
 - 2.1.9.1 Make sure the headsets are powered on, and the multifunction switches are in the top or middle position, but NOT in the bottom (intercom only) position.



2.1.9.2 Press the Bluetooth function button to activate Bluetooth technology.



- 2.1.9.3 To put the headsets in pairing mode, press and hold the Bluetooth function button on the control module for at least five seconds. The headset emits a long, low-pitched beep when it enters pairing mode and the Bluetooth indicator glows.
- 2.1.9.4 Set your Bluetooth technology equipment to "discover" the A20 headset.
- 2.1.9.5 The device name "BOSE A20" will appear on the equipment.
- 2.1.9.6 On the phone or generic Bluetooth equipment, accept by pressing "Yes" or "OK" and confirm with the passkey or PIN of **0000** (four zeros).
- 2.1.10 Set the multifunction switches in TOP position.
- 2.1.11 Insert Audio player via Auxiliary audio input.
- 2.1.12 Verify that the AUX audio, from the audio player is muted when intercom, radio and warning audio are detected.
- 2.1.13 Set the multifunction switches in MIDDLE position.
- 2.1.14 Verify that the AUX audio, from the audio player, is mixed with intercom, radio and warning audios.
- 2.1.15 Set the multifunction switches in BOTTOM position.
- 2.1.16 Call with phone or provide audio from Bluetooth equipment and verify that no AUX audio is heard in the headset.

<u>NOTE</u>

Following step is applicable only if Flightcell Pro (P/N FCV6BO00HIC) is installed.

To test the correct functionality of the system a cellphone and a MP3 player are needed.

NOTE

When performing following step, ensure that:

- the Flightcell Pro commands are easily accessible and usable by pilot or copilot;
- music, radio, phone conversation and ICS are clearly audible independently from External Noise Level, otherwise change their settings.

2.2 FLIGHTCELL PRO FUNCTIONAL TEST

- 2.2.1 Connect Flightcell Pro to:
 - cellphone (optional Item);



- Mp3 Player (optional Item)
- Aircraft ICS
- Pilot Bose ANR headset
- Satellite phone (optional item)
- 2.2.2 Check that inner battery of Flightcell is recharging.
- 2.2.3 Press and keep POWER for 4 seconds to activate Flightcell.
- 2.2.4 Press MENU and using UP or DOWN pushbuttons to get 'Audio Menu' option, then press EXT. Select the first 'Automute' function, press EXT and then select 'Music on' and EXT to confirm the new setting (*). Press ISO to exit from MENU.

<u>NOTE</u>

In **'Audio Menu'** are available two **'Automute'** functions: the first is used to activate or deactivate the automatic reduction audio level and the second is used to set the microphone Squelch level (LOW, MEDIUM or HIGH) (ref step 2.2.5).

- 2.2.5 Select 'Audio Menu' option, find and select the second 'Automute' function, and then select 'SQL High' (press EXT to confirm the new setting). Press ISO to exit from MENU.
- 2.2.6 Play the music and verify that when voice is present on ICS interphone channel or a phone number is composed the music level decreases.
- 2.2.7 Stop talking and verify that volume music raises to original level after some seconds.
- 2.2.8 Deactivate 'Automute` function (Press MENU and using UP and DOWN pushbuttons to get 'Audio Menu' option, then press EXT. Select the first 'Automute' function, press EXT and then select 'Music off' and EXT to confirm the new setting. Press ISO to exit from MENU).
- 2.2.9 Press MENU and using UP and DOWN locate pushbuttons to get 'Audio Menu' option, then press EXT. Select 'ISO from' function, press EXT and then select 'PHONE' and EXT to confirm the new setting. Press ISO to exit from MENU.
- 2.2.10 Start a phone conversation and verify that if ISO is pushed the phone volume is reduced by 50%, music volume by 80% and microphone is isolated from phone without ending phone call. Press ISO to deactivate the function.
- 2.2.11 Perform again steps 2.2.4 thru 2.2.10 for Copilot.
- 2.2.12 Restore the starting condition.



2.2.13 Press and hold power for 4 seconds to turn off Flightcell Pro.





Please send to the following address: LEONARDO S.p.A. CUSTOMER SUPPORT & SERVICES - ITALY		SERVIO	CE BULLET	TIN COMPLIANCE FORM Date:			
		Number:					
PRODUCT SUPPORT ENGINEE	RING & LICENSES DEPT.						
21017 Cascina Costa di Samara Tel.: +39 0331 225036 Fax: +39	ate (VA) - ITALY 0331 225988	Revision:					
Customer Name and Addre	ess:			Telephone:			
				Fax:			
				B.T. Compliance Date:			
Helicopter Model	S/N		Total N	umber	Total Hours	T.S.O.	
Remarks:							
Information:							

We request your cooperation in filling this form, in order to keep out statistical data relevant to aircraft configuration up-to-date. The form should be filled in all its parts and sent to the above address or you can communicate the application also via Technical Bulletin Application Communication Section placed in Leonardo AW Customer Portal - MyCommunications Area. We thank you beforehand for the information given.