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AgustaWestland Products

SERVICE BULLETIN

OPTIONAL

N° 189-373

DATE: January 18, 2024

REV. : /

TITLE

ATA 21 - CABIN VAPOR CYCLE UNIT REPLACEMENT

REVISION LOG

First Issue

1. PLANNING INFORMATION

A. EFFECTIVITY

All AW189 helicopters equipped with the “Cabin Vapor Cycle Unit” P/N 8G2150V02231 and the “Cockpit Vapor Cycle Unit” P/N 8G2150V02331.

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 “ECS compressor retromod” P/N 8G2150P02211 to replace the “Cabin Vapor Cycle Unit” P/N 8G2150V02231 and the “Cockpit Vapor Cycle Unit” P/N 8G2150V02331.

LH issued this SB for the following reason:

Helicopter Reliability/Maintainability	
Product Improvement	
Obsolescence	✓
Customization	
Product/Capability Enhancement	

E. DESCRIPTION

This Service Bulletin gives instructions on how to replace the existing Cabin Vapor Cycle Unit P/N 8G2150V02231 and the Cockpit Vapor Cycle Unit P/N 8G2150V02331, both part of the ECS system, with the new VCU High Pressure P/N 8G2150V02731 and P/N 8G2150V02831 that are equipped with a new compressor. The SB gives also the instructions on how to perform the necessary electrical modifications and how to remove the existing autotransformers for the VCU power supply that are not required anymore.

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 forty (40) MMH are deemed necessary.

MMH are based on hands-on time and can change with personnel and facilities available. MMH are not comprehensive of the overall hours necessary to get access to work areas and to remove all the equipment that interferes with the application of the prescribed instructions.

H. WEIGHT AND BALANCE

WEIGHT (Kg)	-1.500	
	ARM (mm)	**MOMENT (Kgmm)**
LONGITUDINAL BALANCE	3385.3	-5077.9
LATERAL BALANCE	0.0	0.0

I. REFERENCES

I.1 PUBLICATIONS

Following Data Modules refer to AMP:

DATA MODULE		**DESCRIPTION**	**PART**
DM01	89-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance	-
DM02	89-A-06-41-00-00A-010A-A	Access doors and panels - General data	-
DM03	89-A-21-90-06-00A-520A-A	Number 1 vapour cycle unit - Remove procedure	-
DM04	89-A-21-90-06-00A-720A-A	Number 1 vapour cycle unit - Install procedure	-

DATA MODULE		DESCRIPTION	PART
DM05	89-A-21-90-07-00A-520A-A	Number 2 vapour cycle unit - Remove procedure	-
DM06	89-A-21-90-07-00A-720A-A	Number 2 vapour cycle unit - Install procedure	-
DM07	89-A-21-90-19-00A-520A-A	Number 1 ECS autotransformer - Remove procedure	-
DM08	89-A-21-90-20-00A-520A-A	Number 2 ECS autotransformer - Remove procedure	-

Following Data Modules refer to CSPP:

DATA MODULE		DESCRIPTION	PART
DM09	CSPP-A-20-10-13-00A-622A-D	Electrical contacts - Crimp	-
DM10	CSPP-A-20-10-02-00A-622A-D	Terminal lug - Crimp	-
DM11	CSPP-A-20-10-01-00A-691A-D	Wires and cables - Marking	-

I.2 ACRONYMS & ABBREVIATIONS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
ATA	Air Transport Association
C/A	Cable Assy
CSPP	Common Standard Practices Publication
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
ECS	Environmental Control System
HP	High Pressure
IPD	Illustrated Parts Data
ITEP	Illustrated Tool and Equipment Publication
LH	Leonardo Helicopters
MMH	Maintenance Man Hours
N.A.	Not Applicable
P/N	Part Number
SB	Service Bulletin
VCU	Vapour Cycle Unit

I.3 ANNEX

N.A.

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

A.1 PARTS

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	**8G2150P02211**		**ECS COMPRESSOR RETROMOD**	**REF**	**.**		
2	**8G2150P02311**		**SUPPLY COMPRESSOR RETROMOD**	**REF**	**..**		
3	8G2150V02831		Vapour Cycle Unit - HP Cockpit ECS	1	…		189-373L1
4	8G2150V02731		Vapour Cycle Unit - HP Cabin ECS	1	…		189-373L1
5	**8G2150P01811**		**ECS WITH NEW COMPRESSOR RETROMOD**	**REF**	**..**		
6	D38999/26KA35SN		Electrical connector	2	…		189-373L1
7	A529A400-0903B		Backshell	2	…		189-373L1
8	A557A-T3-8		Electrical wire	8 m	…		189-373L1
9	A532A400-2103B		Backshell	1	…		189-373L1
10	CTVS06RF21-48S		Electrical connector	2	…		189-373L1
11	A532A400-0903B		Backshell	1	…		189-373L1
12	A561A-T1-22		Electrical wire	8 m	…		189-373L1
13	A574A01-01		Insulation sleeving	3	…		189-373L1
14	A574A01-04		Insulation sleeving	1	…		189-373L1
15	M39029/56-351		Electrical contact	2	.		189-373L1
16	MS25036-115		Terminal lug	6	.		189-373L1
17	M39029/56-353		Electrical contact	6	.		189-373L1
18	M39029/56-348		Electrical contact	4	.		189-373L1

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

A.2 CONSUMABLES

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

#	SPEC./LH CODE NUMBER	DESCRIPTION	Q.TY	NOTE	PART
19	EN6049-006-16-5	Tubing braided	AR	(1)(2)	-

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

A.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
189-373L1	1	-	-

NOTES

(1) Item to be procured as local supply.

(2) Indicated P/N refer to a specific size. The last digits can be different based on the actual required installation.

B. SPECIAL TOOLS

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

C. INDUSTRY SUPPORT INFORMATION

Configuration change.

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 and plastic cable tiedown.

c) During the installation of bonding braids or components requiring grounding, clean the surface structure in order to obtain a good ground contact.

d) Let adhesive cure at room temperature for at least 24 hours unless otherwise specified.

e) Exposed thread surface and nut must be protected using a layer of tectyl according to MIL-C-16173 grade I.

1. In accordance with AMP DM 89-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.
2. In accordance with AMP DM 89-A-06-41-00-00A-010A-A and with reference to Figures 1 thru 4, remove all external panels, internal panels and internal liners as required to gain access to the area affected by the installation and perform the “ECS Compressor Retromod” P/N 8G2150P02211 as described in the following procedure:

2.1 With reference to Figures 2 thru 4, perform the “ECS with New Compressor Retromod” P/N 8G2150P01811 as described in the following procedure:

2.1.1 With reference to Figure 2 Wiring Diagram “Was”, remove the wire marked as “600” (RD-YE-BL) of the C/A F1A128, between the relay K37 and the AFT autotransformer T11.

2.1.2 With reference to Figure 2 Wiring Diagram “Was”, remove the wire marked as “601” (RD-YE-BL) of the C/A F1A129, between the AFT autotransformer T11 and the splices SP2468, SP2469 and SP2470.

2.1.3 With reference to Figure 2 Wiring Diagram “Was”, remove the three wires marked as “233”, “234” and “235” of the C/A F1A124 between the compressor A15 and the splices SP2468, SP2469 and SP2470.

2.1.4 With reference to Figure 3 Wiring Diagram “Was”, remove the wire marked as “605” (RD-YE-BL) of the C/A F1B134, between the relay K40 and the AFT autotransformer T12.

2.1.5 With reference to Figure 3 Wiring Diagram “Was”, remove the wire marked as “606” (RD-YE-BL) of the C/A F1B135, between the AFT autotransformer T12 and the splices SP2474, SP2475 and SP2476.

2.1.6 With reference to Figure 3 Wiring Diagram “Was”, remove the three wires marked as “245”, “246” and “247” of the C/A F1B133, between the compressor A16 and the splices SP2474, SP2475 and SP2476.

2.1.7 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “364” of the C/A F1A127 between the pin “J” of the connector P279 and the splice SP661.

2.1.8 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “421” of the C/A F1A127 between the pin “D” of the connector A15P1 and the splice SP661.

2.1.9 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “350” of the C/A F1A127 between the pin “E” of the connector A15P1 and the splice SP625.

2.1.10 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “342” of the C/A F1B125 between the pin “J” of the connector P278 and the splice SP660.

2.1.11 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “420” of the C/A F1B125 between the pin “D” of the connector A16P1 and the splice SP660.

2.1.12 With reference to Figure 4 Wiring Diagram “Was”, remove the wire marked as “533” of the C/A F1B125 between the pin “E” of the connector A16P1 and the splice SP624.

2.2 With reference to Figure 1, perform the Supply Compressor Retromod P/N 8G2150P02311 as described in the following procedure:

2.2.1 In accordance with AMP DM 89-A-21-90-06-00A-520A-A (applicable steps) and with reference to Figure 1 View A, remove the “Cabin Vapour Cycle Unit” P/N 8G2150V02231. Retain fixing hardware for later reuse.

2.2.2 In accordance with AMP DM 89-A-21-90-07-00A-520A-A (applicable steps) and with reference to Figure 1 View A, remove the “Cockpit Vapour Cycle Unit” P/N 8G2150V02331. Retain fixing hardware for later reuse.

2.2.3 In accordance with AMP DM 89-A-21-90-19-00A-520A-A (applicable steps), remove the autotransformers cover P/N 8G5333A18051 (part of the steppable platform assy P/N 8G5333A19631) and the Number 1 ECS Autotransformer (T11) P/N 8G2150V02151.

2.2.4 In accordance with AMP DM 89-A-21-90-20-00A-520A-A (applicable steps), remove the Number 2 ECS Autotransformer (T12) P/N 8G2150V02151.

2.3 With reference to Figures 2 thru 4, perform the “ECS with New Compressor Retromod” P/N 8G2150P01811 as described in the following procedure:

2.3.1 With reference to Figure 2 Wiring Diagram “Become”, assemble the connector A15P1 by means of the electrical connector P/N CTVS06RF21-48S and the backshell P/N A532A400-2103B.

2.3.2 With reference to Figure 2 Wiring Diagram “Become”, cut n°1 electrical wire P/N A557A-T3-8 of adequate length and lay down between the connector A15P1 and the relay K37. Run the wire in the braided wire screen and protect with nomex P/N EN6049-006-16-15.

2.3.3 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and DM CSPP-A-20-10-02-00A-622A-D and with reference to Figure 2 Wiring Diagram “Become”, perform the electrical connections of the wire to the connector A15P1 and to the relay K37. Connect the braid to the ground point shown.

2.3.4 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 2 Wiring Diagram “Become”, mark wire as 2150-038 (RD, YE, BL) by means of marker sleeve.

2.3.5 With reference to Figure 2 Wiring Diagram “Become”, apply the insulation sleeving P/N A574A01-04 on the connector A15P1.

2.3.6 With reference to Figure 3 Wiring Diagram “Become”, assemble the connector A16P1 by means of the electrical connector P/N CTVS06RF21-48S and the backshell P/N A532A400-0903B.

2.3.7 With reference to Figure 3 Wiring Diagram “Become”, cut n°1 electrical wire P/N A557A-T3-8 of adequate length and lay down between the connector A16P1 and the relay K40. Run the wire in the braided wire screen and protect with nomex P/N EN6049-006-16-15.

2.3.8 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and DM CSPP-A-20-10-02-00A-622A-D and with reference to Figure 3 Wiring Diagram “Become”, perform the electrical connections of the wire to the connector A16P1 and to the relay K40. Connect the braid to the ground point shown.

2.3.9 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 3 Wiring Diagram “Become”, mark wire as 2150-039 (RD, YE, BL) by means of marker sleeve.

2.3.10 With reference to Figure 3 Wiring Diagram “Become”, apply the insulation sleeving P/N A574A01-01 on the connector A16P1.

2.3.11 With reference to Figure 4 Wiring Diagram “Become”, assemble the connector A15P2 by means of the electrical connector P/N D38999/26KA35SN and the backshell P/N A529A400-0903B.

2.3.12 With reference to Figure 4 Wiring Diagram “Become”, cut n°1 electrical wire P/N A561A-T1-22 of adequate length and lay down between the connector J279 and the connector A15P2.

2.3.13 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and with reference to Figure 4 Wiring Diagram “Become”, perform the electrical connections of the wire to the connectors J279 and A15P2.

2.3.14 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 4 Wiring Diagram “Become”, mark wire as 2150-040 by means of marker sleeve.

2.3.15 With reference to Figure 4 Wiring Diagram “Become”, cut n°1 electrical wire P/N A561A-T1-22 of adequate length and lay down between the connector A15P2 and the splice SP625.

2.3.16 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and with reference to Figure 4 Wiring Diagram “Become”, perform the electrical connections of the wire to the connector A15P2 and the splice SP625.

2.3.17 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 4 Wiring Diagram “Become”, mark wire as 2150-041 by means of marker sleeve.

2.3.18 With reference to Figure 4 Wiring Diagram “Become”, apply the insulation sleeving P/N A574A01-01 on the connector A15P2.

2.3.19 With reference to Figure 4 Wiring Diagram “Become”, assemble the connector A16P2 by means of the electrical connector P/N D38999/26KA35SN and the backshell P/N A529A400-0903B.

2.3.20 With reference to Figure 4 Wiring Diagram “Become”, cut n°1 electrical wire P/N A561A-T1-22 of adequate length and lay down between the connector P278 and the connector A16P2.

2.3.21 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and with reference to Figure 4 Wiring Diagram “Become”, perform the electrical connections of the wire to the connector A16P2 and the connector P278.

2.3.22 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 4 Wiring Diagram “Become”, mark wire as 2150-042 by means of marker sleeve.

2.3.23 With reference to Figure 4 Wiring Diagram “Become”, cut n°1 electrical wire P/N A561A-T1-22 of adequate length and lay down between the splice SP624 and the connector A16P2.

2.3.24 In accordance with CSPP DM CSPP-A-20-10-13-00A-622A-D and with reference to Figure 4 Wiring Diagram “Become”, perform the electrical connections of the wire to the connector A16P2 and the splice SP624.

2.3.25 In accordance with CSPP DM CSPP-A-20-10-01-00A-691A-D and with reference to Figure 4 Wiring Diagram “Become”, mark wire as 2150-043 by means of marker sleeve.

2.3.26 With reference to Figure 4 Wiring Diagram “Become”, apply the insulation sleeving P/N A574A01-01 on the connector A16P2.

2.3.27 Perform a pin-to-pin continuity check of all the electrical connections made.

2.4 With reference to Figures 1 thru 4, perform the “supply compressor retromod” P/N 8G2150P02311 as described in the following procedure:

2.4.1 In accordance with AMP DM 89-A-21-90-06-00A-720A-A (applicable steps) and with reference to Figure 1 View A, install the cabin ECS vapour cycle unit P/N 8G2150V02731 on the structure by means of existing fixing hardware previously removed.

2.4.2 With reference to Figures 2 and 4 Wiring Diagram “Become”, perform the electrical connections of the connector A15P1 and the connector A15P2 to the compressor A15.

2.4.3 In accordance with AMP DM 89-A-21-90-07-00A-720A-A (applicable steps) and with reference to Figure 1 View A, install the cockpit ECS vapour cycle unit P/N 8G2150V02831 on the structure by means of existing fixing hardware previously removed.

2.4.4 With reference to Figures 3 and 4 Wiring Diagram “Become”, perform the electrical connections of the connector A16P1 and the connector A16P2 to the compressor A16.

3. In accordance with AMP DM 89-A-06-41-00-00A-010A-A, re-install all external panels, internal panels and internal liners previously removed.
4. In accordance with weight and balance changes, update the Chart A (see Rotorcraft Flight Manual, Part II, section 6).
5. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
6. Gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

   As an alternative, send the attached compliance form to the following mail box:

   engineering.support.lhd@leonardo.com

   and (for North, Central and South America) also to:

   AWPC.Engineering.Support@leonardocompany.us

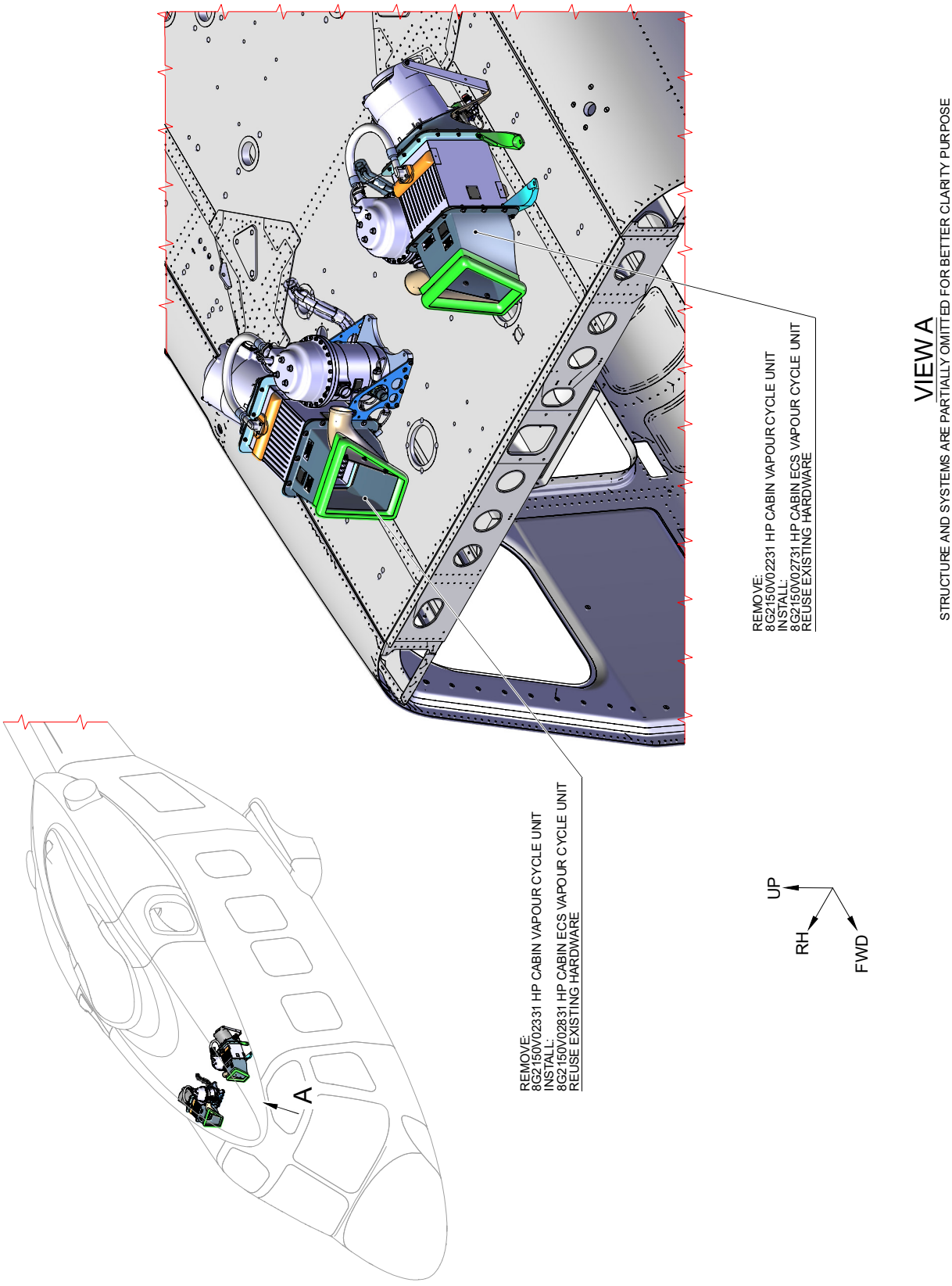

VIEW A
STRUCTURE AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
REMOVE:
8G2150V02231 HP CABIN VAPOUR CYCLE UNIT
INSTALL:
8G2150V02731 HP CABIN ECS VAPOUR CYCLE UNIT
REUSE EXISTING HARDWARE
REMOVE:
8G2150V02331 HP CABIN VAPOUR CYCLE UNIT
INSTALL:
8G2150V02831 HP CABIN ECS VAPOUR CYCLE UNIT
REUSE EXISTING HARDWARE
A
UP
RH
FWD

Figure 1

WIRING DIAGRAM ECS WITH NEW COMPRESSOR RETROMOD

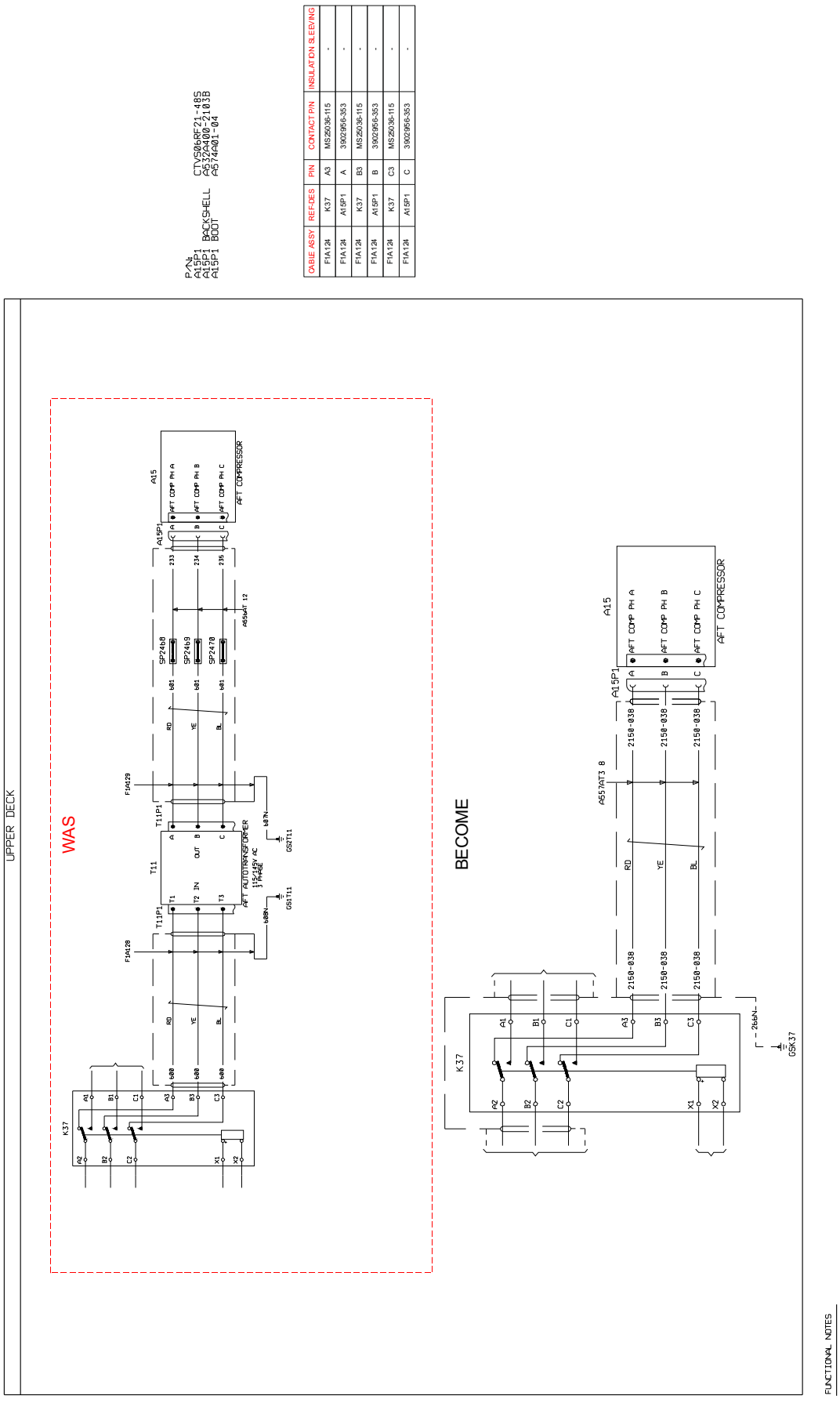


Figure 2

8G2150P01811
SHEET 2 OF 3

WIRING DIAGRAM ECS WITH NEW COMPRESSOR RETROMOD

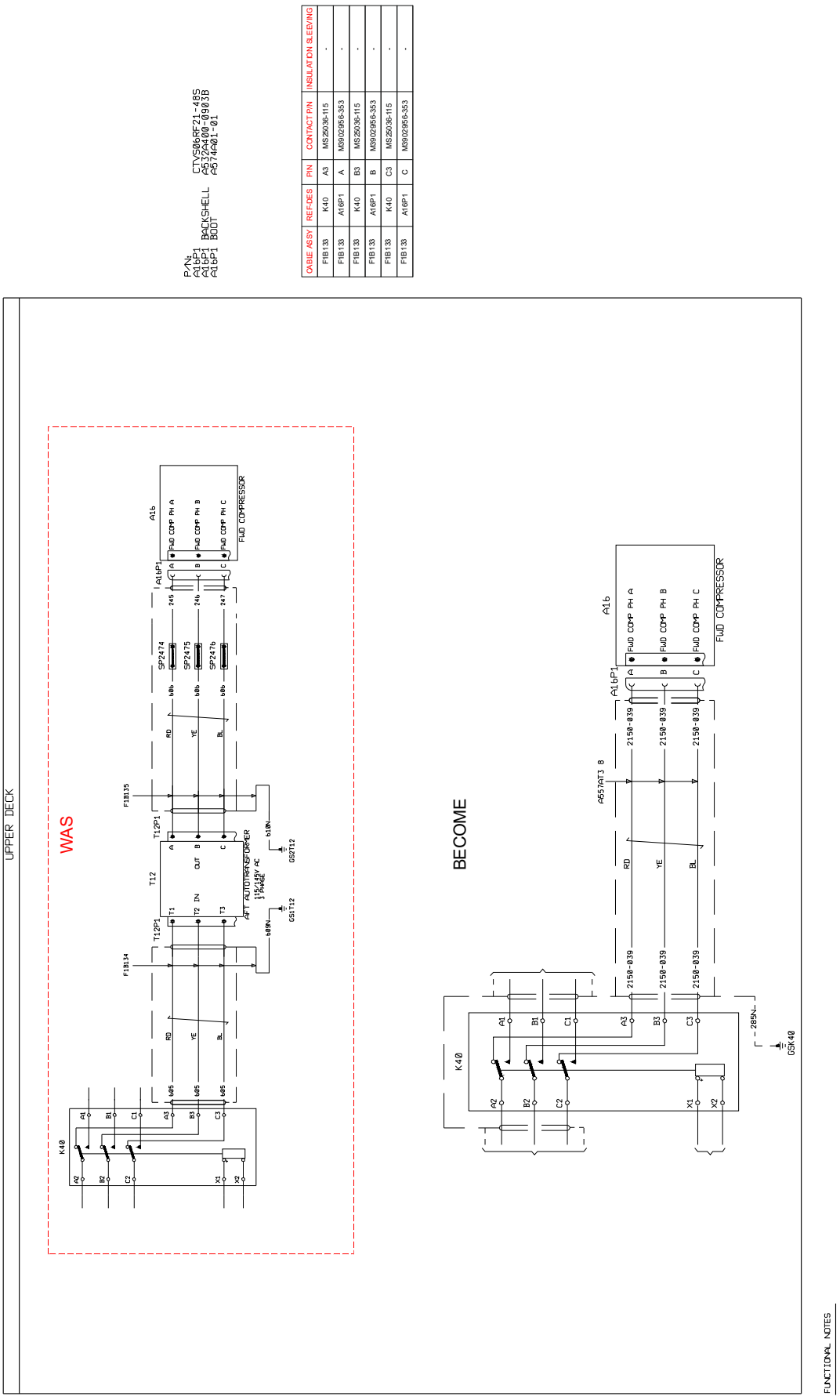


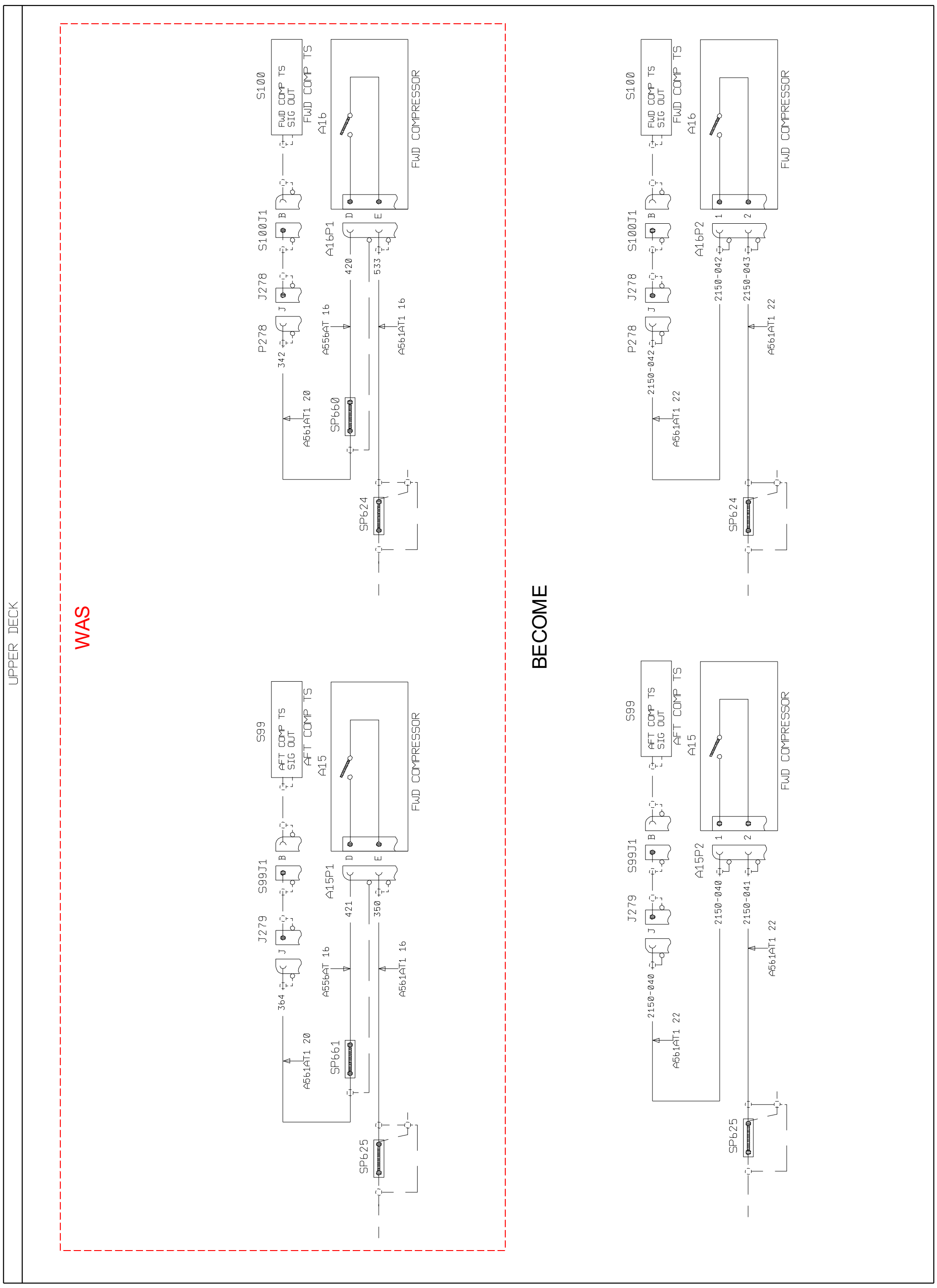
Figure 3

8G2150P01811
WIRING DIAGRAM ECS WITH NEW COMPRESSOR RETROMOD
SHEET 3 OF 3

P/N:
A15P2 D38999/26KA35SN
A15P2 BACKSHELL A529A400-0903B
A15P2 BOOT A574A01-01

A16P2 D38999/26KA35SN
A16P2 BACKSHELL A529A400-0903B
A16P2 BOOT A574A01-01

CABLE ASSY	REF-DES	PIN	CONTACT P/N	INSULATION SLEEVING
F1A127	P279	J	M39029/56-351	-
F1A127	A15P2	1	M39029/56-348	-
F1A127	A15P2	2	M39029/56-348	-
F1B125	P278	J	M39029/56-351	-
F1B125	A16P2	1	M39029/56-348	-
F1B125	A16P2	2	M39029/56-348	-



FUNCTIONAL NOTES

Figure 4

LEONARDO
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Please send to the following address: **LEONARDO S.p.A.** **CUSTOMER SUPPORT & SERVICES - ITALY** **PRODUCT SUPPORT ENGINEERING & LICENSES DEPT.** Via Giovanni Agusta, 520 21017 Cascina Costa di Samarate (VA) - ITALY Tel.: +39 0331 225036 Fax: +39 0331 225988	**SERVICE BULLETIN COMPLIANCE FORM**	Date:
	Number:	
	Revision:	

Customer Name and Address:	Telephone:
	Fax:
	B.T. Compliance Date:

Helicopter Model	S/N	Total Number	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.