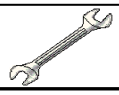
Civil version(s): B

ALERT SERVICE BULLETIN

CORRECTIVE MEASURE

NAVIGATION - Attitude and Heading Reference System (AHRS)
Connection modification on connector "11 ALPHA" (AHRS)
Corresponds to modifications 0722B51 and 365A084754.00

For the attention of
 

Revision No.	Date of issue
Revision 0	2018-02-19

Summary:

The purpose of this ALERT SERVICE BULLETIN is to correct the connections of the primary reference system "Attitude and Heading Reference System (AHRS)" by modifying the connection of connector "11 ALPHA".

Compliance:

Airbus Helicopters renders compliance with this ALERT SERVICE BULLETIN mandatory.

1. PLANNING INFORMATION

1.A. EFFECTIVITY

1.A.1. Helicopters/installed equipment or parts

Helicopters equipped with the Automatic Pilot (AP):
- PRE MOD 0722B51 (Segregation of flight/ground information for the automatic pilot system),
- PRE MOD 365A084754.00 ("11 ALPHA" connection modification).

NOTE

Refer to the aircraft Individual Inspection Log Book (RIC AMS) and the aircraft Log Book to identify the actual modification status of the helicopter.

1.A.2. Non-installed equipment or parts

Not applicable.

1.B. ASSOCIATED REQUIREMENTS

Not applicable.

1.C. REASON

During a test flight for troubleshooting, it was found that there was a difference between the attitude indications delivered by the AHRS systems and displayed by the pilot's and copilot's PFD (Primary Flight Display) and the stand-by horizon during fast helicopter movements in curves.
This indicating difference is due to a wiring anomaly in the FLIGHT/GROUND logic of the FLIGHT/GROUND condition management board, as the AHRS systems have a different dynamic depending on the FLIGHT or GROUND condition of the helicopter.
The analysis of this incident showed that the AHRS systems received the FLIGHT/GROUND signal from the same landing gear position sensor although each AHRS must receive information from different sources to prevent erroneous vertical speed and attitude displays on both PFDs. When there is no segregation in the FLIGHT/GROUND information acquisition, this also affects the FCDS (Flight Control Display System), which is composed of the FCDM (Flight Control Display Module) and SMD45 flight control screens.

To prevent any common mode in the acquisition of FLIGHT/GROUND information used by the AHRS systems, the FCDS, the flight data recorder and the Automatic Pilot (AP), Airbus Helicopters has developed the following modifications:

- 0722B51, which consists in changing the wiring to make sure that the "FLIGHT" information from the LH landing gear is used by the Automatic Pilot (AP) system.

- 365A084754.00, which consists in re-allocating the electronic board output connections by modifying the connection on connector "11 ALPHA".

Airbus Helicopters renders compliance with this ALERT SERVICE BULLETIN mandatory.

1.D. DESCRIPTION

This ALERT SERVICE BULLETIN consists in:
- removing the Pelican rack equipment,
- modifying the wiring (corresponds to modification 0722B51),
- modifying the connections (corresponds to modification 365A084754.00),
- installing the Pelican rack equipment again,
- performing the associated tests,
- performing a flight test of the Automatic Pilot (AP).

1.E. COMPLIANCE

1.E.1. Compliance at H/C manufacturer level

Helicopters/installed equipment or parts

Modification 0722B51 is embodied on new helicopters since December 31, 2002.

Non-installed equipment or parts

Not applicable.

1.E.2. Compliance in service

The work must be performed on the helicopter by the operator.

Helicopters/installed equipment or parts

Airbus Helicopters renders compliance with this ALERT SERVICE BULLETIN mandatory.

Comply with paragraph 3.B. by October 25, 2018 at the latest.

Non-installed equipment or parts

Not applicable.

1.F. APPROVAL

Approval of modifications

The information or instructions relate to modification 0722B51, which was approved on July 03, 2002 under the authority of DGAC No. F.JA01 for civil version helicopters subject to an Airworthiness Certificate.

The information or instructions relate to modification 365A084754.00, which was approved on July 17, 2017 under the authority of EASA Design Organization Approval No. 21J.700 for civil version helicopters subject to an Airworthiness Certificate.

Approval of this document

The technical information contained in this ALERT SERVICE BULLETIN No. 34A037 Revision 0 was approved on February 19, 2018 under the authority of EASA Design Organization Approval No. 21J.700 for civil version helicopters subject to an Airworthiness Certificate.

1.G. MANPOWER

For compliance with this ALERT SERVICE BULLETIN, Airbus Helicopters recommends the following personnel qualifications:

Qualifications: - 1 Electrical Engineering Technician,
- 1 Avionics Technician.

The time for the operations is indicated for reference purposes only and based on a standard helicopter configuration.

Time for the operations: - approximately 4 hours for the Electrical Engineering Technician,
- approximately 3 hours for the Avionics Technician (including the lifting of the helicopter on jacks).

Estimated helicopter downtime is indicated for reference purposes only, based on a standard helicopter configuration.
Helicopter downtime is estimated at approximately 1 day.

1.H. WEIGHT AND BALANCE

Not applicable.

1.I. POWER CONSUMPTION

Not applicable.

1.J. SOFTWARE UPGRADES/UPDATES

Not applicable.

1.K. REFERENCES

The documents required for compliance with this ALERT SERVICE BULLETIN are as follows:

Aircraft Maintenance Manual (AMM)

AMM: 07-10-00-581: Lifting the Helicopter on Jacks - Lifting and Shoring
AMM: 22-10-00-741: Built-In Test - Autopilot System
AMM: 24-00-00-911: Electrical Power - General instructions
AMM: 24-00-00-481: Power Supply - Electrical Power Systems
AMM: 34-00-00-911: General Safety Instructions - Navigation System
AMM: 34-23-00-721: Functional Tests - Primary Reference System
AMM: 34-70-05-062: Removal / Installation - Pelican Rack Card

Standard Practices Manual (MTC)

MTC: 20.07.01.201: Handling of helicopters in a hangar and in a prepared area
MTC: 20.07.02.201: Helicopter parked in a repair shop
MTC: 20.07.03.406: Instructions applicable when working on an aircraft electrical circuit and power generating systems - Technical instructions
MTC: 20.07.03.408: Appearance checks on an aircraft after an inspection or repair
MTC: 20.80.20.101: Contact insertion and extraction method and tools
MTC: 20.80.20.441: Installation of electrical cable bundles and optical fibers

1.L. OTHER AFFECTED PUBLICATIONS

The modifications will be integrated into the following manuals:
- Wiring Diagram Manual (WDM),
- Special Index Modification (SIM).

The documents concerned will be updated in one of the next revisions.

1.M. PART INTERCHANGEABILITY OR MIXABILITY

Not applicable.

2. EQUIPMENT OR PARTS INFORMATION

2.A. EQUIPMENT OR PARTS: PRICE - AVAILABILITY - PROCUREMENT

For any information concerning the modification kits and/or components or for assistance, contact the Sales and Customer Relations Department.

Airbus Helicopters
Etablissement de Marignane
Direction Ventes et Relations Client
13725 MARIGNANE CEDEX
FRANCE

NOTE 1

On the purchase order, please always specify the mode of transport, the destination and the numbers of the helicopters to be modified.

NOTE 2

For ALERT SERVICE BULLETINS, order by:
Telex: HELICOP 410 969F
Fax: +33 (0)4.42.85.99.96.

2.B. LOGISTIC INFORMATION

Not applicable.

2.C. EQUIPMENT OR PARTS REQUIRED PER HELICOPTER/COMPONENT

Consumables to be ordered separately

As per Work Cards and Tasks given in this ALERT SERVICE BULLETIN.

The consumables can be ordered separately from KLX AEROSPACE SOLUTIONS.
Website: https://www.klxaerospace.com/klxaero/
Telephone: +1.305.925.2600
AOG: +1.305.471.8888

Special tools

As per Work Cards and Tasks given in this ALERT SERVICE BULLETIN.

2.D. EQUIPMENT OR PARTS TO BE RETURNED

Not applicable.

3. ACCOMPLISHMENT INSTRUCTIONS

3.A. GENERAL

- Read and comply with the instructions for handling helicopters parked in a repair shop as per MTC Work Card 20.07.01.201.
- Read and comply with the instructions concerning contact insertion and extraction method and tools as per MTC Work Card 20.80.20.101.
- Read and comply with the instructions for installing electrical cable bundles as per MTC Work Card 20.80.20.441.

3.B. WORK STEPS

CAUTION

BEFORE STARTING ANY WORK ON THE ELECTRICAL SYSTEMS, READ TASK 24-00-00-911.

CAUTION

BEFORE STARTING ANY WORK ON THE NAVIGATION SYSTEMS, READ TASK 34-00-00-911.

3.B.1. Preliminary steps

- Park the helicopter in a maintenance shop as per MTC Work Card 20.07.02.201.
- Install appropriate access equipment.
- Disconnect all electrical power supplies.
- Remove equipment and furnishings to allow adequate access to the various work areas.

3.B.2. Procedure

As per Figure 1
- Open the radome to access unit "11 ALPHA" (a).
- Remove the Pelican rack equipment as per AMM Task 34-70-05-062.

3.B.2.a. Wiring modification (corresponds to modification 0722B51) (Figure 1)

As per Figure 1
- Disconnect connector "11ALP2-DP1" (b) from unit "11 ALPHA" (a) (Detail A).
- Modify the wiring on connector "11 ALPHA" as per Figure 1.
- Perform a continuity test of the modified wiring.
- Connect connector "11ALP2-DP1" (b) to unit "11 ALPHA" (a) (Detail A).

3.B.2.b. Connection modification (corresponds to modification 365A084754.00) (Figure 2)

As per Figure 2
- Modify the wiring on connector "11 ALPHA" as per Figure 2.
- Perform a continuity test of the modified wiring.
- Install the Pelican rack equipment as per AMM Task 34-70-05-062.
- Close the radome.

3.B.3. Tests

CAUTION

- DO NOT ACTIVATE THE AUTOMATIC PILOT,
- DO NOT PRESSURIZE THE HYDRAULIC SYSTEMS,
- ALWAYS SECURE THE HELICOPTER ON THE GROUND WITH JACKS.

- Set the helicopter into test condition.
- Connect all electrical power supplies again.
- Energize the helicopter electrical power systems.
- Perform the "tests after FLIGHT/GROUND wiring modification on the main landing gear shock struts" as per Appendix 4.A.
- Perform the functional tests of the primary reference system as per AMM Task 34-23-00-721.
- Perform the automatic pilot built-in test as per AMM Task 22-10-00-741.
- Set the helicopter to flight condition.

3.B.4. Final steps

- Perform an appearance check of the helicopter after inspection or repair as per MTC Work Card 20.07.03.408.
- Install and/or close all cowlings, panels, doors and equipment removed and/or opened during preliminary steps (paragraph 3.B.1.).
- Remove the access equipment.

3.B.5. Ground run-up/flight test

Check the correct operation of the automatic pilot in flight.

3.C. COMPLIANCE CONFIRMATION

Compliance with this document

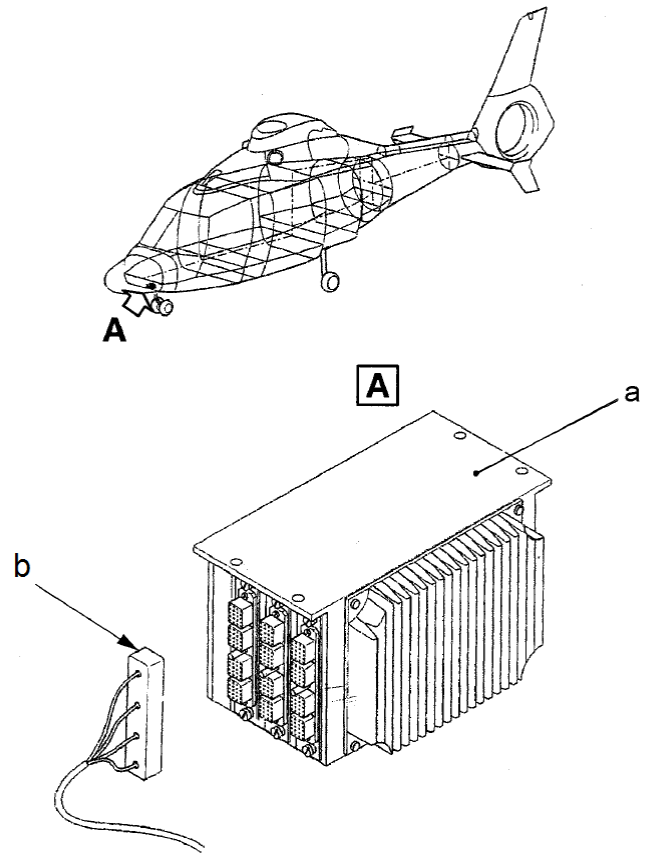
Record compliance with this ALERT SERVICE BULLETIN No. 34A037 Revision 0 in the helicopter documents.

Tracking of modifications in the documentation

Record embodiment of modifications 0722B51 and 365A084754.00 in the helicopter documents.

3.D. OPERATING AND MAINTENANCE INSTRUCTIONS

Not applicable.



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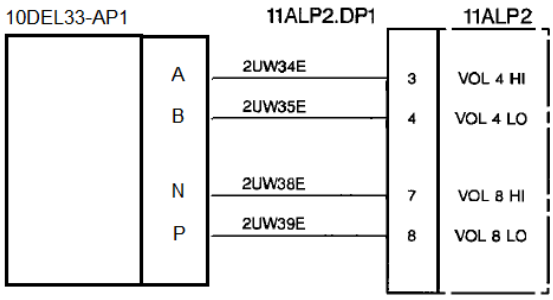
PRE MOD 07.22B51



C

POST MOD 07.22B51

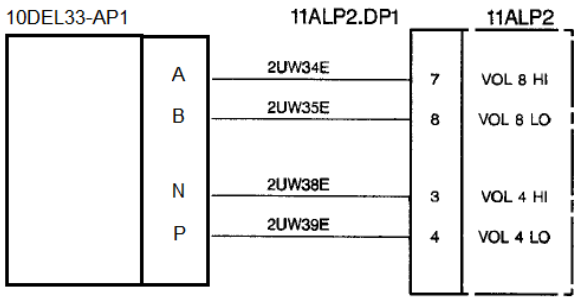
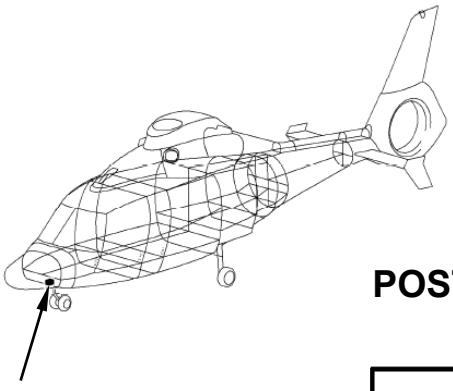
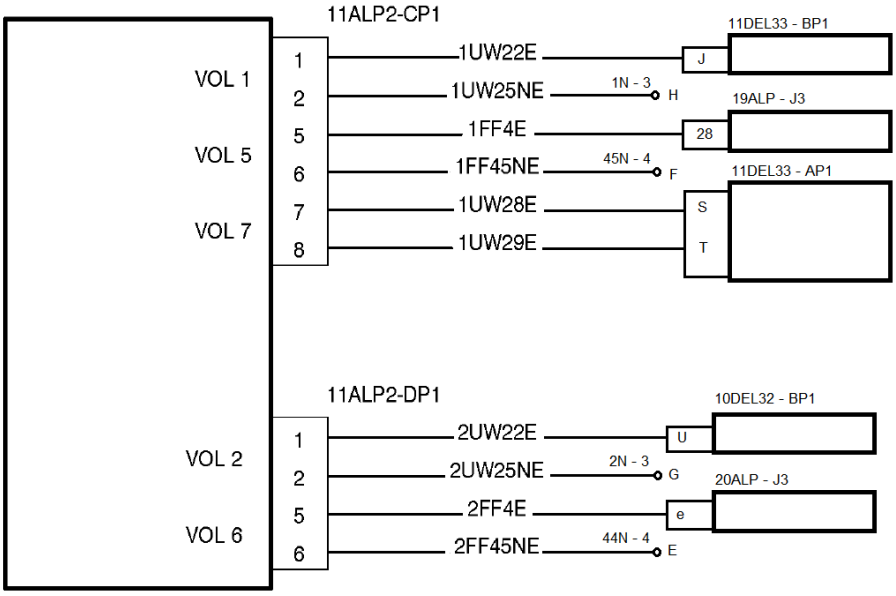


Figure 1



POST MOD 07.22B51 AND PRE MOD 365A084754.00



POST MOD 07.22B51 AND POST MOD 365A084754.00

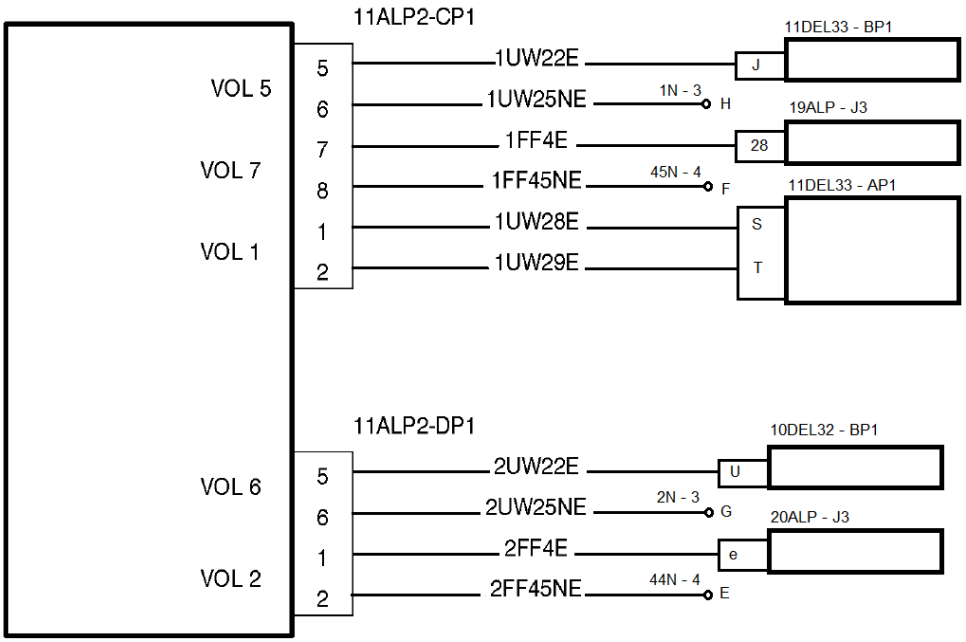


Figure 2

4. APPENDIX

4.A. TEST AFTER FLIGHT/GROUND WIRING MODIFICATION ON THE MAIN LANDING GEAR SHOCK STRUTS

4.A.1. Preliminary steps

- Energize the helicopter with an external electrical power unit as per Sub-Task 24-00-00-481-002 of Task 24-00-00-481.
- Make sure that:
  . an amber "**OFF**" indicator light comes on on the "**AP**" push-button of the APMS control unit,
  . the following equipment is energized and initialized: FCDM1, FCDM2, ADC1, CDA 2, AHRS1, AHRS2, PFD1, PFD2, ICP1 and ICP2.

4.A.2. Procedure

CAUTION

DO NOT ACTIVATE THE AUTOMATIC PILOT.

CAUTION

DO NOT PRESSURIZE THE HYDRAULIC SYSTEM.

- Lift the helicopter on jacks as per Sub-task 07-10-00-581-001 of Task 07-10-00-581.
- Disconnect connectors "**9G**" (LH landing gear) and "**10G**" (RH landing gear).

4.A.2.a. LH landing gear in FLIGHT position / RH landing gear in FLIGHT position

- On the LH landing gear, make a shunt between "**D**" and "**E**" (fixed connector) to simulate the FLIGHT position.
- On the RH landing gear, make a shunt between "**D**" and "**E**" (fixed connector) to simulate the FLIGHT position.
- Energize the helicopter electrical power systems.

FCDM information acquisition on SMD45

- Turn off and then turn on the 4 screens.
- Make sure that the flight control symbols appear ("**T**" must not appear).

AHRS information acquisition

- On the AHRS control unit, set "**AHRS 1**" to "**OFF**" and then to "**ON**".
- Make sure that AHRS 1 aligns and then displays the information after approximately 1 minute and 5 seconds on the 2 copilot screens.
- On the AHRS control unit, set "**AHRS 2**" to "**OFF**" and then to "**ON**".
- Make sure that AHRS 2 aligns and then displays the information after approximately 1 minute and 5 seconds on the 2 pilot screens.

4.A.2.b. LH landing gear in GROUND position / RH landing gear in FLIGHT position

- De-energize the helicopter electrical power systems.
- On the LH landing gear, remove the shunt between "**D**" and "**E**" (fixed connector) to simulate the GROUND position.
- Energize the helicopter electrical power systems.

FCDM information acquisition on SMD45

- Turn off and then turn on the 4 screens.
- Make sure that the flight control symbols appear ("**T**" must not appear).

4.A.2.c. LH landing gear in FLIGHT position / RH landing gear in GROUND position

- De-energize the helicopter electrical power systems.
- On the LH landing gear, make a shunt between "**D**" and "**E**" (fixed connector) to simulate the FLIGHT position.
- On the RH landing gear, make a shunt between "**D**" and "**F**" (fixed connector) to simulate the GROUND position.
- Energize the helicopter electrical power systems.

FCDM information acquisition on SMD45

- Turn off and then turn on the 4 screens.
- Make sure that the flight control symbols appear ("**T**" must not appear).

4.A.2.d. LH landing gear in GROUND position / RH landing gear in GROUND position

- De-energize the helicopter electrical power systems.
- On the LH landing gear, remove the shunt between "**D**" and "**E**" (fixed connector).
- On the RH landing gear, remove the shunt between "**D**" and "**F**" (fixed connector).
- Connect connectors "**9G**" (LH landing gear) and "**10G**" (RH landing gear).
- Lower the helicopter from the jacks as per Sub-task 07-10-00-581-001 of Task 07-10-00-581.
- Energize the helicopter electrical power systems.

FCDM information acquisition on SMD45

- Turn off and then turn on the 4 screens.
- Make sure that "**T**" appears for a few seconds on the 4 screens and then that the flight control symbols appear (longer initializing phase than in flight).

AHRS information acquisition

- On the AHRS control unit, set "**AHRS 1**" to "**OFF**" and then to "**ON**".
- Make sure that AHRS 1 aligns and then displays the information after approximately 30 seconds on the 2 copilot screens.
- On the AHRS control unit, set "**AHRS 2**" to "**OFF**" and then to "**ON**".
- Make sure that AHRS 2 aligns and then displays the information after approximately 30 seconds on the 2 pilot screens.

4.A.3. Final steps

De-energize the helicopter electrical power systems as per Sub-task 24-00-00-481-002 of Task 24-00-00-481.