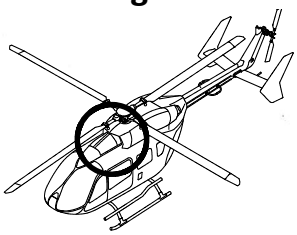
Valid for Version(s): C-2, C-2e.

ALERT SERVICE BULLETIN

SUBJECT: **HYDRAULIC POWER SYSTEM - Plate Assembly**

Installation of attachment hardware with double locking

For the attention of	
	



Revision No.	Date of issue
Revision 0	2015-10-12
Revision 1	2016-10-14
Revision 2	2017-02-01
Revision 3	2017-12-19

Summary:

With this Alert Service Bulletin (ASB), Airbus Helicopters Deutschland (AHD) prescribes the installation of fasteners with double locking for the hydraulic module plate.

Reason for last Revision

Please replace Revision 2 of this ASB with Revision 3.

With Revision 3 of this ASB two alternative washers for the aft attachment points of the hydraulic module plate are added with a new material kit. Furthermore an inspection of the clamping effect of the aft screw joints is prescribed if Revision 2 of this ASB has already been accomplished. The position of the aft grounding straps has changed with Revision 3 to be in accordance with the current design.

If Revision 2 of this ASB has already been accomplished the tightening torque and the clamping effect of the aft screw joints of the hydraulic module plate must be inspected. A relocation of the aft grounding straps as referred in this ASB is not mandatory.

Compliance:

Compliance with this ASB is mandatory.

1 PLANNING INFORMATION

1.A EFFECTIVITY

1.A.1 Helicopters/installed equipment and parts

MBB-BK117 C-2, C-2e, up to and including S/N 9750.

1.A.2 Non-installed equipment and parts

Not applicable.

1.B ASSOCIATED REQUIREMENTS

Not applicable.

1.C REASON

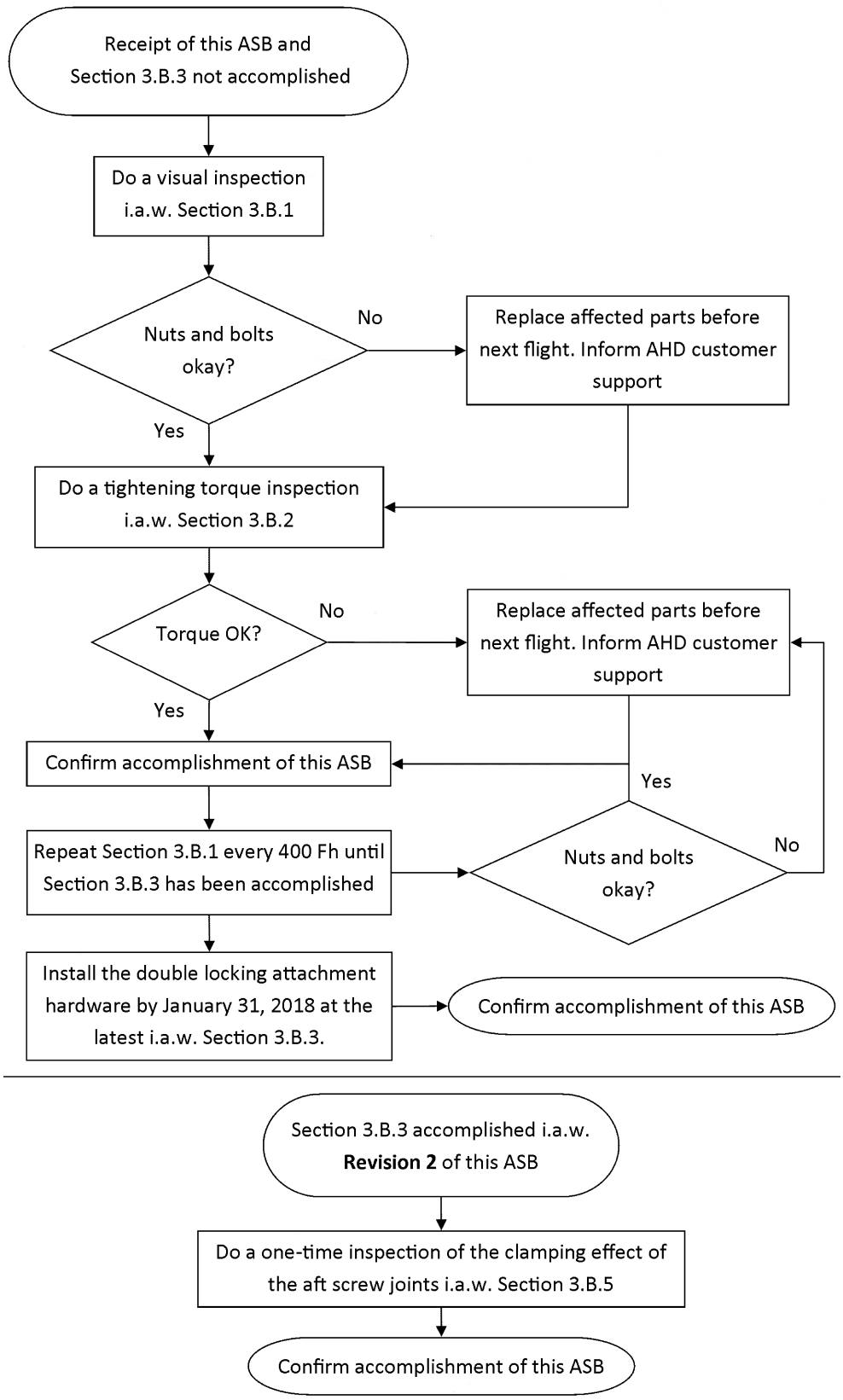
The hydraulic module plate of the MBB-BK117 C-2 has four attachment points at the fuselage. All four attachment points are secured by means of single locking. Design reassessment revealed that due to insufficient stiffness of the hydraulic module plate in case of a single attachment failure a double locking of the fasteners is required.

Until the installation of the new attachment hardware with double locking , AHD prescribes a first time inspection and a repetitive inspection every 400 Fh (+ 40 Fh tolerance) of the attachment points of the module plate assembly.

1.D DESCRIPTION

Remove the old attachment hardware of the hydraulic module plate. Install new attachment hardware with double locking.

1.E COMPLIANCE



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

Helicopters/installed equipment and parts:

Install the double locking attachment hardware for the hydraulic module plate i.a.w. Section 3.B.3 before a helicopter is delivered.

Non-installed equipment and parts:

Not applicable.

1.E.2 Compliance in service

Helicopters/installed equipment and parts:

a) Do the first time visual inspection and tightening torque check of the attachment points of the module plate assembly within 100 Fh after the receipt of **Revision 0** of this ASB i.a.w. Section 3.B.1 and 3.B.2.

b) Do a repetitive visual inspection of the attachment hardware of the module plate assembly every 400 Fh (+40 Fh tolerance) i.a.w. Section 3.B.1 until Section 1.E.2. part c has been accomplished.

c) Install the double locking attachment hardware for the hydraulic module plate by **January 31, 2018** at the latest i.a.w. Section 3.B.3.

EFFECTIVITY Only if Section 3.B.3 of Revision 2 of this ASB has been accomplished.

d) Do a one-time inspection of the clamping effect of the aft screw joints of the hydraulic module plate within 800 Fh (+80 Fh tolerance) i.a.w. Section 3.B.5.

Non-installed equipment and parts:

Not applicable.

1.F APPROVAL

Approval of modification(s):

The information or instructions contained in this document refer to change no. 4328. The technical content of this document is approved under the authority of DOA No. EASA.21J.700.

1.G MANPOWER

Qualification	Mechanic	Electrician	Pilot	Others
Estimated Man-hours	approx. 3.0 h	-	-	-

1.H WEIGHT AND BALANCE

No effect on weight and balance.

1.I POWER CONSUMPTION

Not applicable.

1.J SOFTWARE UPGRADES/UPDATES

Not applicable.

1.K REFERENCES

AMM MBB-BK117 C-2.

1.L OTHER AFFECTED PUBLICATIONS

Publications already updated:

Not applicable.

Publications to be updated:

The changes to AMM MBB-BK117 C-2 and IPC MBB-BK117 C-2 which are required as a result of this ASB will be incorporated with one of the next revisions.

1.M INTERCHANGEABILITY OR MIXABILITY OF PARTS

Interchangeability:

Not applicable.

Mixability:

Not applicable.

2 MATERIAL INFORMATION

2.A MATERIAL: PRICE - AVAILABILITY - PROCUREMENT

Information on price and availability of required material kit SB-117C2-29A-003-2C and SB-117C-2-29A-003-2C2 will be provided by AHD, Dept. Spares Order Administration on request.

All material kits required will be provided free of cost by AHD only within the time limits that apply for the compliance (Section 1.E). Material that is ordered outside the time limits given in the ASB will be charged according to the ruling prices.

2.B LOGISTIC INFORMATION

Not applicable.

2.C MATERIAL REQUIRED PER HELICOPTER/COMPONENT

Material kits to be ordered for one helicopter:

Material kit SB-117C2-29A-003-2C i.a.w. design document B290M0001881.

No.	Keyword	Qty	New P/N	Old P/N	Rem.
1	Hexagon bolt	2	D290M0001201	-	-
		2	-	LN29522S08019	A
2	Hexagon head bolt	2	EN2549D080016F	-	-
		2	-	LN29522S08014	A
3	Self-locking castellated nut	2	DIN65246-08E	-	-
	Castellated nut	2	-	LN9345-08	A
4	Split pin	2	LN94-20020	-	-
		2	-	LN94-20020	A
5	Self-locking hexagon nut	4	EN2883-080	-	-
		2	-	LN9345-08	A
6	Cover	2	GPN910-2179	-	B

NOTE Material kit SB-117C2-29A-003-2C2 must only be ordered if the tightening torque of the aft screw joints during the accomplishment of Section 3.B.3 cannot be applied or the tightening torque and clamping effect inspection i.a.w. Section 3.B.5 has failed.

Material kit SB-117C2-29A-003-2C2 similar to design document B290M0001107.

No.	Keyword	Qty	New P/N	Old P/N	Rem.
1	Washer	2	EN2914-08025	-	-
2	Split pin	2	LN94-20020	-	-
		2	-	LN94-20020	A
3	Self-locking castellated nut	2	DIN65246-08E	-	-
		2	-	DIN65246-08E	A

Remark:

A = AHD does not take back parts with old part numbers.

B = Only necessary if the existing cover breaks during removal or installation.

Consumables to be ordered separately:

Products can be ordered from KLX Aerospace Solutions. The given CM numbers are i.a.w. the list of consumable materials of the Standard Practice Manual (MTC).
Website: https://klxaerospace.com
Email: integration@klx.com

WARNING

RESPECT THE SAFETY DATA SHEET OF THE MANUFACTURER.

No.	Keyword	Qty. (approx.)	Specification **	CM	Rem.
1	PU-Lacquer	10 cm^2	-	478	-
2	Hardener	a.n.*	-	479	-
3	Thinner	a.n.*	-	480	-
*a.n. = as needed ** Specification i.a.w. MTC, 20-01-01-102					

2.D MATERIAL TO BE RETURNED

Not applicable.

3 ACCOMPLISHMENT INSTRUCTIONS

3.A GENERAL

CAUTION

BEFORE STARTING WORK, AFFIX A PLACARD IN THE COCKPIT WHICH SAYS THAT THE CONTROLS MUST NOT BE MOVED. OPERATING THE CONTROLS DURING THE CHECK MAY CAUSE SERIOUS INJURIES.

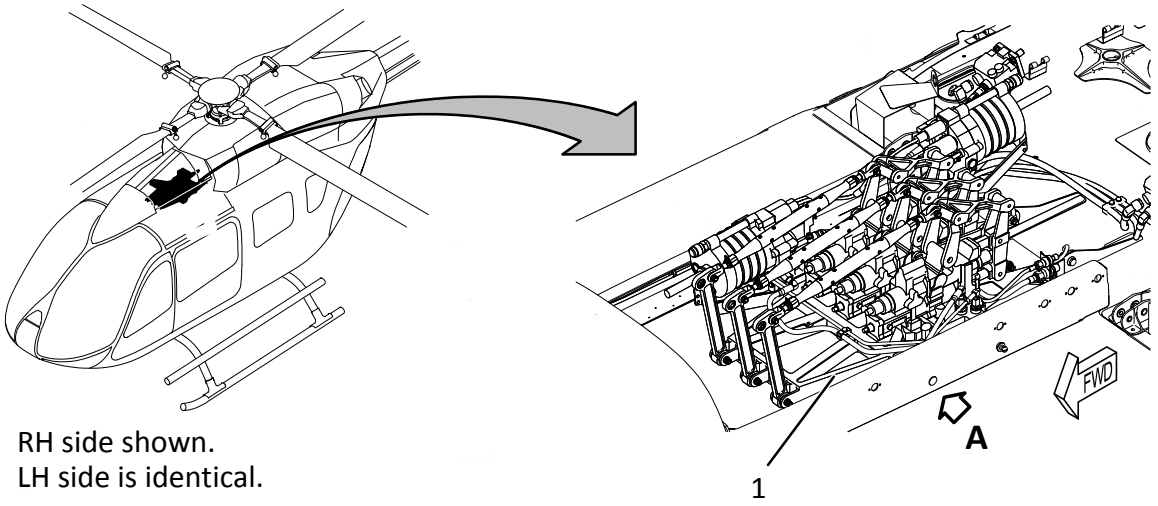
3.B WORK STEPS

3.B.1 Visual Inspection

1. Remove the crest cowling i.a.w. AMM, 71-11-00, 4-1.
2. Remove LH and RH cover (4, Fig. 1).
3. Do a visual inspection of all four attachment points of the hydraulic module plate (1, Fig. 1 and Fig. 2) for condition:
   a. Inspect the LH and RH split pins (4, Fig. 2) for condition and correct installation.
   b. Inspect the LH and RH castellated nuts (2, Fig. 2) and the hexagon bolts (3) for condition and correct installation.
   c. Inspect the LH and RH nuts (3, Fig. 1) for cracks in installed condition using a mirror and a flashlight.
   d. Inspect the LH and RH hexagon bolts (2, Fig. 1) for condition in installed condition using a mirror and a flashlight.
   e. If cracks are detected during the visual inspection, replace the affected parts before the next flight and inform AHD customer support.

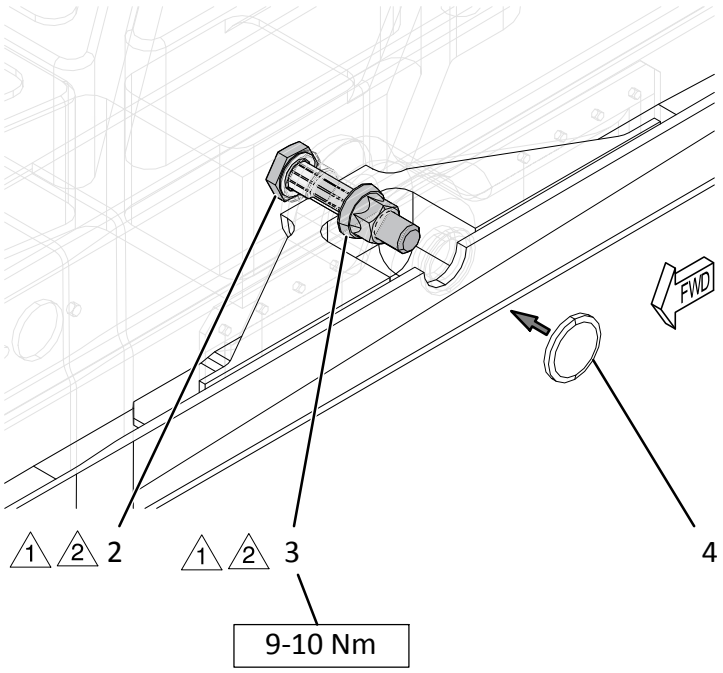
3.B.2 Tightening Torque Check

1. Do a check of the tightening torque of the forward attachment points of the hydraulic module plate (1, Fig. 1):
   a. Apply the required tightening torque of 9-10 Nm to the LH and RH nuts (3, Fig. 1) to check tight fit.
   b. If the torque cannot be applied, replace the affected parts before the next flight and inform AHD customer support.



RH side shown.
LH side is identical.

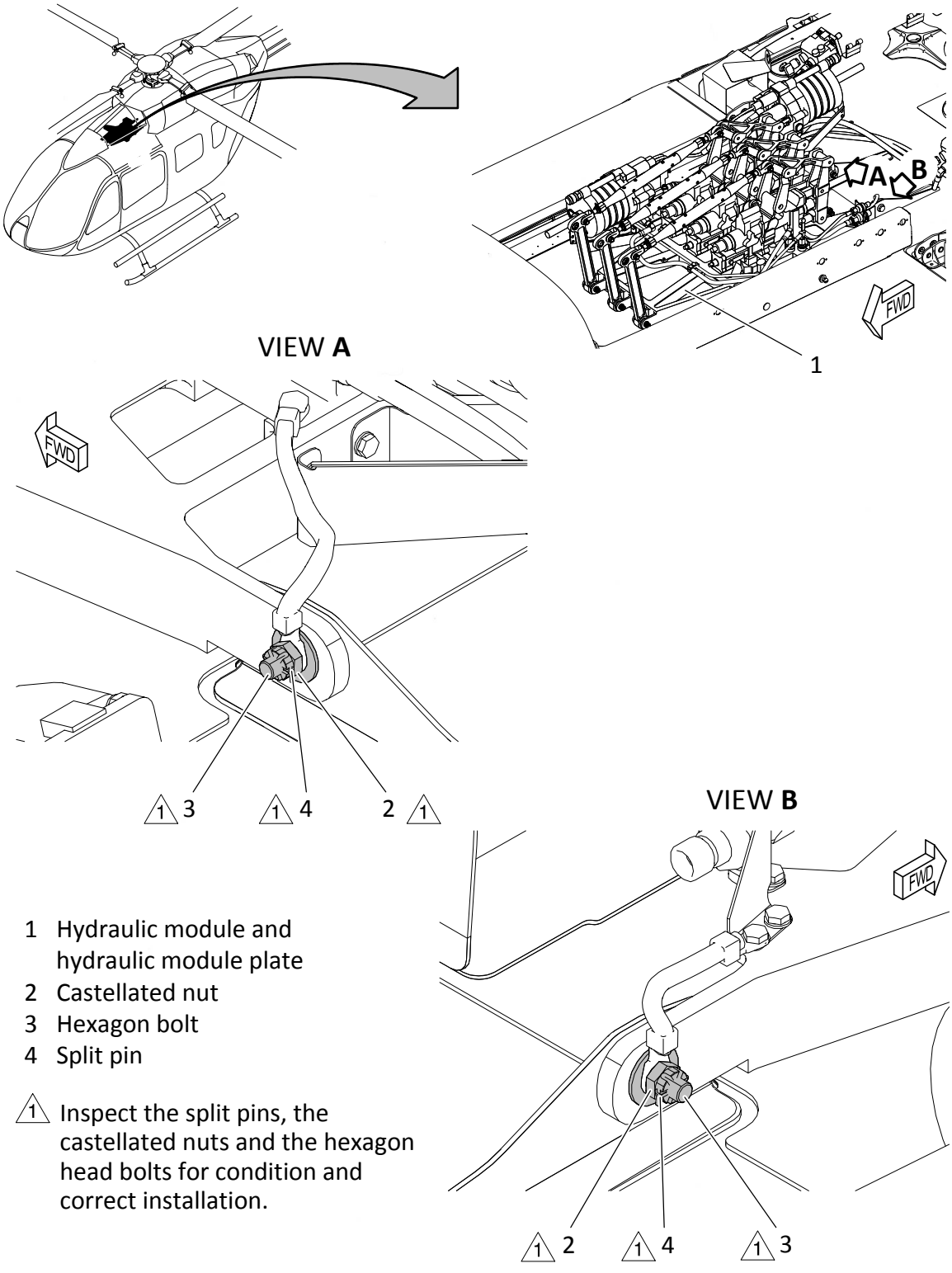
VIEW **A**



1 Hydraulic module and hydraulic module plate
2 Hexagon bolt
3 Nut
4 Cover

1 Use a mirror and a flashlight to inspect the nut and the hexagon bolt for condition.
2 Check the nut for tightening torque.

Inspection and Check of the Hydraulic Module Plate Attachment Points
Figure 1



1 Hydraulic module and hydraulic module plate
2 Castellated nut
3 Hexagon bolt
4 Split pin

1 Inspect the split pins, the castellated nuts and the hexagon head bolts for condition and correct installation.

Inspection and Check of the Hydraulic Module Plate Attachment Points
Figure 2

3.B.3 Retrofit of the attachment hardware

Retrofit of the forward attachment hardware:

1. Remove the crest cowling i.a.w. AMM, 71-11-00, 4-1.
2. Remove LH and RH cover (7, Fig. 3).

NOTE In the following the procedure for the LH side is described. The procedure for the RH side is identical.

3. Remove the self-locking nut (4, Fig. 3), the washer (3) and the hexagon head bolt (2). Discard old parts.
4. Install the new hexagon head bolt (5, Fig. 3) and the new self-locking nut (6). Tighten the self-locking-nut (6) with a tightening torque of 13-14 Nm.
5. Determine the self-locking torque of the self-locking nut (6, Fig. 3):

NOTE The self-locking torque must be determined separately for the LH and RH side. If necessary, the self-locking torque can be determined on an other suitable thread.

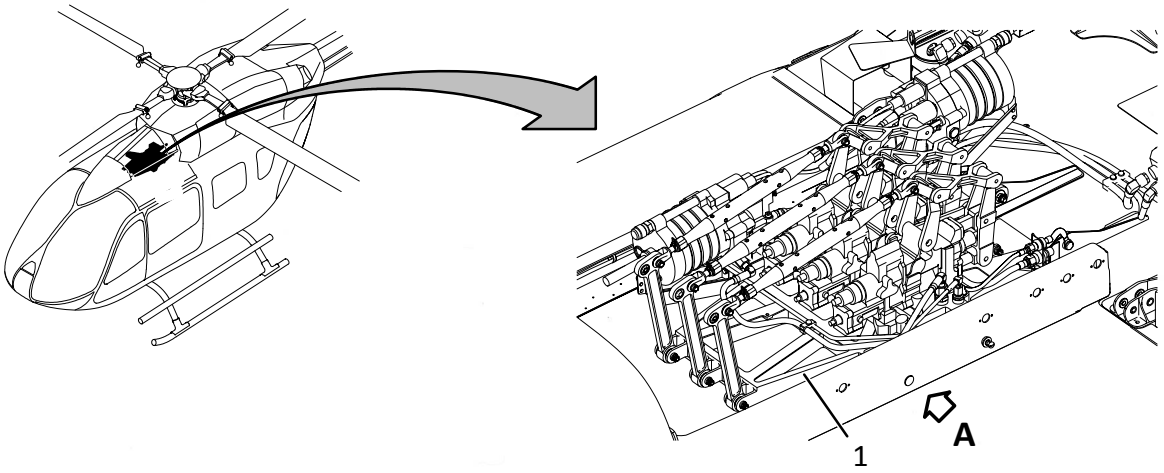
a. Screw the self-locking nut (6, Fig. 3) on the hexagon bolt (5).

b. Determine self-locking torque:

- Adjust a torque wrench initially to 1.0 Nm.
- Increase the adjustment of the torque wrench until the self-locking nut (6, Fig. 3) can be screwed without a click sound of the torque wrench.

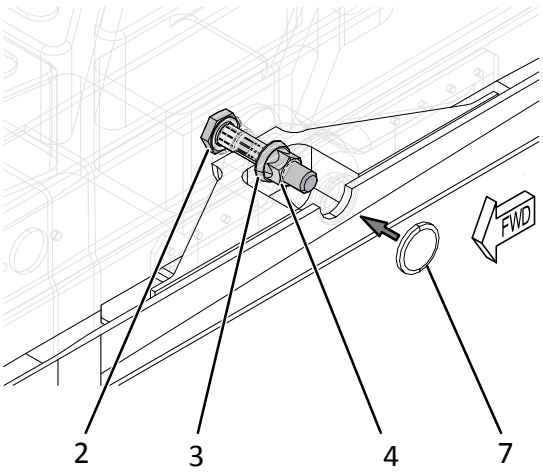
NOTE A thread protrusion down to 0 mm (nut flush with the bolt thread) is allowed as long as the self-locking torque can be applied.

6. Screw the second self-locking nut (6, Fig. 3) with the determined self-locking torque $^{+1\ Nm}$ until it has contact with the first self-locking nut.

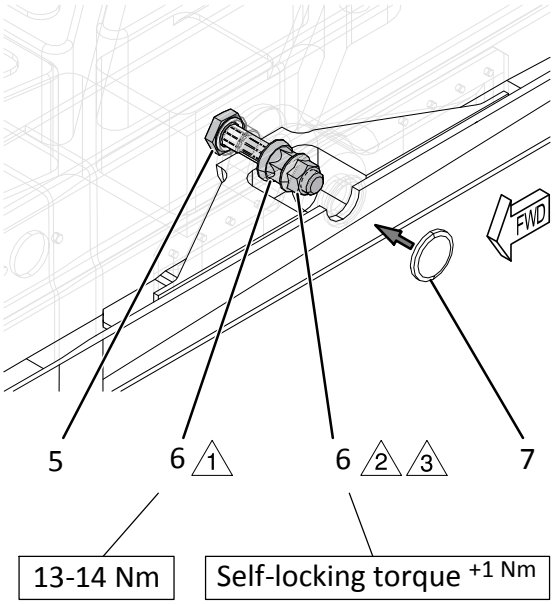


VIEW **A**

Before retrofit



After Retrofit



1 Hydraulic module plate
2 Hexagon head bolt
3 Washer
4 Self-locking nut
5 Hexagon head bolt D290M0001201
6 Self-locking nut EN2883-080
7 Cover

LH side shown.
RH side is identical.

1 Consider order of installation.

2 Determine self-locking torque of self-locking nut. Screw self-locking nut with self-locking torque $^{+1\ Nm}$ until contact with first self-locking nut.

3 A thread protrusion down to 0 mm (nut flush with the bolt thread) is allowed as long as the self-locking torque can be applied.

Figure 3

Retrofit of the aft attachment hardware:

NOTE In the following the procedure for the LH side is described. The procedure for the RH side is identical.

1. Remove the installed split pin (6, Fig. 4), the castellated nut (4), the grounding strap (7), the washer (2) and the hexagon head bolt (5).
2. Store the washer (2, Fig. 4) for reuse. Discard the split pin (6), the castellated nut (4) and the hexagon head bolt (5).

NOTE During the reinstallation the grounding strap must be installed to the opposite site of the attachment point of the hydraulic module plate (see Figure 4).

3. Install the new hexagon head bolt (5, Fig. 4), the washer (2), the grounding strap (7) and the new self-locking castellated nut (4). Tighten the self-locking castellated nut (4) with a tightening torque of 11-13 Nm.
4. Check the clamping effect of the LH and RH screw joints :
   a. Set a torque wrench to 8 Nm and tighten both screw joints to the tightening direction without using a counter torque.
   b. If the screw joints **cannot** be turned proceed with Step 5.
   c. If a screw joint **can** be turned:

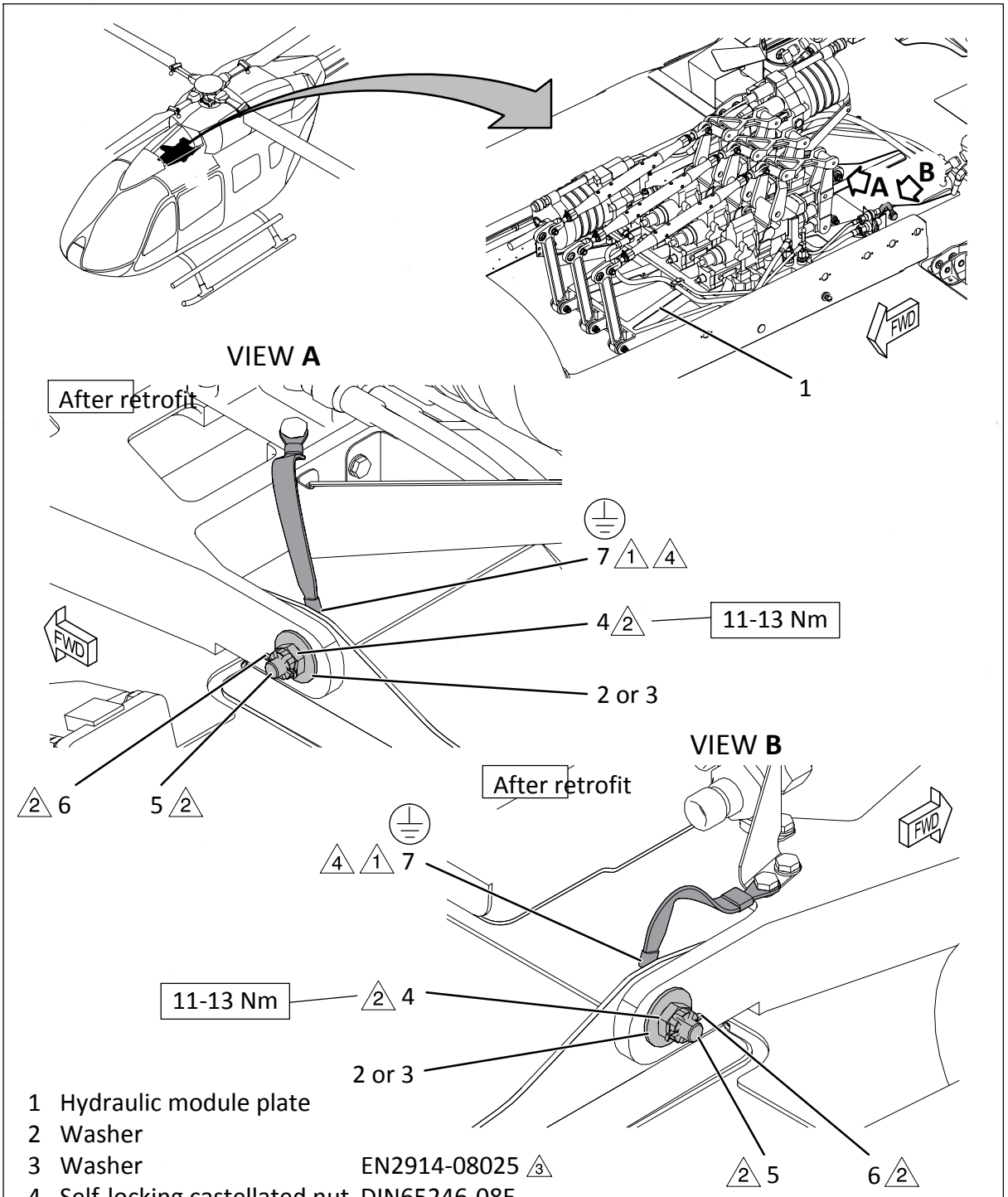
   NOTE The washers (3, Fig. 4) are not included in material kit SB-117C2-29A-003-2C and must be ordered separately with material kit SB-117C2-29A-003-2C2 if necessary.

   NOTE If one screw joint is affected it is recommended to replace the washer (2, Fig. 4) on the LH and RH aft screw joint of the hydraulic module plate.

   - Remove both self-locking castellated nuts (4, Fig. 4).
   - Replace both washers (2, Fig. 4) with washers (3).

   NOTE A low thread protrusion is allowed while using the washer (3, Fig. 4). The thread end of the screw **must** be at least flush with the top of the nut. If the thread end of the screw **is not** at least flush with the top of the nut on the **not affected** screw joint, the washer (2) must be reinstalled.

   - Install both self-locking castellated nuts (4, Fig. 4). Tighten both self-locking castellated nut (4) with a tightening torque of 11-13 Nm.
5. Secure both self-locking castellated nut (4, Fig. 4) with a new split pins (6).
6. Check the electrical bonding of the hydraulic module i.a.w. AMM, 20-00-00, 2-11.
7. Protect the grounding connection with PU-Lacquer (CM 478, CM 479, CM 480).



1	Hydraulic module plate	
2	Washer	
3	Washer	EN2914-08025 3
4	Self-locking castellated nut	DIN65246-08E
5	Hexagon head bolt	EN2549D080016F
6	Split pin	LN94-20020
7	Grounding strap	

4 Reinstalled to the opposite side.

1 Respect AMM, 20-00-00, 2-11 for electrical bonding.

2 Discard old attachment hardware.

3 Only necessary if the required torque cannot be applied.

Figure 4

3.B.4 Final steps

1. Install LH and RH cover (7, Fig. 3).
2. Install the crest cowling i.a.w. AMM, 71-11-00, 4-1.

3.B.5 Clamping effect inspection after accomplishment of Revision 2

EFFECTIVITY Only if Revision 2 of this ASB has been accomplished.

1. Remove the crest cowling i.a.w. AMM, 71-11-00, 4-1.
2. Do an inspection of the clamping effect of the LH and RH aft screw joints of the hydraulic module plate (1, Fig. 5):
   a. Set a torque wrench to 8 Nm and tighten both screw joints to the tightening direction without using a counter torque.
   b. If both screw joints cannot be turned proceed with Step 3.
   c. If a screw joint can be turned:

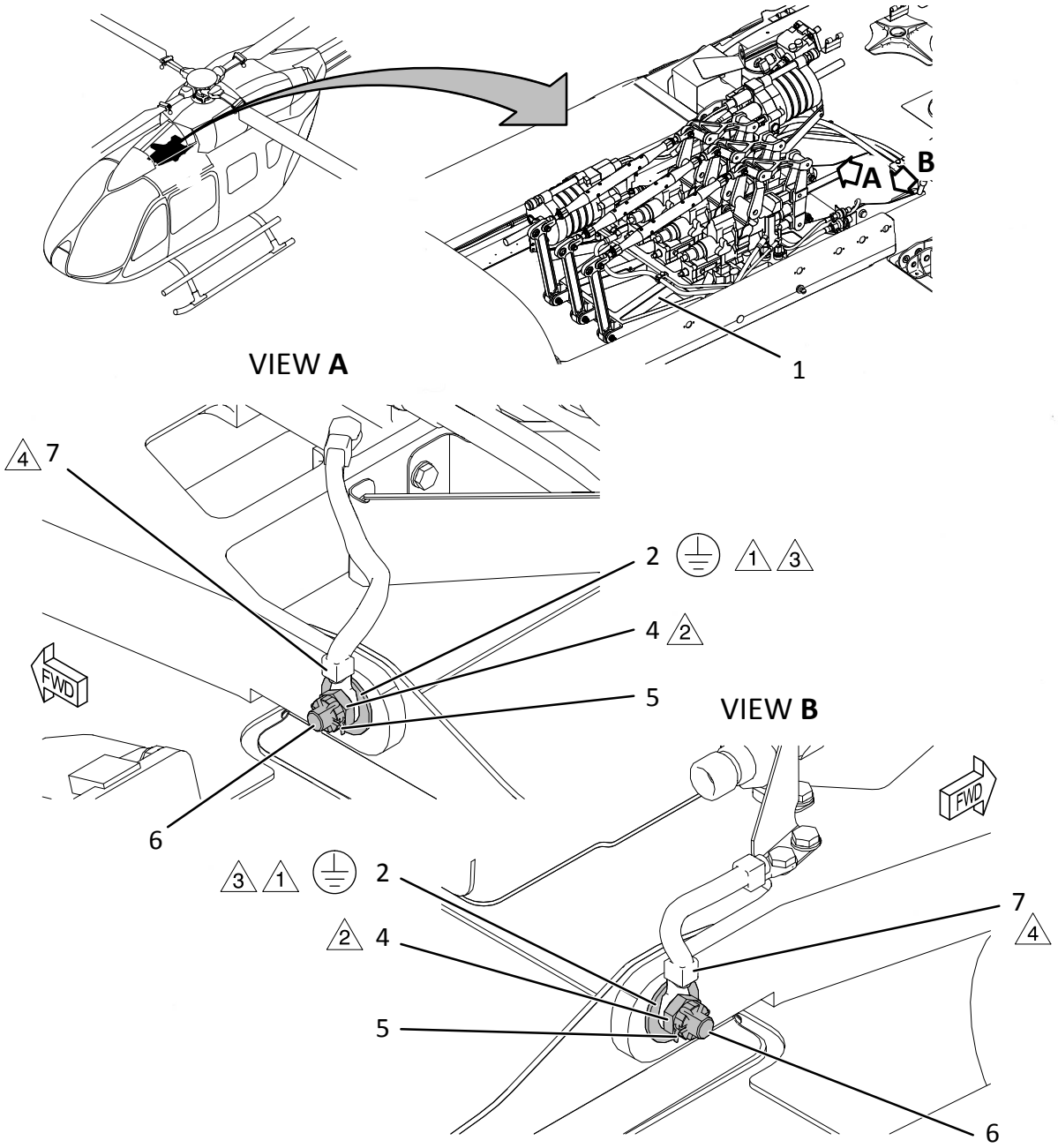
      NOTE The washers (3, Fig. 5) are not included in material kit SB-117C2-29A-003-2C and must be ordered separately with material kit SB-117C2-29A-003-2C2 if necessary.

      NOTE If one screw joint is affected it is recommended to replace the washer (2, Fig. 5) on the LH and RH aft screw joint of the hydraulic module plate.

      - Remove both split pins (5, Fig. 5). Discard the split pin.
      - Remove both self-locking castellated nuts (4, Fig. 5). Discard the self-locking castellated nut
      - Check the affedcted screw (6, Fig. 5) for wear and replace the screw if necessary.
      - Reposition the grounding strap (7, Fig. 5) to the opposite site of the attachment point of the hydraulic module plate (see Figure 4).
      - Replace both washers (2, Fig. 5) with washers (3).

      NOTE A low thread protrusion is allowed while using the washer (3, Fig. 5). The thread end of the screw **must** be at least flush with the top of the nut. If the thread end of the screw **is not** at least flush with the top of the nut on the **not affected** screw joint, washer (2) must be reinstalled.

      - Install the new self-locking castellated nut (4, Fig. 5). Tighten the self-locking castellated nut (4) with a tightening torque of 11-13 Nm.
      - Check the electrical bonding i.a.w. AMM, 20-00-00, 2-11.
      - Secure the self-locking castellated nut (4, Fig. 5) with a new split pin (5).
      - Protect the grounding connection with PU-Lacquer (CM 478, CM 479, CM 480).
3. Install the crest cowling i.a.w. AMM, 71-11-00, 4-1.



1. Respect AMM, 20-00-00, 2-11 for electrical bonding.
2. Tightening torque inspected with 8 Nm.
3. Replaced with washer (3) if the clamping effect inspection fails.
4. Grounding strap repositioned to the opposite side if washer must be replaced.

1	Hydraulic module plate	
2	Washer	
3	Washer	EN2914-08025
4	Self-locking castellated nut	DIN65246-08E
5	Split pin	LN94-20020
6	Screw	
7	Grounding strap	

Figure 5

3.C COMPLIANCE CONFIRMATION

Compliance with this document:

Confirm accomplishment of this ASB by an entry in the historical record of the helicopter.

3.D OPERATING AND MAINTENANCE INSTRUCTIONS

Operating instructions:

Not applicable.

Maintenance instructions:

Not applicable.

4 APPENDIX

Not applicable.