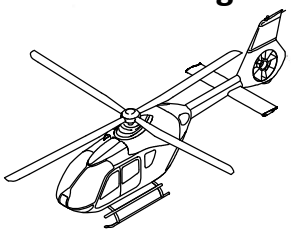
Valid for Version(s): T1, T2, T2+, P1, P2, P2+
635 T1, 635 T2+, 635 P2+

ALERT SERVICE BULLETIN

SUBJECT: **ROTOR FLIGHT CONTROL - Tail Rotor-, Cyclic- and Collective Controls**

Check bearings for correct attachment and retrofit of bushings and washers



For the attention of	
	

Revision No.	Date of issue
Revision 0	2008-04-28
Revision 1	2009-09-29
Revision 2	2009-10-07
Revision 3	2009-12-16
Revision 4	2017-04-03

Summary:

Reason for the first issue (Revision 0) of this Alert Service Bulletin (ASB) were bearings which had not been correctly bonded.

Reason for last Revision:

Please replace Revision 3 of this ASB with Revision 4.

The repetitive inspection of this ASB has already been incorporated into the AMM/MSM EC135/EC635. Therefore this inspection was deleted with Revision 4 of this ASB. This ASB does not feature revision bars as the entire document has been revised.

If Revision 3 of this ASB has already been accomplished, no further work is necessary due to this Revision.

Compliance:

Compliance with Revision 3 of this ASB is mandatory.

1 PLANNING INFORMATION

1.A EFFECTIVITY

1.A.1 Helicopters/installed equipment and parts

a) EC135, T1, T2, T2+, P1, P2, P2+, 635 T1, 635 T2+, 635 P2+, all S/N up to and including S/N 0829, excluding S/N 0028.

b) Components affected:

<u>Tail rotor controls:</u>	
LH lever	P/N L672M2802205
RH lever	P/N L672M1012212
<u>Cyclic control:</u>	
Lever	P/N L671M1005250
<u>Collective Control:</u>	
Lever assy	P/N L671M2020108
Plate	P/N L671M5040207

1.A.2 Non-installed equipment and parts

See section 1.A.1 part b.

1.B ASSOCIATED REQUIREMENTS

None.

1.C REASON

Reason for the first issue of this ASB were bearings which had not been correctly bonded. To address this unsafe condition inspections and modifications were introduced with the first issue. and washers were introduced.

- With Revision 1 the installation of additional bushings.
- With Revision 2 references to the AMM were corrected.
- With Revision 3 an additional inspection was introduced.

The compliance time of this ASB ended 30.09.2010 (12 months after receipt of Revision 1). The inspection after replacement of affected components and the repetitive inspection (see Section 1.E of ASB EC135-67A-019 Revision 3 - appended to this ASB) is already incorporated in the AMM/MSM.

1.D DESCRIPTION

ASB Revision 4 requires no additional work.

1.E COMPLIANCE

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

Helicopters/installed equipment and parts:

Not affected.

Non-installed equipment and parts:

Not affected.

1.E.2 Compliance in service

Helicopters/installed equipment and parts:

a) If Revision 3 of this ASB was already accomplished no additional work is necessary.

b) If the Revision 1, 2 or 3 of this ASB was not accomplished, see Section 1.E., steps (1)(a), (2)(a) and (2)(c), of ASB EC135-67A-019 Revision 3 attached to this ASB.

Non-installed equipment and parts:

Do not install an affected part (Section 1.A.2 of this ASB) on any helicopter, unless it has been modified in accordance with instructions of this ASB (see Appendix).

1.F APPROVAL

Approval of this document:

The technical content of this document is approved under the authority of DOA No. EASA.21J.700.

1.G MANPOWER

None.

1.H WEIGHT AND BALANCE

No effects on weight ans balance.

1.I POWER CONSUMPTION

Not affected.

1.J SOFTWARE UPGRADES/UPDATES

Not changed.

1.K REFERENCES

None.

1.L OTHER AFFECTED PUBLICATIONS

Publications already updated:

The repetitive inspection introduced with the First Issue of this ASB has been incorporated in the AMM EC135/EC635.

Publications to be updated:

Not affected.

1.M INTERCHANGEABILITY OR MIXABILITY OF PARTS

Interchangeability:

Not affected.

Mixability:

Not affected.

2 MATERIAL INFORMATION

None.

3 ACCOMPLISHMENT INSTRUCTIONS

None.

4 APPENDIX

Revision 03 of ASB EC135-67A-019 (14 pages) for information.

NOTE The inspection of the bearings for correct attachment was prescribed with the first issue of this ASB. It had to be accomplished by 31.05.2008 at the latest.
The retrofit of the washers and bushings was prescibed with Revision 1 of this ASB. It had to be accomplished by 30. September 2010 at the latest.

ALERT SERVICE BULLETIN

Rotor Flight Controls – Tail Rotor, Cyclic and Collective Controls – Check bearings for correct attachment and retrofit of bushings and washers

1. Planning Information

A. Effectivity

(1) Helicopters affected: EC135/EC635 all models, excluding S/N 0028.

(2) Components affected:

Tail rotor controls:	
LH lever	L672M2802205
RH lever	L672M1012212
Cyclic control:	
Lever	L671M1005250
Collective Control:	
Lever assy	L671M2020108
Plate	L671M5040207

(3) Spare parts affected:

Tail rotor controls:	
LH lever	L672M2802205
RH lever	L672M1012212
Cyclic control:	
Lever	L671M1005250
Collective control:	
Lever assy	L671M2020108
Plate	L671M5040207

B. Concurrent Requirements

Not applicable.

C. Reason

During accomplishment of an inspection on a MBB BK117 C-2, bearings were detected which had not been correctly bondend. Not properly bonded bearings may cause the respective lever to shift in the axial direction. Under unfavourable circumstances, the lever might get into contact with the helicopter structure and thus impair the controls' freedom of movement. As the affected bearings of the EC135 are bonded in the same procedure, they must be checked for correct attachment with this Alert Service Bulletin.
Furthermore, with this Alert Service Bulletin the retrofit of bushings and washers is described. Thus, the bearings are prevented from shifting in the axial direction.

D. Description

Check attachment of bearings. If necessary, rebond bearings. Retrofit of bushings and washers.

E. Compliance

(1) The following deadlines had been set in the first issue of this Alert Service Bulletin:

EFFECTIVITY All EC135 on which no periodical inspection has been accomplished up to now.

(a) The inspection and the possibly necessary repair of the levers i.a.w. Section 3.B must be accomplished within the next 50 fh after receipt of this Alert Service Bulletin, but by 31.05.2008 at the latest.

EFFECTIVITY Helicopters S/N 0005 up to and including S/N 0829 **before** retrofit of the washers and bushings i.a.w. Section 3.C.

(b) Check of the bearing in the LVDT plate i.a.w. Section 3.B.(5) must be repeated together with the periodical inspection or with the 12–month inspection, depending upon whichever occurs first.

(2) The following deadlines are set for the Revisions 01, 02 and **03** of this Alert Service Bulletin:

EFFECTIVITY Helicopters S/N 0005 up to and including S/N 0829.

(a) The retrofit of the washers and the bushings must be accomplished within the next 12 months after receipt of Revision 1 of this Alert Service Bulletin i.a.w. Section 3.C.

EFFECTIVITY Helicopters with washers and bushings i.a.w. Section 3.C.

(b) After the retrofit of the bushings and washers i.a.w. Section 3.C. of this Alert Service Bulletin, the check of the levers must be repeated with the periodical inspection at 800 Fh or 36 months (what ever comes first).

EFFECTIVITY Inspection after replacement of one of the components given in Section 1.A.(3) which was delivered **before** receipt of Revision 3 of this Alert Service Bulletin.

(c) The replaced component must be inspected i.a.w. Section 3.B not before 10 fh have been reached but not later than 50 fh after its replacement.

F. Approval

The information or instruction contained in this document refer to change no. 1670. The technical content of this document is approved under the authority of DOA No. EASA.21J.034.

G. Manpower

Approx. 6.5 man–hours for the check.

Approx. 32 man–hours for retrofit of bushings and washers.

H. Weight and Balance

Weight: 0.032 kg

Moment: 67.60 kgmm

I. Electrical Load Data

Not applicable.

J. Software Accomplishment Summary

Not applicable.

K. References

AMM EC135 and AMM EC135/635.

L. Other publications affected

The changes to AMM EC135, AMM EC135/635, IPC EC135, IPC EC135/635, MSM EC135 and MSM EC135/635 which are required as a result of this Alert Service Bulletin will be incorporated with one of the next revisions.

M. Interchangeability of Parts

With accomplishment of Revision 1 of this Alert Service Bulletin the P/Ns of the following componts change:

Guidance unit RH	from L672M1012101	to L672M1012103
	from L672M1012102	to L672M1012103
Guidance unit LH	from L672M2802101	to L672M2802103
	from L672M2802102	to L672M2802103
Cyclic shaft	from L671M1005102	to L671M1005104
	from L671M1005103	to L671M1005104

2. Material Information

A. Material – Price and Availability

Information on cost and availability of required retrofit kit SB-135-67A-019-2C will be provided by ECD, Dept. Spares Order Administration on request.

B. Support Information

Not applicable.

C. Material Necessary for Each Helicopter

Retrofit kit SB-135-67A-019-2C i.a.w. design documents L671M1005104, L672M2802103, L670M2003057 and L672M1012103.

No.	New P/N	Keyword	Old P/N	Qty	Disposition
1	L671M1005260	Washer	–	1	A
2	L672M1012260	Bushing	–	2	A
3	L221M1042208	Washer	–	2	A
4	RSN-46	Retaining ring	RSN-46	1	A, B

Disposition:

A = New, included in kit.

B = Part with old P/N is discarded.

D. Material Necessary for Each Spare

Not applicable.

E. Reidentified Parts

Not applicable.

F. Special Tooling

Not applicable.

3. Accomplishment instructions

A. Preliminary Work Steps:

(1) De–energize helicopter electrical system i.a.w. AMM, 24-00-00, 2-1.

(2) Remove middle cover i.a.w. AMM, 52-40-00, 4-4.

(3) If installed, remove equipment plate i.a.w. AMM, 25-70-00, 4-2.

(4) Remove forward access cover i.a.w. AMM, 52-40-00, 4-3.

B. Check bearing for correct attachment:

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.

NOTE The check requires a flashlight and a mirror.

(1) Check bearing in LH guidance unit (Detail A, Figure 2) for correct attachment.

(a) Check, whether bearing (1, Figure 2) is correctly installed in lever (2) as shown in Section A–A.

(b) Manually check, whether bearing (1) is tightly fitted in lever (2). To do so, manually try to move lever in axial direction △1.

(c) If a loose bearing is detected, copy reply form sheet on page 14, fill out and send to ECD customer support. Rebond bearing i.a.w. AMM, 20-00-00, 2-14.

(2) Check bearing in RH guidance unit (Detail B, Figure 2) for correct attachement.

(a) Check, whether bearing (1, Figure 2) is correctly installed in lever (3) as shown in Section B–B.

(b) Manually check, whether bearing (1) is tightly fitted in lever (3). To do so, manually try to move lever (3) in axial direction △1.

(c) If a loose bearing is detected, copy reply form sheet on page 14, fill out and send to ECD customer support. Rebond bearing i.a.w. AMM, 20-00-00, 2-14.

(3) Check bearing of cyclic control (Detail C, Figure 3) for correct attachment.

(a) Check, whether bearing (1, Figure 3) is correctly installed in lever (2) as shown in Section C–C.

(b) Manually check, whether bearing (1, Figure 3) is tightly fitted in lever (2). To do so, manually try to move lever in axial direction △1.

(c) If a loose bearing is detected, copy reply form sheet on page 14, fill out and send to ECD customer support. Rebond bearing i.a.w. AMM, 20-00-00, 2-14.

(4) Check bearing of upper guidance unit (Detail D, Figure 3) for correct attachment.

(a) Check, whether bearing (3, Figure 3) is correctly installed in lever (4) as shown in Section D–D.

(b) Manually check, whether bearing (3, Figure 3) is tightly fitted in lever (4). To do so, manually try to move connected forked end in axial direction △2.

(c) If a loose bearing is detected, copy reply form sheet on page 14, fill out and send to ECD customer support. Rebond bearing i.a.w. AMM, 20-00-00, 2-14.

(5) Check bearing in LVDT plate (Detail E, Figure 4) for correct attachment.

(a) Check, whether bearing (1, Figure 4) is correctly installed in plate (2) as shown in Section E–E.

(b) Manually check, whether bearing (1, Figure 4) is tightly fitted in plate (2). To do so, manually try to move plate (2) in axial direction ⚠1.

(c) If a loose bearing is detected, copy reply form sheet on page 14, fill out and send to ECD customer support. Rebond bearing i.a.w. AMM, 20-00-00, 2-14.

C. Retrofit of bushings and washers:

(1) Remove LH guidance unit i.aw. AMM, 67-20-00, 4-4.

(2) Disassemble LH guidance unit i.aw. AMM, 67-20-00, 4-5.

(3) Assemble LH guidance unit i.a.w. AMM, 67-20-00, 4-5. While doing so, additionally install bushing (1, Figure 5) between bearing block (2) and lever (3) (see Detail A, Figure 5) – notwithstanding the instructions given in the AMM.

(4) Install LH guidance unit i.a.w. AMM, 67-20-00, 4-4.

EFFECTIVITY Helicopters **S/N 0005** up to and **including S/N 0829 without** yaw brake.

(5) Remove RH guidance unit i.a.w. AMM, 67-20-00, 4-4.

(6) Disassemble RH guidance unit i.a.w. AMM, 67-20-00, 4-5.

(7) Assemble RH guidance unit i.a.w. AMM, 67-20-00, 4-5. While doing so, additionally install bushing (1, Figure 5) between bearing block (4) and lever (5) (see Detail B, Figure 5) – notwithstanding the instructions given in the AMM.

(8) Install RH guidance unit i.a.w. AMM, 67-20-00, 4-4.

EFFECTIVITY Helicopters **S/N 0005** up to and **including S/N 0829.**

(9) Remove cyclic shaft i.a.w. AMM, 67-11-00, 4-5.

(10) Disassemble the cyclic shaft i.a.w. AMM, 67-11-00, 4-6. While you do so, disassemble the cyclic shaft only as far as necessary for the retrofit of the washer (2, figure 6).

(11) Assemble cyclic shaft i.a.w. AMM, 67-11-00, 4-6. While doing so, additionally install washer (2, Figure 6) between bearing block (3) and lever (1) (see Detail C, Figure 6) – notwithstanding the instructions given in the AMM.

(12) Install cyclic shaft i.a.w. AMM, 67-11-00, 4-5.

(13) Remove collective control rod (4, Figure 6) from bellcrank i.a.w. AMM, 67-10-00, 4-2. While doing so, remove the collective control rod (4) only as far as necessary for the retrofit of the washers (5).

(14) Install collective control rod (4, Figure 6) at the bellcrank i.a.w. AMM, 67-10-00, 4 2. While doing so, additionally install washers (5) between collective control rod (4) and bellcrank (6) (see Detail D, Figure 6) – notwithstanding the instructions given in the AMM.

D. Conclusive work:

(1) Accomplish inspection for foreign objects and for foreign matter.

(2) Install forward access cover i.a.w. AMM, 52-40-00, 4-3.

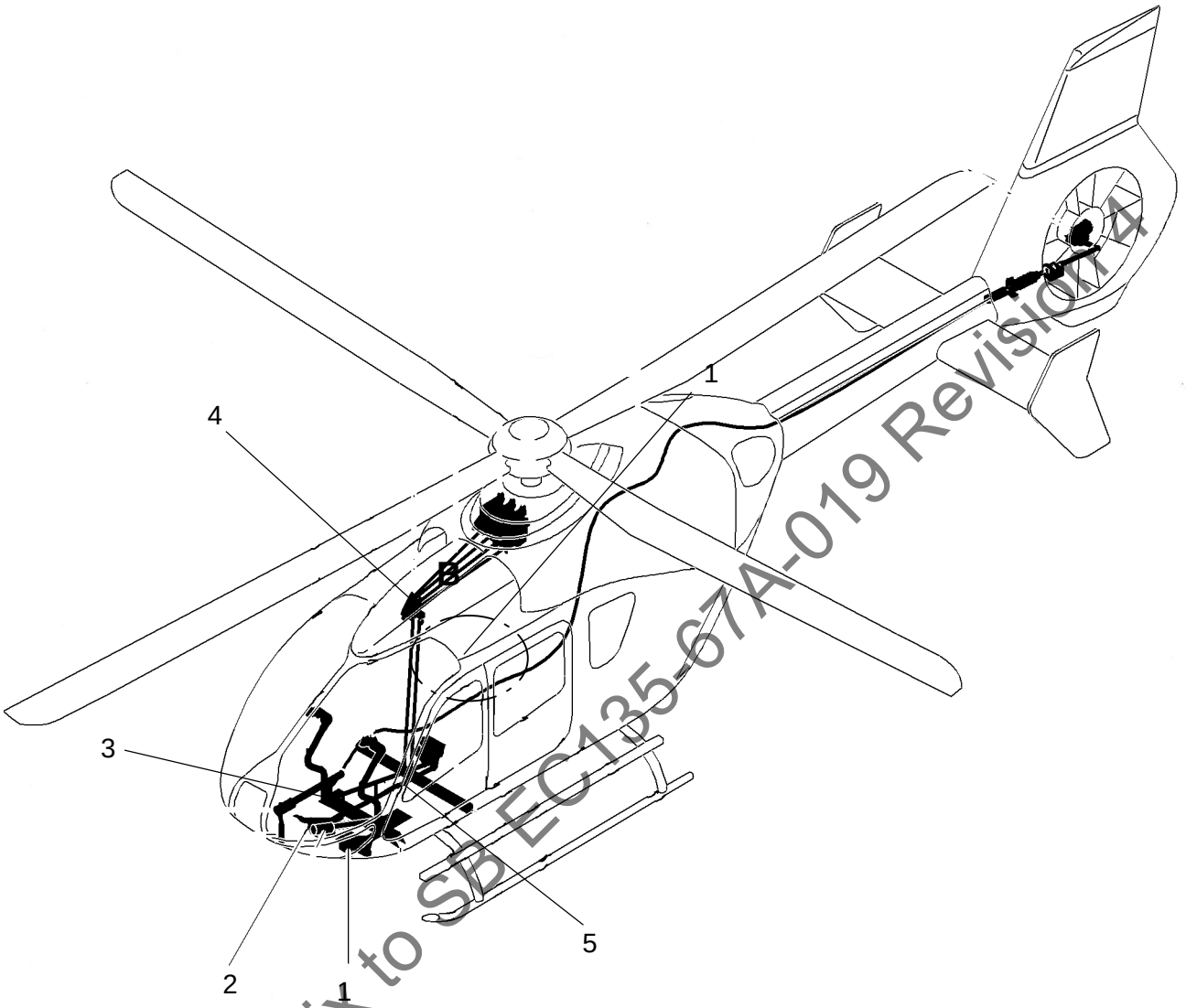
(3) If removed, install equipment plate i.a.w. AMM, 25-70-00, 4-2.

(4) Install middle cover i.a.w. AMM, 52-40-00, 4-4.

E. Confirm accomplishment of this Alert Service Bulletin by an entry in the historical record of the helicopter.

4. Appendix

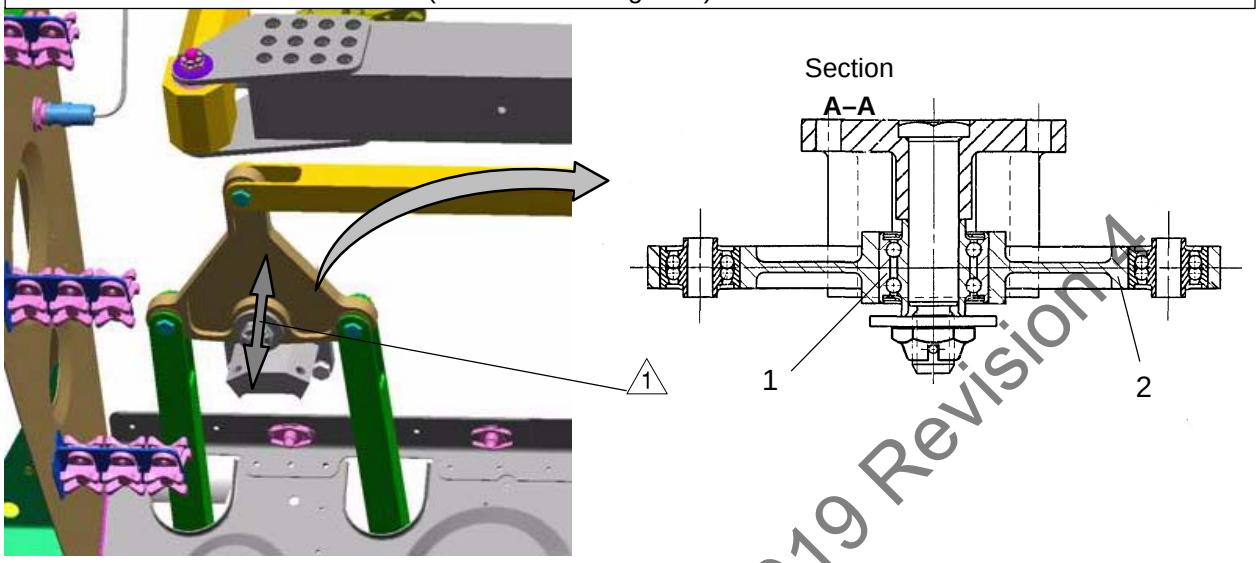
Not applicable.



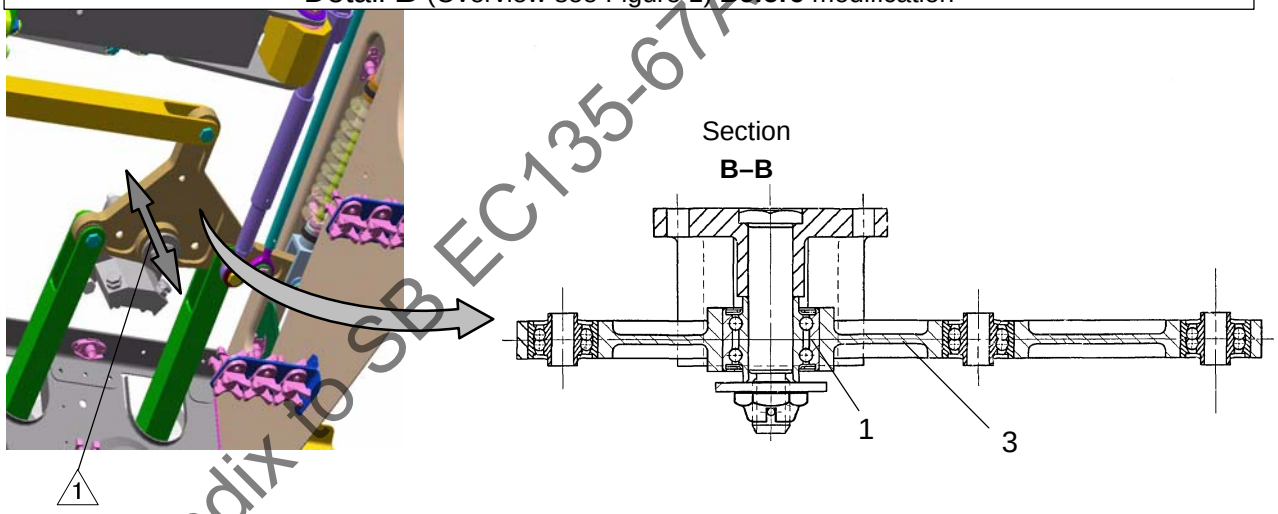
1 LH guidance unit – Detail A, Figure 2
2 RH guidance unit – Detail B, Figure 2
3 Lever, cyclic control – Detail C, Figure 3
4 Upper guidance unit – Detail D, Figure 3
5 LVDT – Detail E, Figure 4

Arrangement of Levers
Figure 1

Detail **A** (Overview see Figure 1) **Before** modification



Detail **B** (Overview see Figure 1) **Before** modification

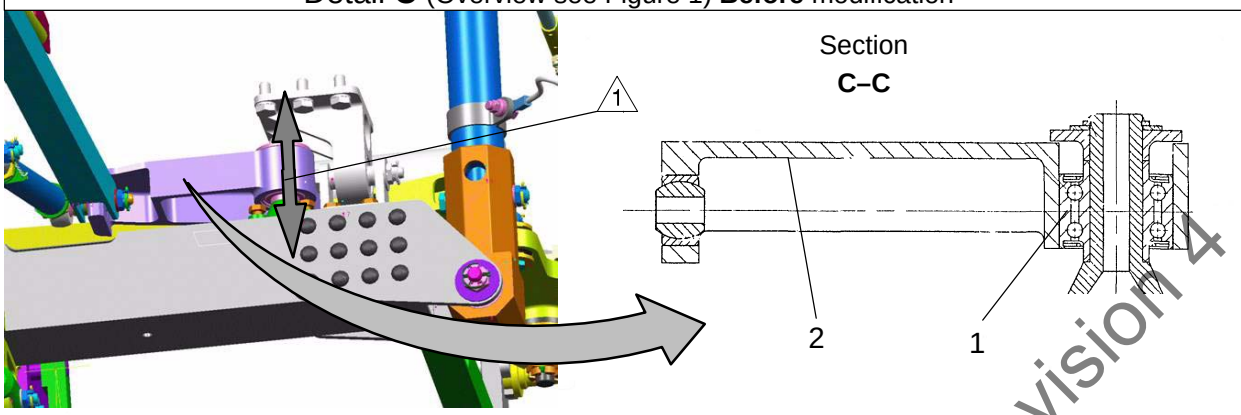


1 Lever must free of play in axial direction.

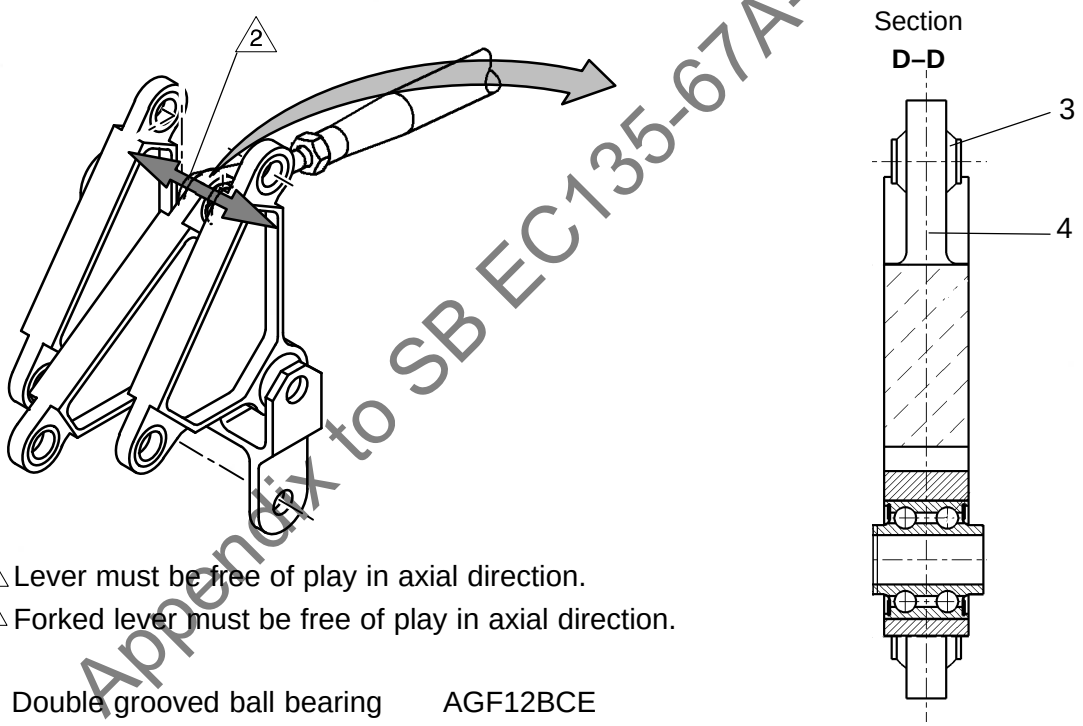
1	Double grooved ball bearing (bonded)	AG12EG81
2	LH lever	L672M2802205
3	RH lever	L672M1012212

Detail A and B of Figure 1
Figure 2

Detail **C** (Overview see Figure 1) **Before** modification



Detail **D** (see Figure 1) **Before** modification

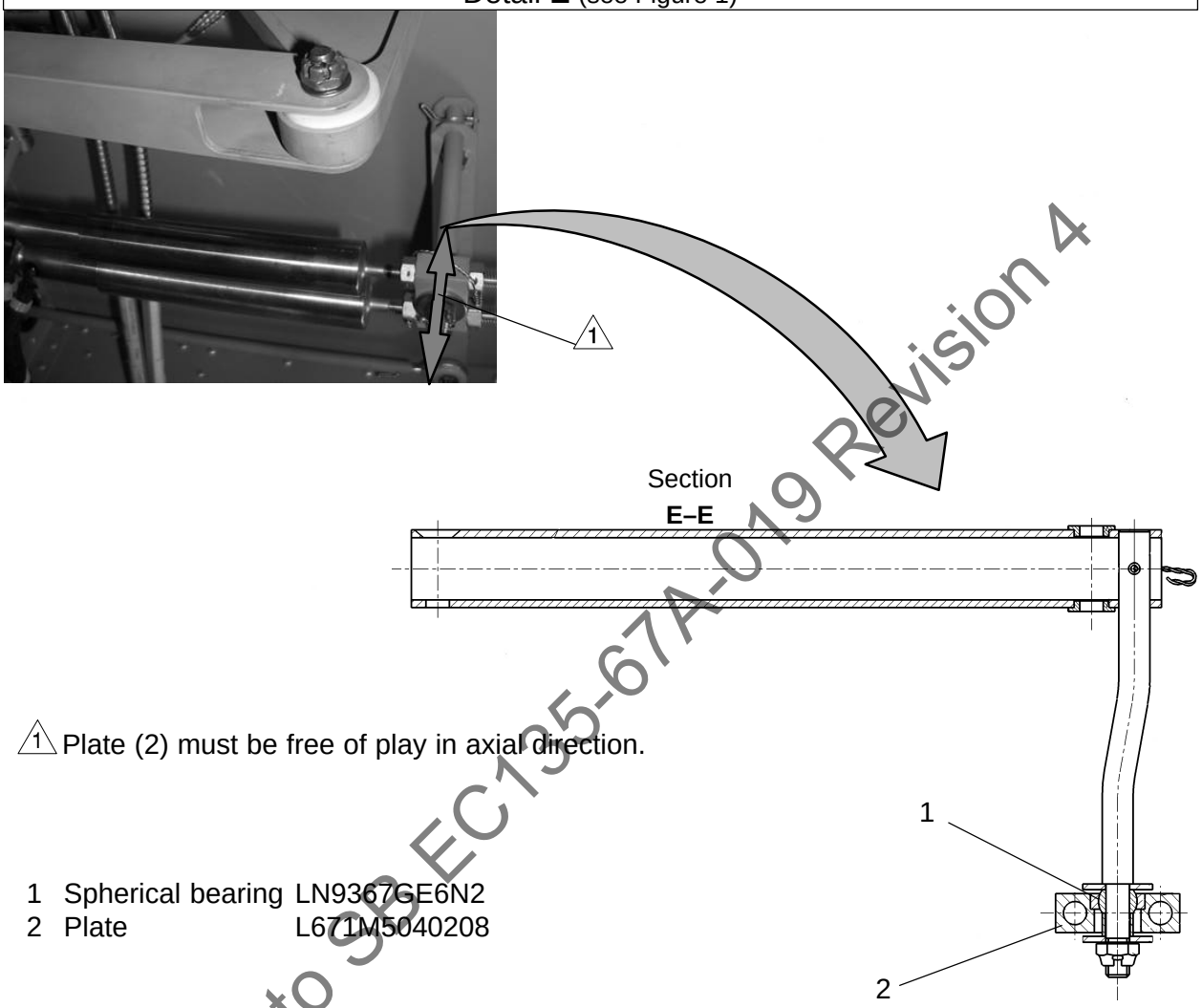


1 Lever must be free of play in axial direction.
2 Forked lever must be free of play in axial direction.

1	Double grooved ball bearing	AGF12BCE
2	Lever	L671M1005250
3	Spherical bearing	MBBN3068–06U
4	Collective lever assy	L671M2020108

Detail C and D of Figure 1
Figure 3

Detail **E** (see Figure 1)

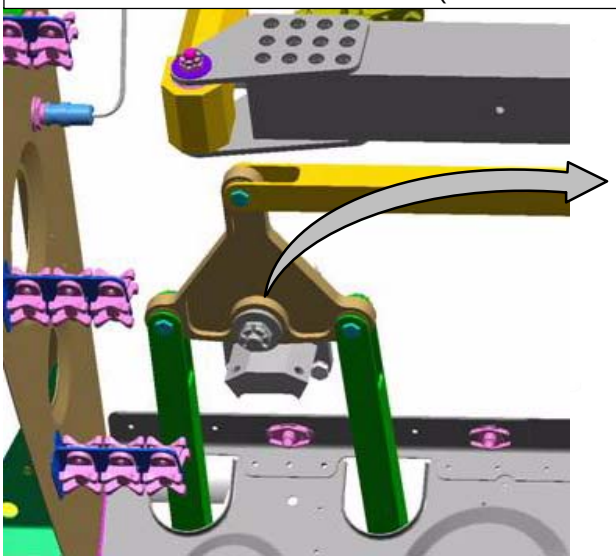


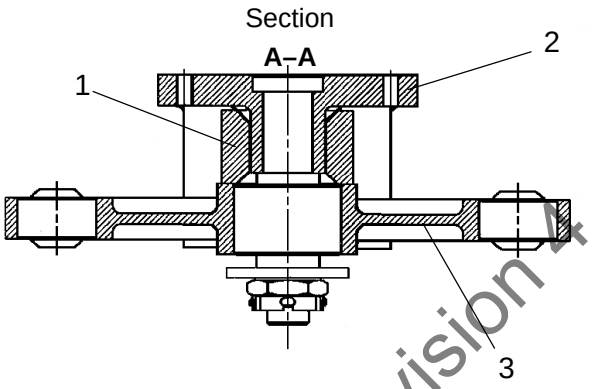
1 Plate (2) must be free of play in axial direction.

1	Spherical bearing	LN9367GE6N2
2	Plate	L671M5040208

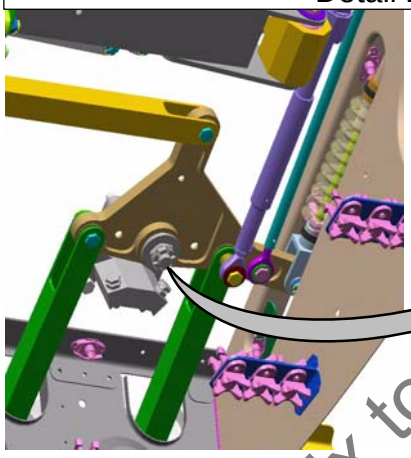
Detail E of Figure 1
Figure 4

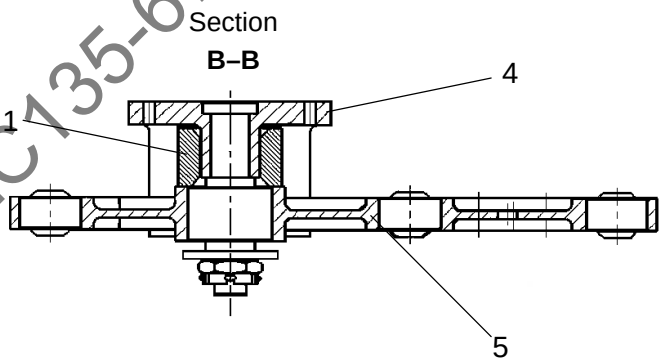
Detail **A** (Overview see Figure 1) **After** modification





Detail **B** (Overview see Figure 1) **After** modification



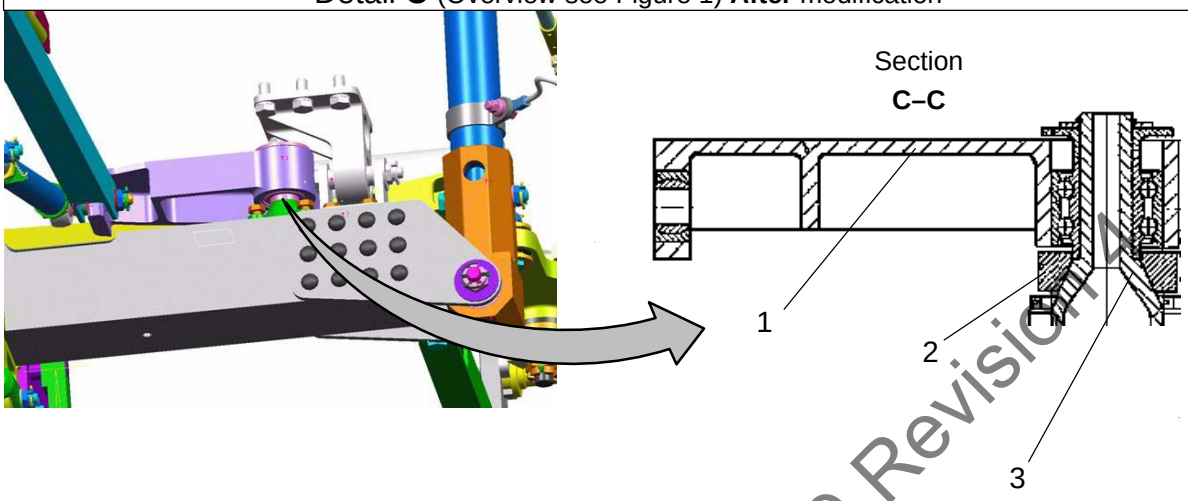


1	Bushing	L672M1012260 ⚠1
2	Bearing block of LH guidance unit	
3	LH lever	L672M2802205
4	Bearing block of RH guidance unit	
5	RH lever	L672M1012212

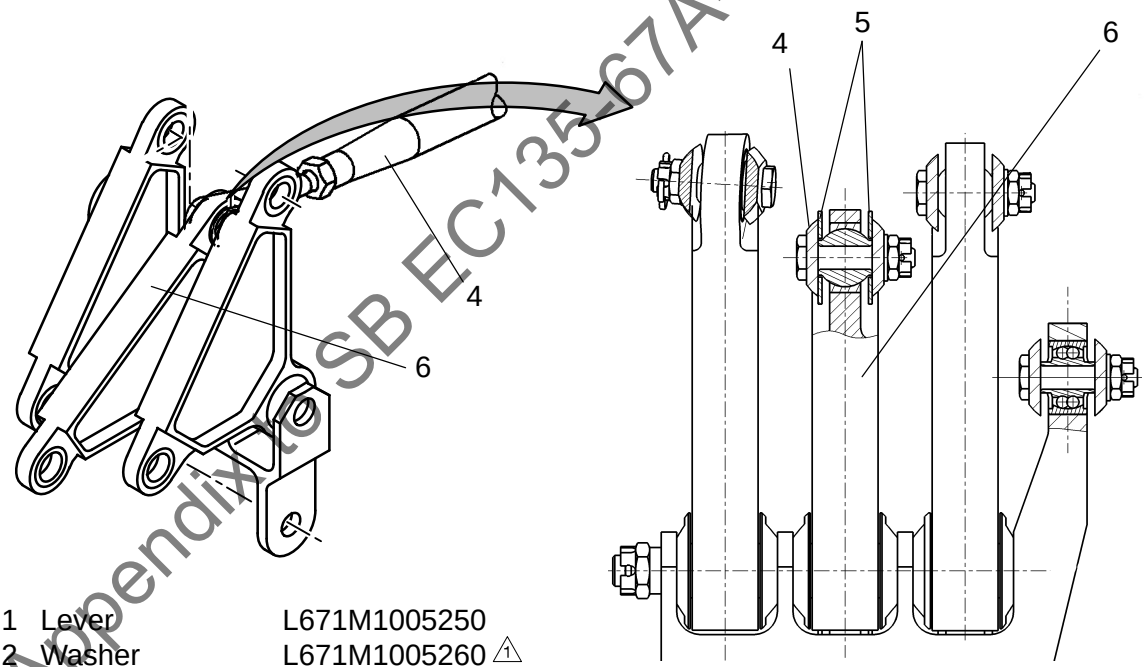
⚠1 After modification.

Detail A and B of Figure 1
Figure 5

Detail **C** (Overview see Figure 1) **After** modification



Detail **D** (Overview see Figure 1) **After** modification



1	Lever	L671M1005250
2	Washer	L671M1005260 △1
3	Bearing block	
4	Control rod	
5	Washer	L221M1042208 △1
6	Bellcrank	

△1 After modification.

Detail C and D of Figure 1
Figure 6

Telefax

Reply form sheet for ASB EC135-67A-019 "check bearings of correct attachment"

Please completely fill out reply form sheet and send to the given FAX No.

To
Eurocopter Deutschland GmbH
Customer Support
FAX 0049 906 714111

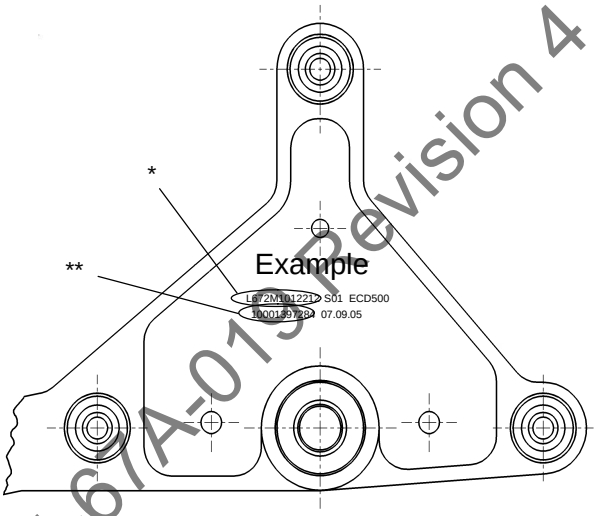
Address of operator:

_____

_____

_____

_____



	Helicopter S/N:	Important data regarding lever P/N*	Production order number **	TT (Fh)
1				
2				
3				
4				

Disposition:

_____

_____

_____

_____

Date:_____ Signature:_____

Please copy page! Original page remains in Alert Service Bulletin!