
SERVICE BULLETIN

N° 139-649

DATE: November 8, 2021

REV. : /

TITLE

ATA 67 – TAIL ROTOR ACTUATOR UPGRADE

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 Tail Rotor Actuators (TRA) P/N 3G6730V00731 installed on AW139 helicopters.

B. COMPLIANCE

After the issue date of this Service Bulletin, at the first TRA repair or overhaul, whichever occurs first.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the information about the upgrade of the Tail Rotor Actuator providing dynamic VL seals instead of Enercap seals.

E. DESCRIPTION

The change detailed below is the one that is required to upgrade the build standard from P/N 5655H1 (LH P/N 3G6730V00731) to P/N 5655H2 (LH P/N 3G6730V00732).

As described in the Collins Aerospace SB_27-0040 in Annex A, the modification consists in:

- Replacing the Gland Dynamic Seals P/N 593-21200-964-0430 with the P/N REL2BM212AT19 (Seal Cap, MT 085366) and the P/N M83461/1-119 (O-Ring, MT 081342);
- Replacing the Identification Label P/N 71123-82 with the P/N 165410-1;
- Synchronize the Valve Matched Assy according to the Open Loop Procedure.

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

Refer to Annex A

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

1) PUBLICATIONS

N.A.

2) ACRONYMS & ABBREVIATIONS

DOA	Design Organization Approval
EASA	European Aviation Safety Agency
LHD	Leonardo Helicopters Division
P/N	Part Number
TRA	Tail Rotor Actuator

3) ANNEX

Annex A Service Bulletin SB_27-0040

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

N.A.

B. SPECIAL TOOLS

N.A.

C. INDUSTRY SUPPORT INFORMATION

N.A.

3. ACCOMPLISHMENT INSTRUCTIONS

1. There are no compliance instructions to be performed. The aim of this document is to inform Customer that all TRA P/N 3G6730V00731 will be upgraded to the new configuration P/N 3G6730V00732 during the next repair or overhaul that will be performed after receipt of this Service Bulletin, according to the instruction reported in Service Bulletin in Annex A.

The introduction of these modifications will be performed by Collins Wroclaw maintenance personnel and by organizational authorized helicopter maintenance personnel and then recorded on the component according to Service Bulletin SB_27-0040 in annex A.

2. 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".

ANNEX A

**SERVICE BULLETIN SB_27-0040 TAIL ROTOR ACTUATOR
P/N 3G6730V00731 UPGRADE TO P/N 3G6730V00732**



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CIRCULATE PROMPTLY

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TAIL ROTOR ACTUATOR (TRA) P/N 5655H1 (LH P/N 3G6730V00731)

AW139

UPDATE TO P/N 5655H2 (LH P/N 3G6730V00732) BUILD STANDARD

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1. PLANNING INFORMATION

A. Effectivity

All TAIL ROTOR ACTUATOR (TRA) reported in Table 1 removed from the aircraft for repair or scheduled maintenance.

Table 1 – Components Affected

Nomenclature	Manufacturer Part Number	S/N affected	Type Certificate Holder Part Number (LH)	Manufacturer Cage Code
Tail Rotor Actuator	5655H1	All	3G6730V00731	A0076

B. Concurrent Requirements

N/A

C. Reason

To update the configuration of the Tail Rotor Actuator providing dynamic VL seals instead of Enercap seals.

D. Description & Solution

The change detailed below is the one that is required to update the build standard from P/N 5655H1 (LH P/N 3G6730V00731) to P/N 5655H2 (LH P/N 3G6730V00732).

The modification consists in:

- Replacing the Gland Dynamic Seals P/N 593-21200-964-0430 with the P/Ns REL2BM212AT19 (Seal Cap, MT 085366) and M83461/1-119 (O-Ring, MT 081342);
- Replacing the Identification Label P/N 71123-82 with the P/N 165410-1;
- Synchronize the Valve Matched Assy according to the Open Loop Procedure.

E. Compliance

Compliance shall be at next return to an authorized repair facility for repair or overhaul, or in accordance with Leonardo Helicopters instructions.

F. Approval

This Service Bulletin revises the design standard from H1 to H2 which has been approved by the design authority (Leonardo Helicopters) and therefore requires no governmental or other regulatory approval.



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G. Manpower

The Manpower for the accomplishment of these operations is approximately 10 (ten) MMH.

H. Weight and Balance

The weight change and the impact on balance are negligible.

I. Electrical Load Data

Not Applicable.

J. Software Accomplishment Summary

Not Applicable.

K. References

CMM	27-20-50
ATP	5655H2-25
Drawing	5655H2-01

L. Other Publications Affected

Not applicable.

M. Interchangeability or Intermixability of Parts

Not applicable.



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2. MATERIAL INFORMATION

A. Material Price and Availability

The materials necessary to accomplish this Service Bulletin on one AW139 Tail Rotor Servoactuator are listed in Table 2. The materials shall be supplied by Collins Wroclaw or qualified Suppliers in accordance with appropriate specifications.

Table 2 – List of Parts

Reference Item	New P/N	Old P/N	QTY	Keyword	Instruction Code
1	081342	593-21200-964-0430*	8*	O-Ring	A
2	085366	593-21200-964-0430*	N/A*	Seal Cap	A
3	165410-1	71123-82	1	Identification Label	A

* the P/N 593-21200-964-0430 includes both O-Ring and Seal Cap

Instruction code A

- The “Old Part Number” is replaced with the “New Part Number” in the new configuration of the Tail Rotor Servoactuator. Discard the old item.

Instruction code B

- This item is introduced in the new version of the Tail Rotor Servoactuator and does not replace any components.

Instruction code C

- This “Old Part Number” is no longer used in the new configuration of the Tail Rotor Servoactuator and is not directly replaceable. Discard the old item.

Instruction code D

- This item must be replaced. The new item has the same part number of the old item.



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B. Industry Support Information

This modification will be introduced

- by Collins Wrocław maintenance personnel;
- by organizational authorized helicopter maintenance personnel.

C. Material Necessary For Each Unit

Refer to Paragraph 2.A.

D. Material Necessary For Each Spare

Refer to Paragraph 2.A.

E. Reidentified Parts

Refer to Paragraph 2.A.

F. Tooling - Price and Availability

As specified in the applicable CMM 27-20-50.

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3. ACCOMPLISHMENT INSTRUCTIONS

A. General

The Service Bulletin shall be carried out with the actuator removed from the helicopter.

B. Compliance Instructions

Dynamic Seals, Glands and Bodies disassembly

1. Referring to DISASSEMBLY section of the CMM, in order to remove the installed dynamic seals, perform the following sequences:
 - a) Remove the outboard piston from the outboard body assembly (ref. CMM 27-20-50 – Disassembly – Sequence I);
 - b) Remove the pitch control rod from the inboard body assembly (ref. CMM 27-20-50 – Disassembly – Sequence J);
 - c) Discard the removed seals.

Dynamic Seals installation

CAUTION: THE SEAL ORIENTATION IS A KEY CHARACTERISTIC. 100% INSPECTION REQUIRED.

1. Refer to Figure 1. Install the O-Ring (P/N 081341), the Seal Cap and Back-Up Ring (P/N 085366) in the interface bores of the inboard (P/N 71827-81 or 70715-81) and outboard bodies (P/N 70711-81 or 71831-81).

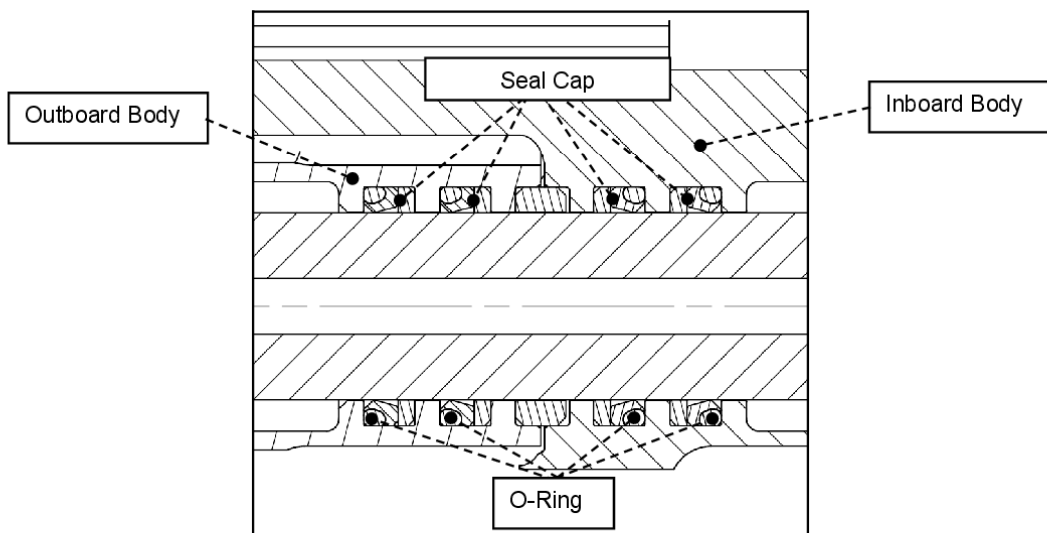


Figure 1: Dynamic Seals Orientation in the Inboard and Outboard Body (Central Glands)

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- Refer to Figure. 2. Install the O-Ring P/N 081341, the Seal Cap and Back-Up Ring P/N 085366 and Scraper Ring (P/N R2001-118-S-043) to the internal bores of each of the Outboard and Inboard Glands (P/N 71839-82).

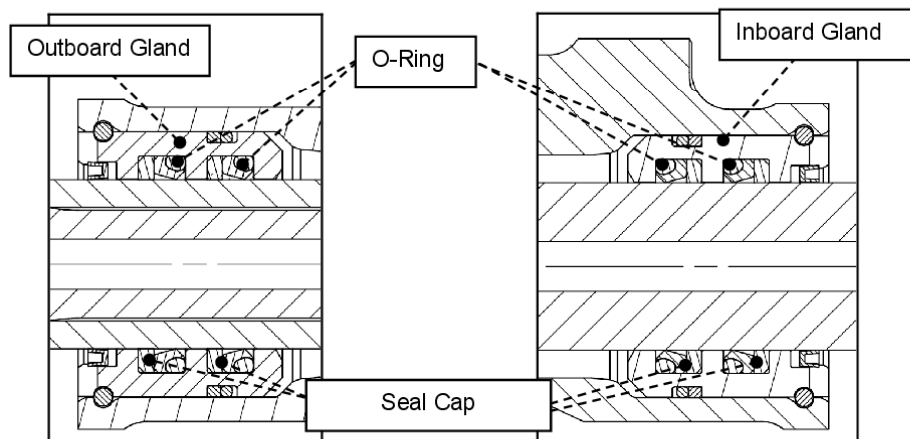


Figure 2: Dynamic Seals Orientation in the Inboard and Outboard Glands

- Inspect the bodies and glands for correct assembly of the dynamic VL seals. Take photo of the installed seals.

Tail Rotor Actuator Assembly

- Referring to ASSEMBLY section of the CMM, reassemble the unit according to relevant sequences.

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Valve Matched Assy Synchronization

System 1 and System 2 matched valve assemblies shall be synchronized in open loop (Pilot Input Lever P/N 70765-81 and Trunion P/N 70731-84 disconnected. See Figure 3) as per the following procedure:

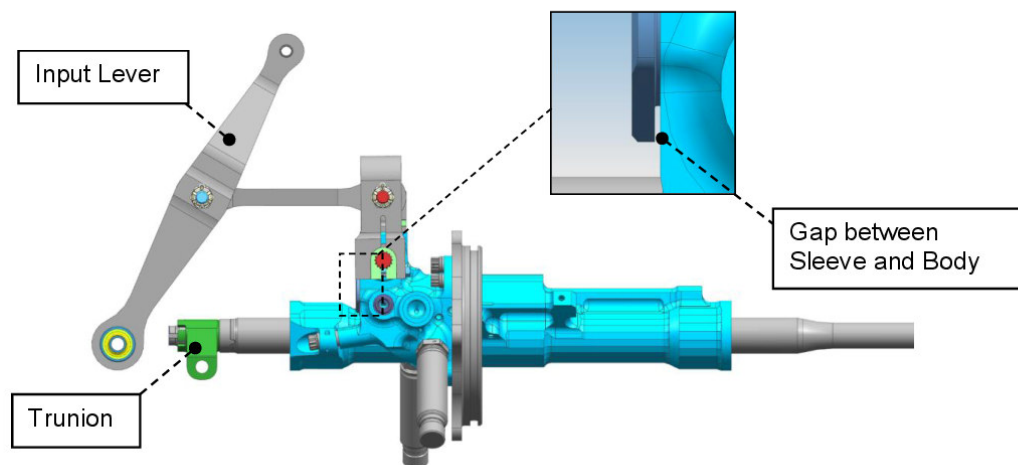


Figure 3: Input Lever disconnected during Valve Matched Assy Synchronization

1. Connect pressure and return to system 1 and open system 2 to atmosphere (both pressure and return ports);
2. Apply 207 bar to system 1 and move the valve out until the PCR is fully retracted;
3. With zero bar supply pressure, install the setting tool (AGB0014) onto the rate stop of the unit to restrain the input lever mechanism at mid-stroke position;
4. Install a DTI at the Trunion (P/N 70731-84);
5. With the PCR retracted, adjust the sleeve position until there is no perceptible movement of the PCR (a maximum rate of 2 mm/min is acceptable);
6. Use the feeler gauges and measure the gap between the sleeve and the outboard body;
7. Remove pressure from the unit and adjust the thickness of the outboard adjustable shim (P/N 71237-82) so that it is equal to the width of the gap measured in step 6;
8. Fit the shim, the outboard detent cap (P/N 70813-82), detent cap screws (P/N FHS1934-11-B-4) and washers (P/N FHS1909-B). Torque the cap screws to between 0.9 and 1.0 Nm.



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9. Apply 207 bar to system 1 of the unit and monitor the Trunion for any PCR evidence of motion. Measure the PCR movement with the DTI. Make sure that the maximum rate of the PCR does not exceed the following limits:
 - a. The maximum differential speed between System 1 and System 2 shall not exceed 10 mm/min;
 - b. The maximum speed of any system shall not exceed 20 mm/min (see note below).

NOTE: The maximum differential speed between the two systems is 10 mm/min. Therefore the difference in speed between the 2 systems must not exceed 10 mm/min.

For example:

- a. If System 1 is set in a stationary condition, then System 2 should be set between 10 mm/min extending and 10 mm/min retracting
 - b. If System 1 is set at 10 mm/min extending, then System 2 should be set between zero and 20 mm/min extending
 - c. If System 1 is set at 10 mm/min retracting, then System 2 should be set between zero and 20 mm/min retracting
 - d. If System 1 is set at 6 mm/min extending, then System 2 should be set between 16 mm/min extending and 4 mm/min retracting
10. On completion de-pressurise system 1;
 11. Perform the steps 1 to 9 for the system 2 main control valve (differences to be noted: inboard adjustable shim P/N 70755-82, inboard detent cap P/N 70757-82)
 12. Do a check of the adjustment of Valve Synchronization according to ATP 5655H2-25.



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C. Re-identification

To complete the Service Bulletin, the Identification Label P/N 71123-82 assembled on the Tail Rotor Actuator P/N 5655H1 has to be removed and scrapped.
 The new Identification Label P/N 165410-1 with the appropriate fields filled has to be applied, on the modified Tail Rotor Actuator P/N 5655H2.
 Ensure that the new label is marked with the all the information, e.g. Unit Serial Number, MFR Site, MFR Date, MFR P/N and ISS etc.
 Also record the implemented SB 27-0040, marking the body adjacent to the label with indelible black ink and apply transparent laquer (see Figure 4).

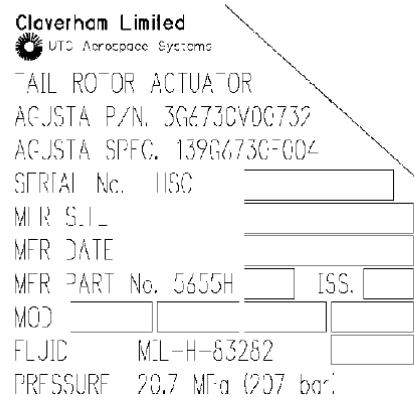


Figure 3: New identification label



Figure 4: Identification of the SB number on the unit (the shown label is the one of the configuration 5655H1. Reference only)

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Record the application of the SB 27-0040 on the log card of the Tail Rotor Servoactuator.
Modify P/N from 3G6730V00731 to 3G6730V00732 on the log card.

D. Functional tests

Perform complete functional testing according to ATP 5655H2-25.

E. Spares

This SB is applicable also to the servoactuators P/N 5655H1 (LH P/N 3G6730V00731) stored as spares.

F. Consumable materials

Refer to Paragraph 2.A.

G. Requirement after job completion

Not applicable.

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