LEONARDO HELICOPTERS LEONARDO MALAYSIA SDN.BHD.	**WORK CARD**	**SERVICE ORDER NUMBER:**	90025566	**WORKCARD NUMBER:**	2022/31763/004-07
	TITLE:	EASA AD NO.: 2018-0112R1 ISSUED: 04 JUNE 2018 (ASB 139-450 DATE: MAY 28, 2019 REV.: D) - ATA 62 - MAIN ROTOR DAMPER INSPECTIONS **(PART III)**		**CUSTOMER:**	LEONARDO HELICOPTER ITALY (LHI)

REGISTRATION:	9M-BGH	**AIRFRAME HOURS:**	300:40	**#1 ENGINE**	**SERIAL NUMBER:**	PCE-KB1931	**#2 ENGINE**	**SERIAL NUMBER:**	PCE-KB1885	**APU**	**SERIAL NUMBER:**	N/A
SERIAL NUMBER:	31763	**LANDINGS:**	838		**HOURS:**	300:40		**HOURS:**	300:40		**HOURS:**	N/A

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
NOTE: FOR FIGURE(S), REFER TO IETP / ENGINE MANUAL / AD / SB.						
ACCOMPLISHMENT INSTRUCTIONS						
1	-	IN ACCORDANCE WITH DM 39-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.	SATISFACTORY NIL FINDINGS		L12 LM	15/11/22
2	-	PUT THE PLATFORM (GG-01-00), OR AN APPROVED ALTERNATIVE, ADJACENT TO THE LEFT SIDE OF THE FUSELAGE.	SATISFACTORY NIL FINDINGS		L12 LM	15/11/22
3	-	**NOTE** REFER TO THE "COMPLIANCE" SECTION TO DEFINE THE APPLICABILITY OF THE FOLLOWING STEPS 3 THRU 5.	-	-	-	-

☐ PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.	☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.
* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.	

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Date: 05 Jul 2022

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
		WITH REFERENCE TO FIGURE 8, TURN THE MR HEAD TO MOVE THE APPLICABLE MR DAMPER ABOVE THE PLATFORM AND GET ACCESS TO THE WORK AREA.	SATISFACTORY NIL FINDINGS	JP.	L12 LM	15/11/22
4	-	**NOTE** AS AN ALTERNATIVE TO THE DETAILED INSPECTION DESCRIBED AT FOLLOWING STEP 4, IT IS ALLOWED TO PERFORM THE EDDY CURRENT INSPECTION, ACCORDING TO ANNEX B, ON THE AREAS SHOWN IN FIGURE 19. WITH REFERENCE TO FIGURES 8 AND 19, PERFORM A DETAILED INSPECTION ON THE MR DAMPER, USING THE MAGNIFYING GLASS AND MIRROR: **NOTE** THE AREAS TO BE INSPECTED ON THE MR DAMPER ARE SHOWN IN FIGURE 19 (TOP SIDE SHOWN, BOTTOM SIDE IS SYMMETRICAL). **CAUTION** **MAKE SURE THAT THE ALIPHATIC NAPHTHA (C059) DOES NOT COME IN CONTACT WITH THE SPHERICAL BEARING LINER.** 4.1 CLEAN THE SURFACE TO BE INSPECTED, ON BOTH SIDES OF BOTH ENDS, WITH A CLEAN CLOTH (C011) SOAKED WITH ALIPHATIC NAPHTHA (C059).	SATISFACTORY NIL FINDINGS	JP.	L12 LM	15/11/22

☐ PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.	☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.
* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.	

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
		4.2 DO A DETAILED INSPECTION OF THE DAMPER ROD END (3) FOR CRACKS. IF YOU FIND CRACKS, CONTACT PRODUCT SUPPORT ENGINEERING (CSE.AW139.AW@LEONARDOCOMPANY.COM) FOR FURTHER INSTRUCTION.	SATISFACTORY NIL FINDINGS	JP.	L 12 LM	15/11/22
		4.3 DO A DETAILED INSPECTION OF THE DAMPER BODY END (2) FOR CRACKS. IF YOU FIND CRACKS, CONTACT PRODUCT SUPPORT ENGINEERING (CSE.AW139.AW@LEONARDOCOMPANY.COM) FOR FURTHER INSTRUCTION.	SATISFACTORY NIL FINDINGS	JP.	L 12 LM	15/11/22
5	-	REPEAT STEPS 3 AND 4 UNTIL YOU HAVE CHECKED ALL THE APPLICABLE MR DAMPERS.	SATISFACTORY NIL FINDINGS	JP.	L 12 LM	15/11/22
6	-	REMOVE THE PLATFORM (GG-01-00) FROM THE LEFT SIDE OF THE FUSELAGE.	SATISFACTORY NIL FINDINGS	JP.	L 12 LM	15/11/22
7	-	RETURN THE HELICOPTER TO FLIGHT CONFIGURATION AND **RECORD FOR COMPLIANCE WITH PART III OF THIS SERVICE BULLETIN.**	SATISFACTORY RETURNED TO FLIGHT CONFIG. CAMO TO RECORD IN LOGBOOK.		L 12 LM	15/11/22

ANNEX B - MR DAMPER EDDY CURRENT INSPECTION

COMPLIANCE INSTRUCTIONS

WARNING

THE INSPECTIONS PERFORMED IN ACCORDANCE WITH THIS PROCEDURE SHALL BE CARRIED OUT BY PERSONNEL QUALIFIED AT LEAST LEVEL 2 IN THE EDDY CURRENT METHOD IN ACCORDANCE WITH THE REQUIREMENTS OF EN4179/NAS410.

☐ PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.	☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.

* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
		NOTE AS REQUIRED BY PART I, PART II AND PART III OF THIS SERVICE BULLETIN, THE INSPECTION AREAS ARE LOCALISED ON THE BODY END AND ROD END CLOSE TO THE SPHERICAL BEARING. REFER TO FIGURES B1 AND B2 TO IDENTIFY THE AREAS ON BODY END AND ROD END, RESPECTIVELY. **CAUTION** **MAKE SURE THAT THE SOLVENT DOES NOT COME IN CONTACT WITH THE SPHERICAL BEARING LINER.**				
1	-	MAKE SURE THAT THE WHOLE SURFACES OF THE AREAS OF INSPECTION ARE FREE FROM ANY GREASE, SCALE, CONDUCTIVE SEALANTS OR OTHER EXCESSIVE CONTAMINANTS THAT CAN INTERFERE WITH THE INSPECTIONS. IF NECESSARY, CLEAN THE SURFACE ON BOTH SIDES WITH A CLEAN CLOTH (C011) SOAKED WITH SOLVENT. LET THE SOLVENT AIR DRY.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L 12 LM	15/11/22
2	-	**CAUTION** **DURING THE INSPECTION, IT IS IMPORTANT TO:** • **ALWAYS MAINTAIN THE PROBE AS PERPENDICULAR AS POSSIBLE TO THE SURFACE;** • **MOVE IT SLOWLY AND UNIFORMLY;** • **TAKE CARE TO THE SIGNAL FROM THE EDGE EFFECT.** CONNECT THE PROBE ON THE INSTRUMENT BY RELEVANT CABLE.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L 12 LM	15/11/22
3	-	SWITCH ON THE INSTRUMENT AND SET UP THE PARAMETERS LISTED IN FIGURE B4.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L 12 LM	15/11/22
4	-	PERFORM INSTRUMENT CALIBRATION AS FOLLOWS:	-	-	-	-

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* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.	

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
		NOTE THE CALIBRATION SHALL BE CARRIED OUT BEFORE THE INSPECTION AND RECHECKED AFTER THE END OF THE INSPECTION; IT SHALL BE PERFORMED ON THE REQUESTED REFERENCE BLOCK IN ACCORDANCE WITH STEPS 4.1 THRU 4.3. 4.1 PUT THE SENSOR OF THE PROBE ON THE REFERENCE STANDARD AWAY FROM THE NOTCH.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
		4.2 PRESS THE COMPENSATION KEY AND ADJUST THE PHASE OF THE INSTRUMENT IN A WAY THAT THE LIFT-OFF SIGNAL RESULTS IN HORIZONTAL DEFLECTION FROM THE CENTRE TO THE LEFT, SO THAT IT IS CLEARLY DISTINGUISHED FROM THE DEFECT INDICATION (SEE TRACE A ON FIGURE B4),	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
		4.3 PERFORM THE SCANNING INSPECTION ON THE REFERENCE BLOCK TO VERIFY THAT, IN CORRESPONDENCE OF THE REFERENCE NOTCH 0.5 MM DEEP, A VERTICAL DEFLECTION SIGNAL AND AT LEAST OF FOUR MAIN DIVISIONS OF THE SCREEN OR AT LEAST 80% OF FULL SCREEN IS OBTAINED (SEE TRACE B ON FIGURE B4).	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
5	-	PERFORM THE INSPECTION AS FOLLOWS: **NOTE** FIGURES B1 AND B2 ARE RELATED TO BODY END AND ROD END, RESPECTIVELY. PERFORMING THE INSPECTION DESCRIBED IN STEPS 5.1 THRU 5.4, REFER TO THE APPLICABLE FIGURE FOR THE COMPONENT TO BE INSPECTED.	-	-	-	-

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* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.	

NO	SOURCE	TASK / REFERENCE	REMARKS	MECHANIC SIGN	* AH SIGN & STAMP	DATE
		5.1 PUT THE PROBE ON THE AREA IDENTIFIED "BALANCING/COMPENSATION" IN FIGURE B1 / B2 AND PERFORM THE BALANCING/COMPENSATION. ADJUST THE PHASE IN A WAY THAT THE LIFT-OFF SIGNAL RESULTS IN HORIZONTAL DEFLECTION	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
		5.2 PERFORM THE DETAILED EXAMINATION ON THE INSPECTION AREAS IDENTIFIED IN FIGURE B1 / B2 USING CIRCULAR PATH DIRECTIONS AND, IF POSSIBLE, USING THE CHAMFERING EDGE TO DRIVE THE SENSOR.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
		NOTE EACH INDICATION OF CRACK IS TYPICALLY ASSOCIATED WITH A RAPID VARIATION OF THE SIGNAL ON THE SCREEN IN THE DIRECTION CLOSE TO THAT DUE TO THE REFERENCE NOTCH. 5.3 PROCESS AND CONSIDER RELEVANT ANY VERTICAL DEFLECTION, UNLESS IT CAN BE ATTRIBUTED TO LIFT-OFF OR EDGE EFFECT. IF ANY VERTICAL DEFLECTION IS FOUND, VERIFY THE INSTRUMENT CALIBRATION AND REPEAT THE INSPECTION TO CONFIRM THE CRACK.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
		5.4 RECHECK THE INSTRUMENT CALIBRATION AS DESCRIBED IN STEP 4.	N/A DUE TO ANNEX B NOT REQUIRED	N/A	L12 LM	15/11/22
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☐ PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.	☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.
* APPROVAL HOLDER HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W MAINTENANCE MANUAL SPECIFIED IN WORKPACK INDEX LM/QA/GEN/01.	

Airworthiness Directive

AD No.: 2018-0112R1

Issued: 04 June 2018

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:
LEONARDO S.p.A.

Type/Model designation(s):
AB139 and AW139 helicopters

Effective Date:	05 June 2018 (same as original issue)
TCDS Number(s):	EASA.R.006
Foreign AD:	Not applicable
Revision:	This AD revises EASA AD 2018-0112 dated 22 May 2018, which superseded EASA AD 2017-0160 dated 28 August 2017.

ATA 62 – Main Rotor – Main Rotor Damper – Inspection / Replacement

Manufacturer(s):
Leonardo S.p.A. Helicopters (formerly Finmeccanica S.p.A., Helicopter Division (FHD), AgustaWestland S.p.A., Agusta S.p.A.), AgustaWestland Philadelphia Corporation (formerly Agusta Aerospace Corporation)

Applicability:
AB139 and AW139 helicopters, all serial numbers (s/n), except s/n 31004, s/n 31007 and s/n 41237.

Definitions:
For the purpose of this AD, the following definitions apply:

Affected MR damper: Main Rotor (MR) dampers, P/N 3G6220V01351; P/N 3G6220V01352; and P/N 3G6220V01353.

Groups: Group 1 helicopters are those that have an affected MR damper installed. Group 2 helicopters are those that do not have an affected MR damper installed.

ALF inspection: After the last flight (ALF) of the day.

Reason:
In-service failures were reported of affected MR dampers on AW139 helicopters. In some cases, these failures occurred at the eye end and body lugs with disconnection of the damper in flight. The results of preliminary investigations determined that a combination of several factors could lead to disconnection of an MR damper.

This condition, if not detected and corrected, could lead to loss of the lead-lag damping function of an MR blade, possibly resulting in damage to adjacent critical MR components and consequent reduced control of the helicopter.

To initially address this potential unsafe condition, AgustaWestland published Mandatory Bollettino Tecnico (BT) 139-410 and later FHD published BT 139-446, providing interim inspection instructions. Further investigations highlighted the need for a one-time non-destructive inspection (NDI) followed by repetitive detailed visual inspections to detect cracks on the MR damper rod end and body end. Consequently, FHD issued Mandatory BT 139-450, incorporating the inspections contained in the previous two BTs and, in addition, providing instructions for a one-time dye penetrant inspection for cracks of limited areas of the MR damper (rod end and body end) and repetitive detailed visual inspections for cracks in the same areas. Consequently, EASA issued AD 2016-0087 requiring various one-time and repetitive inspections of the MR damper and a torque check and, depending on findings, accomplishment of applicable corrective action(s).

After that AD was issued, additional cases of in-service MR damper body end disconnections were reported. New analyses prompted FHD to issue BT 139-450 Revision A, with reduced compliance times, and BT 139-452 with additional actions. Consequently, EASA issued AD 2016-0140, retaining the requirements of EASA AD 2016-0087, which was superseded, to require accomplishment of additional actions as specified in BT 139-452 and in revised BT 139-450. That AD also introduced an eddy current inspection as an alternative action to the dye penetrant inspection and detailed visual inspection.

After that AD was issued, a new MR Damper, P/N 3G6220V01353, was certified and introduced into service. As a precautionary measure, pending completion of additional tests, it was determined that this new MR damper also needed to be inspected. Consequently, EASA issued AD 2017-0160, retaining the requirements of EASA AD 2016-0140, which was superseded, and extended the Applicability to helicopters equipped with MR Damper P/N 3G6220V01353.

Since that AD was issued, the results of additional tests performed on MR damper P/N 3G6220V01353 determined that this MR damper P/N does not need to be subject to the dye-penetrant inspection and detailed visual inspections for cracks required by EASA AD 2017-160, provided it is removed from service before exceeding its safe retirement life, which is now published in Chapter 4 Airworthiness Limitation Section (ALS) Issue 9. This revised ALS will be subject to a new EASA AD. It was also determined all affected MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 must be replaced with MR dampers P/N 3G6220V01353.

Consequently, EASA issued AD 2018-0112, partially retaining the requirements of EASA AD 2017-0160, which was superseded, removing the MR damper P/N 3G6220V01353 from the inspection requirements and requiring modification of Group 1 helicopters by replacement of each

affected MR damper P/N 3G6220V01351 and P/N 3G6220V01352 with an MR damper P/N 3G6220V01353, which is terminating action for the repetitive inspections as required by that AD.

This AD is revised to correct an inadvertent omission in paragraph (5), clarifying that repetitive DVI of the body end of each affected MR damper are required, as previously by EASA AD 2017-0160.

Required Action(s) and Compliance Time(s):
Required as indicated, unless accomplished previously:

Inspection(s) / Torque Check:
Part A: For Group 1 helicopters:
(1) Within the compliance time specified in Table 1 of this AD, as applicable, reduce the installation torque of the bolts fixing each affected MR damper to the MR hub in accordance with the instructions of Part I of FHD BT 139-452.

Table 1 – Torque Reduction

MR Damper P/N	Compliance Time
3G6220V01351 and 3G6220V01352	Within 10 flight hours (FH), or during the next ALF inspection, whichever occurs later after 28 July 2016 [the effective date of EASA AD 2016-0140]
3G6220V01353	Within 10 FH after 11 September 2017 [the effective date of EASA AD 2017-0160]

Part B: For Group 1 helicopters, except affected MR dampers P/N 3G6220V01353:
(2) Within the compliance times defined in Table 2 of this AD, as applicable, depending on the FH accumulated by each affected MR damper, accomplish a one-time dye penetrant inspection of the rod end and body end of each affected MR damper in accordance with the instructions of Part I of FHD BT 139-450.

Table 2 – Group 1 helicopters – MR Dampers One-time Inspection

FH accumulated (see Note 1 of this AD)	Compliance Time
Less than 300	Before exceeding 300 FH, or within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0087], whichever occurs later
300 or more	Within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0087], or at the first MR damper removal, whichever occurs first

Note 1: Unless specified otherwise, the number of FH specified in this AD are those accumulated by each affected MR damper (or rod end or body end, as applicable) since new (first installation on a helicopter), or since overhaul.

Part B (continued)

(3) Following the inspection as required by paragraph (2) of this AD, each time a replacement MR damper rod end is installed, P/N M006-01H004-041, or P/N M006-01H004-045, or P/N M006-01H004-053, which is not marked as per FHD BT 139-450, within 300 FH after installation of that rod end, accomplish a one-time dye penetrant inspection of that rod end in accordance with the instructions of Part II of FHD BT 139-450.

(4) Within 5 FH after 28 July 2016 [the effective date of EASA AD 2016-0140], for rod ends that have accumulated 300 FH or more (see Note 1 of this AD) and, thereafter, during each ALF inspection, or before the first flight of each day, accomplish a detailed visual inspection (DVI) of the rod end of each affected MR damper in accordance with the instructions of Part III of FHD BT 139-450.

(5) Within 5 FH after 28 July 2016 [the effective date of EASA AD 2016-0140], for body ends that have accumulated 300 FH or more, but not more than 1 200 FH (see Note 1 of this AD) and, thereafter, during each ALF inspection, or before the first flight of each day, accomplish a DVI of the body end of each affected MR damper in accordance with the instructions of Part III of FHD BT 139-450.

(6) An eddy current inspection (ECI) of an affected MR damper in accordance with the instructions of Annex B of FHD BT 139-450 is an acceptable alternative method to an inspection as required by paragraph (2) or (3) of this AD, as applicable, for that affected MR damper. An ECI of the rod end or body end of an affected MR damper in accordance with the instructions of Annex B of BT 139-450, or Annex A of BT 139-452, as applicable, is an acceptable alternative method to an inspection as required by paragraph (4) or (5) of this AD, as applicable, for that affected MR damper.

(7) Within the compliance times (threshold and intervals) as defined in Table 3 and Table 4 of this AD, as applicable, depending on the FH accumulated by each affected MR damper rod end or each affected MR damper body end (see Note 1 of this AD), inspect the rod end and/or body end bearings of each affected MR damper to detect rotation, in accordance with the instructions of Part IV of FHD BT 139-450.

Table 3 – Rod End Bearing Repetitive Inspections

FH accumulated by rod end	Threshold	Interval
Less than 300	Within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0087]	Not to exceed 10 FH
300 or more	Within 5 FH after 28 July 2016 [the effective date of EASA AD 2016-0140]	During each ALF inspection, or before the first flight of each day

Part B (continued)

Table 4 – Body End Bearing Repetitive Inspections

FH accumulated by body end	Threshold	Interval
Less than 300	Within 30 FH after 10 May 2016 [the effective date of AD 2016-0087]	Not to exceed 10 FH
From 300 up to 1 200	Within 5 FH after 28 July 2016 [the effective date of EASA AD 2016-0140]	During each ALF inspection, or before the first flight of each day

(8) For helicopters equipped with an affected MR damper, having an s/n specified in Part V of FHD BT 139-450: Within 30 FH after 10 May 2016 [the effective date of EASA AD 2016-0087] and, thereafter, at intervals not to exceed 20 FH, visually inspect the rod end broached ring nut of each affected MR damper, in accordance with the instructions of Part V of FHD BT 139-450. These repetitive inspections can be terminated when an affected MR damper accumulates 600 FH since first installation on a helicopter.

(9) Within 50 FH after 10 May 2016 [the effective date of EASA AD 2016-0087], or within 100 FH after the latest inspection in accordance with the instructions of FHD BT 139-446 Part I accomplished before 10 May 2016 [the effective date of EASA AD 2016-0087], as applicable, and, thereafter, at intervals not to exceed 100 FH, accomplish a bearing friction inspection of the body end and rod end bearings of each affected MR damper, and a detailed inspection of the anti-rotation block of each affected MR damper, in accordance with the instructions of Part VI of FHD BT 139-450.

(10) For helicopters equipped with an affected MR damper, having an s/n specified in Part VII of FHD BT 139-450: Within 50 FH after 10 May 2016 [the effective date of EASA AD 2016-0087], accomplish a visual inspection of each affected MR damper rod end installation and a torque check of the MR damper broached ring nut, in accordance with the instructions of Part VII of FHD BT 139-450.

Corrective Action(s):

(11) If, during the inspection as required by paragraph (10) of this AD, any special washer P/N 3G6220A05051 is found installed, before next flight, replace that special washer P/N 3G6220A05051 with a new washer P/N 3G6220A05052 in accordance with the instructions of Part VII of FHD BT 139-450.

(12) If, during any inspection as required by paragraph (2), (3), (4), (5) or (8) of this AD, or as specified in paragraph (6) of this AD, as applicable, any crack or other damage is detected, before next flight, contact Leonardo in accordance with the instructions of FHD BT 139-450 and BT 139-452, as applicable, and, if the discrepancy is confirmed, replace the affected MR damper with a serviceable part.

Part B (continued)

(13) If, during any inspection or torque check as required by paragraph (7), (9) or (10) of this AD, as applicable, any discrepancy is detected as defined in FHD BT 139-450 or FHD BT 139-452, as applicable, before next flight, accomplish the applicable corrective action(s) as specified in, and in accordance with, the instructions of FHD BT 139-450 or FHD BT 139-452, as applicable.

Replacement:

(14) Before exceeding 1 200 FH accumulated by an MR damper body end P/N M006-01H002-041 or P/N M006-01H002-047 since new (see Note 1 of this AD), or within 30 FH after the effective date of this AD, whichever occurs later, replace the affected MR damper with an MR damper P/N 3G6220V01353 in accordance with the instructions of Part II of Leonardo SB 139-452 Revision B.

Terminating Action:

(15) Accomplishment of corrective action(s) on a helicopter, as required by paragraph (11), (12) or (13) of this AD, as applicable, does not constitute terminating action for any repetitive action as required by this AD for that helicopter.

(16) Modification of a helicopter by replacement of each affected MR damper P/N 3G6220V01351 or P/N 3G6220V01352 with a MR damper P/N 3G6220V01353 in accordance with the instructions of Part II of Leonardo SB 139-452 Revision B, constitutes terminating actions for all repetitive actions required by this AD for that helicopter.

Part C: For Group 1 and Group 2 helicopters:

Parts installation:

(17) Do not install an affected MR damper P/N 3G6220V01351 or P/N 3G6220V01352 on any helicopter, as required by paragraph (17.1) or (17.2) of this AD, as applicable.

(17.1) For Group 1 helicopters: After modification of a helicopter, as specified in paragraph (16) of this AD.

(17.2) For Group 2 helicopters: From the effective date of this AD.

(18) From the effective date of this AD, installation of an affected MR damper P/N 3G6220V01353 on a helicopter is allowed, provided that it is installed on the MR hub of the helicopter using the correct torque values, as specified in Leonardo SB 139-452 (any revision), or in Maintenance Manual Data Module Code, task 39-A-62-22-02-00A-720A-A "Lag Damper - Install Procedure".

Ref. Publications:

FHD BT 139-410 Revision A dated 12 February 2016.

FHD BT 139-446 original issue dated 12 February 2016.

FHD BT 139-450 original issue dated 20 April 2016, or Revision A dated 27 June 2016, or Revision B dated 25 November 2016, or Leonardo SB 139-450 Revision C dated 10 April 2018.

FHD BT 139-452 original issue dated 27 June 2016, or Revision A dated 05 December 2016, or Leonardo SB 139-452 Revision B dated 10 April 2018.

The use of later approved revisions of the above-mentioned documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this AD, and which may occur, or have occurred on a product, part or appliance not affected by this AD, can be reported to the EU aviation safety reporting system.

5. For any question concerning the technical content of the requirements in this AD, please contact: Leonardo S.p.A. Helicopters, E-mail: CSE.AW139.AW@leonardocompany.com.

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AgustaWestland Products

SERVICE BULLETIN

N° 139-450

ALERT

DATE: April 20, 2016

REV. : D May 28, 2019

P/N : 3G6220V01352.

TITLE

ATA 62 - MAIN ROTOR DAMPER INSPECTIONS

REVISION LOG

Present revision D is issued to add, as last page of Annex B, the figure B4 showing the setup parameters for the eddy current inspection instrument. This figure, missing in revision C of the Service Bulletin, was already present in the previous issues.

No other changes are made to the accomplishment instructions and to the compliance time scheduling already introduced with the previous revisions.

Revision A introduced an Eddy current inspection as valid alternative to the ones already prescribed with the first issue and limited the checks on the body end up to 1200 FH while for body ends having logged more than 1200 FH since new a more stringent inspection program was provided in Service Bulletin 139-452.

Revision B was issued to introduce new MR damper P/N 3G6220V01353, fitting the new body end P/N M006-01H046-041.

Revision C was issued to remove from the effectivity of this Service Bulletin MR damper P/N 3G6220V01353, because it is no more subject to the inspections herein described. The maintenance program applicable to MR damper P/N 3G6220V01353 has been reported in AMPI Chapter 5 Issue 15.

Revision bars in the outer margin identify changes.

1. PLANNING INFORMATION

A. EFFECTIVITY

NOTE

This Service Bulletin cancels and supersedes BT 139-410 Rev. A and BT 139-446.

Part I: all MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 installed on AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237).
all MR dampers P/N 3G6220V01351, P/N 3G6220V01352 kept in stock that have logged three hundred (300) FH or more since new.

Part II: all MR dampers that have been already inspected according to Part I and that have replaced the rod end assy with a component P/N M006-01H004-041 or P/N M006-01H004-045 or P/N M006-01H004-053 not marked as per Service Bulletin 139-450 figure 7.

15.11.17

Part III: all body ends P/N M006-01H002-041 or P/N M006-01H002-047 and rod ends P/N M006-01H004-041 or P/N M006-01H004-045 or P/N M006-01H004-053, part of MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 installed on AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237).

Part IV: all body ends P/N M006-01H002-041 or P/N M006-01H002-047 and rod ends P/N M006-01H004-041 or P/N M006-01H004-045 or P/N M006-01H004-053, part of MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 installed on AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237).

Part V: all MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 up to S/N MCR8086 included, that are installed on AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237) and have accumulated less than 600 FH since new.

Part VI: all AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237) equipped with MR dampers P/N 3G6220V01351 and P/N 3G6220V01352

Part VII: all MR dampers P/N 3G6220V01351 and all MR dampers P/N 3G6220V01352 up to S/N MCR8764 (included) having rod end P/N M006-01H004-041 or -045 or -053, except MR dampers listed in table 1 of Annex A and MR dampers marked with "BT 139-446 Part II" or "BT 139-446 Part III" on the logcard, installed on AB139 / AW139 helicopters (except S/N 31004, S/N 31007 and S/N 41237).
all MR dampers P/N 3G6220V01351 and P/N 3G6220V01352 that have removed the damper rod end assy in accordance with AMP procedure before

the issuance of BT 139-446, even if they have S/N higher than MCR8764 or they are listed in table 1 of Annex A.

Part VIII: all MR dampers P/N 3G6220V01351 and all MR dampers P/N 3G6220V01352 up to S/N MCR8764 (included) having rod end assy P/N M006-01H004-041 or -045 or -053, except MR dampers listed in table 1 of Annex A and MR dampers marked with "BT 139-446 Part II" or "BT 139-446 Part III" on the logcard, kept in stock.

NOTE

MR damper ends marked as per figure 7 are not affected by part I and part II of this Service Bulletin.

NOTE

The MR damper exact S/N may be composed of either four or five digits, possibly preceded by letters MCR and/or followed by letters A and/or B. For the purpose of the present instructions, only valid numerical characters are considered, neglecting "MCR", "A", "B" and initial zeros.

Possible examples follow:

- S/N 0272 will be referred to as S/N 272;
- S/N 00344AB will be referred to as S/N 344;
- S/N MCR1848A will be referred to as S/N 1848;
- S/N MCR07568 will be referred to as S/N 7568;
- S/N MCR10755 will be referred to as S/N 10755;

MAG confirms that no duplicates exist in the valid numerical digits of item serialization (that means that only one among S/N 715, S/N MCR0715, S/N MCR00715 or S/N MCR0715AB exists).

B. COMPLIANCE

NOTE

Rod end and body end time since new or since overhaul can be computed based on removal/installation data recorded on MR damper logcard Section 2.

Part I:

- ✓ within thirty (30) FH since receipt of this Service Bulletin or at first MR damper removal, whichever comes first, on MR dampers that have logged three hundred (300) FH or more since new.
- ✓ within thirty (30) FH since receipt of this Service Bulletin or when they reach three hundred (300) FH since new, whichever occurs later, on MR dampers that have not already logged three hundred (300) FH.
- ✓ before next installation on the helicopter for MR dampers kept in stock that have logged three hundred (300) FH or more since new.

Part II: three hundred (300) FH after the replacement of the rod end assy.

Part III:

- ✓ for rod end, after the last flight of each day or before the first flight of each day since the rod end has logged three hundred (300) FH or more since new or since overhaul.
- ✓ for body end, after the last flight of each day or before the first flight of each day since the body end has logged three hundred (300) FH or more since new and until it has logged twelve hundred (1200) FH since new.

Part IV:

- ✓ for rod end
  - within thirthy (30) FH since receipt of this Service Bulletin and then every ten (10) FH for rod ends that have logged less than three hundred (300) FH since new or since overhaul.
  - after the last flight of each day or before the first flight of each day since the rod end has logged three hundred (300) FH or more since new or since overhaul.
- ✓ for body end
  - within thirthy (30) FH since receipt of this Service Bulletin and then every ten (10) FH for body ends that have logged less than three hundred (300) FH since new.

- after the last flight of each day or before the first flight of each day since the body end has logged three hundred (300) FH or more since new and until it has logged twelve hundred (1200) FH since new.

Part V: within thirthy (30) FH since receipt of this Service Bulletin and then every twenty (20) FH until the affected damper reaches six hundred (600) FH Time Since New.

Part VI: within fifty (50) FH since receipt of this Service Bulletin and then every one hundred (100) FH.

Part VII: within fifty (50) FH since receipt of this Service Bulletin.

Part VIII: within three (3) months since receipt of this Service Bulletin or before the first installation on the helicopter, whichever is first.

NOTE

For part IV and part V the compliance time must be scheduled starting from the date of the last inspection performed according to BT 139-410, if this has been already accomplished at least one time.

For part VI the compliance time must be scheduled starting from the date of the last inspection performed according to BT 139-446 part I, if this has been already accomplished at least one time.

Compliance with part VII and VIII is not required for helicopters / parts that have already accomplished BT 139-446 part II or part III respectively.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to introduce a new one off and a new periodic inspection and to collect the existing periodic inspections of MR damper.

E. DESCRIPTION

Some failures of MR damper in the inboard spherical bearing area were experienced by AW139 fleet; in addition, cases of rod end loosening were reported. This Service Bulletin introduces the inspections to be performed on the MR damper, until replacement with P/N 3G6220V01353 when the body end reaches twelve hundred (1200) FH.

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 the following MMH are deemed necessary:

Part I: six (6) MMH;

Part II: four (4) MMH;

Part III: half (0.5) MMH

Part IV: half (0.5) MMH;

Part V: half (0.5) MMH;

Part VI: two (2) MMH;

Part VII:five (5) MMH;

Part VIII:half (0.5) MMH for each MR damper.

MMH are based on hands-on time and can change with personnel and facilities available.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

1) PUBLICATIONS

DATA MODULE		DESCRIPTION	PART
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance	I thru VII
DM02	39-A-GG-02-00-00A-066A-A	Platform, left (GG-01-00)	I thru VII

DATA MODULE		DESCRIPTION	PART
DM03	39-A-62-22-02-00A-520A-A	Main rotor damper – Remove procedures	I, II, IV, VI, VII
DM04	39-A-62-22-02-00A-720A-A	Main rotor damper – Install procedures	I, II, IV, VI, VII
DM05	39-A-62-22-02-01A-921A-B	Rod end (lag damper) - Replacement (remove and install a new item)	IV, VI, VII
DM06	39-A-62-22-07-00A-520A-A	Anti-rotation block - Remove procedure	VI
DM07	39-A-62-22-07-00A-720A-A	Anti-rotation block - Install procedure	VI

2) ACRONYMS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
AMPI	Aircraft Maintenance Planning information
AR	As Required
BT	Bollettino Tecnico
DM	Data Module
FH	Flight Hours
ITEP	Illustrated Tools and Equipment Publication
LHD	Leonardo Helicopter Division
LS	Local Supply
MMH	Maintenance-Man-Hours
MMIR	Maintenance Malfunction Information Report
MR	Main Rotor

3) ANNEX

Annex A	MAG In Service Query Record n° ISQR-16-002
Annex B	MR damper eddy current inspection

J. PUBLICATIONS AFFECTED

N.A.

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

A MR damper or a rod end assy, as applicable, can be ordered to LHD only in case replacement is requested by this Service Bulletin.

NOTE

MR damper P/N 3G6220V01353 is fully interchangeable and mixable on the same MR Hub with a damper with different P/N.

If a MR damper P/N 3G6220V01353 is furnished to replace a damper with different P/N, also a new antirotation block P/N 3G6220A05353 must be supplied to replace the existing one.

The new anti-rotation block P/N 3G6220A05353 can be used also with damper with different P/N.

2) CONSUMABLES

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

#	Spec./LHD code number	DESCRIPTION	Q.TY	NOTE	PART
1	Commercial	Masking tape, adhesive	AR	LS (1)	I, II
2	Commercial	Clean, lint-free, dry cloth (C011) or absorbent toweling	AR	LS (1)	I, II
3	QPL-AMS2644	Penetrant, Type II, Method C, in aerosol container	AR	LS (1)	I, II
4	QPL-AMS2644	Solvent remover, class 2, in aerosol container	AR	LS (1)	I, II
5	MS20995C41	Safety wire (C241)	AR	LS	VII, VIII
6	PERMACEL P422 Cod. No. 900002514 or 900002515 or 900002516 or 900002517	Tape, antifretting	AR	LS	VII, VIII
7	MIL-PRF-85285, Ty. I Color N° 37038	Polyurethane paint, black	AR	LS (1)	I, II
8	TT-N-95	Aliphatic naphtha (C059)	AR	LS	III
9	Commercial	Strap, tiedown	2	LS	

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

3) LOGISTIC MATRIX

N.A.

NOTE

(1) Required to perform the dye penetrant inspection. Refer to Annex B for consumable materials required for the Eddy Current inspection.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this Service Bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
10	RMGE-DS-06-2010-LH or approved alternative	Platform left (GG-01-00)	AR	LS	I thru VII
11	/	Magnifying glass (5 power)	1	LS (B1)	I, II, III
12	/	Brush, fine tipped	1	LS (B1)	I, II
13	Commercial	Luxmeter	1	LS (B1)	I, II
14	/	Small, clean, dry, not contamined recipient (beaker or equivalent)	1	LS (B1)	I, II
15	Commercial	Mirror	1	LS	III, V
16	Commercial	Torque wrench (capability up to 100 Nm - 885 lb in)	1	LS	VI, VII, VIII
17	Commercial	Spanner 1-5/16"	1	LS	VII, VIII
18	Commercial	Spanner 5/8"	1	LS	VI, VII, VIII
19	Commercial	Digital centesimal caliper	1	LS	VI

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

SPECIAL TOOLS NOTE

(B1) Required to perform the dye penetrant inspection. Refer to Annex B for special tools required for the Eddy Current inspection.

C. INDUSTRY SUPPORT INFORMATION

WARRANTY: Owners/Operators who comply with the instructions of this Service Bulletin no later than the applicable date in the "Compliance" section will be eligible to receive Main Rotor Damper or a Rod End Assy, as applicable, on a free of charge basis, except for Consumable Materials & Special Tools.

Please Issue relevant MMIR form to your Warranty Administration Dpt.

3. ACCOMPLISHMENT INSTRUCTIONS

PART I

NOTE

Skip steps 1 thru 3 when performing the inspection on the MR dampers kept in stock.

1. In accordance with DM 39-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. Put the platform (GG-01-00), or an approved alternative, adjacent to the left side of the fuselage.
3. Remove the MR dampers. Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A.

NOTE

It is suggested to start the inspection on all the MR dampers at the same time.

NOTE

As an alternative to the dye penetrant inspection described at following step 4, it is allowed to perform the Eddy Current inspection, according to Annex B.

4. With reference to figures 1 thru 6, perform the dye penetrant inspection of the MR damper. Operative conditions and inspection sequence shall be compliant with ASTM E1417, in particular the following steps shall be followed:

   4.1 Put the MR damper on a suitable work bench, as shown in figure 2.

   4.2 With reference to figure 3, on each spherical bearing, protect the liner with masking tape as follows:

NOTE

The areas to be inspected are shown in figure 1 (one side shown, the other is symmetrical), identified by the red boxes.

CAUTION

Make sure that the solvent does not come in contact with the spherical bearing liner.

   4.2.1 Clean the surface on both sides of both ends with a clean cloth (C011) soaked with solvent. Let the solvent air dry.

NOTE

If there are slippage marks in the areas to be inspected, remove the paint, from the damper end surface only, using solvent.

CAUTION

Make sure that the adhesive masking tape adheres completely to the damper ends surface, when performing following step 4.2.2.

4.2.2 Protect the surface all around the areas to be inspected according to figures 3 thru 5, using adhesive masking tape. Make sure that the tape is tangent to the bearing seat, according to figures 4 and 5.

4.3 Inspect the damper ends as follows:

CAUTION

Make sure that, during the inspection, the part is always under appropriate illumination. The lighting system shall provide at least 1000 lx (100 fc) at the examination surface. Use the luxmeter to confirm this condition.

4.3.1 Clean the areas to be inspected, on both sides of both ends, with a clean cloth (C011) soaked with solvent. Let the solvent air dry.

CAUTION

Make sure that the recipient is clean, dry and free from any contaminant.

4.3.2 Put a few drops of penetrant in a small recipient (beaker or equivalent).

CAUTION

Make sure not to apply too much penetrant, when performing following step 4.3.3.

4.3.3 Apply the penetrant with a clean, dry, fine tipped brush on all the areas to be inspected, according to figure 6 (same application to be carried out on the other side). Let the penetrant dwell.

NOTE

Dwell time must be at least one hour and no more than two hours.

4.3.4 Clean the penetrant in excess by first with a clean, dry, lint-free cloth (C011) or absorbent towelling.

4.3.5 If penetrant in excess remain, remove it with a solvent dampened lint-free cloth (C011) or towel, until the penetrant in excess has been completely removed. Let the solvent air dry.

4.3.6 Let the penetrant develop for at least thirty minutes without developer.

4.3.7 Inspect the areas shown in figure 1 using the magnifying glass.

4.3.7.1 If you don't find indication of cracks, go to step 4.4.

4.3.7.2 If you find indication of cracks, confirm the crack by wipe-off.

4.3.7.3 If, at step 4.3.7.2, you have confirmed presence of cracks on the body end or on the rod end, contact Product Support Engineering (CSE.AW139.AW@leonardocompany.com) for further instruction.

4.4 Remove the adhesive masking tape from all the serviceable damper ends.

CAUTION

Make sure that the solvent does not come in contact with the spherical bearing liner.

4.5 Clean all the surfaces on both sides of both ends using a cloth (C011) soaked with solvent until all the penetrant has been removed.

4.6 Mark a black dot, using polyurethane black paint, on the rod end and on the body end, in positions shown in figure 7.

4.7 If you have removed slippage marks, cleaning the damper end surface at step 4.2.1, restore the slippage mark using the applicable paint colour: yellow, green or blue. Use commercially available varnish such as thread securing/sealing product or equivalent alternatives. Let dry for one hour at 25°C, or as otherwise specified by product specification.

5. Install the MR damper/dampers. Refer to AMP, see DM n° 39-A-62-22-02-00A-720A-A.
6. Remove the platform (GG-01-00) from the left side of the fuselage.
7. Return the helicopter to flight configuration.
8. Record for compliance with part I of this Service Bulletin on the MR damper logcard.
9. Send the attached compliance form to the following mail box:
   cse.aw139.aw@leonardocompany.com
   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART II

1. In accordance with DM 39-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. Put the platform (GG-01-00), or an approved alternative, adjacent to the left side of the fuselage.
3. Remove the affected MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A.

NOTE

As an alternative to the dye penetrant inspection described at following step 4, it is allowed to perform the Eddy Current inspection, according to Annex B.

4. With reference to figures 1 thru 6, perform the dye penetrant inspection of the affected MR damper rod end. Operative conditions and inspection sequence shall be compliant with ASTM E1417, in particular the following steps shall be followed:

   4.1 Put the MR damper on a suitable work bench, as shown in figure 2.

   4.2 With reference to figure 3 view B, on the rod end spherical bearing, protect the liner with masking tape as follows:

NOTE

The area to be inspected is shown in figure 1 view B (one side shown, the other is symmetrical), identified by the red boxes.

CAUTION

Make sure that the solvent does not come in contact with the spherical bearing liner.

   4.2.1 Clean the surface on both sides of the rod end with a clean cloth (C011) soaked with solvent. Let the solvent air dry.

NOTE

If there are slippage marks in the areas to be inspected, remove the paint, from the damper end surface only, using solvent.

CAUTION

Make sure that the adhesive masking tape adheres completely to the damper end surface, when performing following step 4.2.2.

4.2.2 Protect the surface all around the areas to be inspected according to figures 3 thru 5, using adhesive masking tape. Make sure that the tape is tangent to the bearing seat, according to figures 4 and 5.

4.3 Inspect the damper rod end as follows:

CAUTION

Make sure that, during the inspection, the part is always under appropriate illumination. The lighting system shall provide at least 1000 lx (100 fc) at the examination surface. Use the luxmeter to confirm this condition.

4.3.1 Clean the areas to be inspected, on both sides of the rod end, with a clean cloth (C011) soaked with solvent. Let the solvent air dry.

CAUTION

Make sure that the recipient is clean, dry and free from any contaminant.

4.3.2 Put a few drops of penetrant in a small recipient (beaker or equivalent).

CAUTION

Make sure not to apply too much penetrant, when performing following step 4.3.3.

4.3.3 Apply the penetrant with a clean, dry, fine tipped brush on all the areas to be inspected, according to figure 6 view B (same application to be carried out on the other side). Let the penetrant dwell.

NOTE

Dwell time must be at least one hour and no more than two hours.

4.3.4 Clean the penetrant in excess by first with a clean, dry, lint-free cloth (C011) or absorbent towelling.

4.3.5 If penetrant in excess remain, remove it with a solvent dampened lint-free cloth (C011) or towel, until the penetrant in excess has been completely removed. Let the solvent air dry.

4.3.6 Let the penetrant develop for at least thirty minutes without developer.

4.3.7 Inspect the areas shown in figure 1 using the magnifying glass.

4.3.7.1 If you don't find indication of cracks, go to step 4.4.

4.3.7.2 If you find indication of cracks, confirm the crack by wipe-off.

4.3.7.3 If, at step 4.3.7.2, you have confirmed presence of cracks on the rod end, contact Product Support Engineering (CSE.AW139.AW@leonardocompany.com) for further instruction.

4.4 Remove the adhesive masking tape from the serviceable rod end.

CAUTION

Make sure that the solvent does not come in contact with the spherical bearing liner.

4.5 Clean all the surfaces on both sides of the rod end using a cloth (C011) soaked with solvent until all the penetrant has been removed.

4.6 Mark a black dot, using polyurethane black paint, on the rod end, in position shown in figure 7.

4.7 If you have removed slippage marks, cleaning the damper end surface at step 4.2.1, restore the slippage mark using the applicable paint colour: yellow, green or blue. Use commercially available varnish such as thread securing/sealing product or equivalent alternatives. Let dry for one hour at 25°C, or as otherwise specified by product specification.

5. Install the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-720A-A.
6. Remove the platform (GG-01-00) from the left side of the fuselage.
7. Return the helicopter to flight configuration.
8. Record for compliance with part II of this Service Bulletin on the MR damper logcard.
9. Send the attached compliance form to the following mail box:
   cse.aw139.aw@leonardocompany.com
   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART III

1. In accordance with DM 39-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. Put the platform (GG-01-00), or an approved alternative, adjacent to the left side of the fuselage.

NOTE

Refer to the "Compliance" section to define the applicability of the following steps 3 thru 5.

3. With reference to figure 8, turn the MR head to move the applicable MR damper above the platform and get access to the work area.

NOTE

As an alternative to the detailed inspection described at following step 4, it is allowed to perform the Eddy Current inspection, according to Annex B, on the areas shown in figure 19.

4. With reference to figures 8 and 19, perform a detailed inspection on the MR damper, using the magnifying glass and mirror:

NOTE

The areas to be inspected on the MR damper are shown in figure 19 (top side shown, bottom side is symmetrical).

CAUTION

Make sure that the aliphatic naphtha (C059) does not come in contact with the spherical bearing liner.

4.1 Clean the surface to be inspected, on both sides of both ends, with a clean cloth (C011) soaked with aliphatic naphtha (C059).

4.2 Do a detailed inspection of the damper rod end (3) for cracks. If you find cracks, contact Product Support Engineering (CSE.AW139.AW@leonardocompany.com) for further instruction.

4.3 Do a detailed inspection of the damper body end (2) for cracks. If you find cracks, contact Product Support Engineering (CSE.AW139.AW@leonardocompany.com) for further instruction.

5. Repeat steps 3 and 4 until you have checked all the applicable MR dampers.
6. Remove the platform (GG-01-00) from the left side of the fuselage.

7. Return the helicopter to flight configuration and record for compliance with part III of this Service Bulletin.

25-11-22

PART IV

1. In accordance with DM 39-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.

NOTE

Refer to the "Compliance" section to define the applicability of the following steps 2 thru 4.

2. With reference to figure 8, get access to the work area.

NOTE

Damper (1) and/or rod end (3) removal is not necessary to perform the inspection.

3. With reference to figures 8 and 9 perform the inspection as follows:
   - 3.1 Examine the bearing of the rod end (3) for rotation in the damper seat by looking for slippage marks misalignment. If you find rotation (as shown in figure 9), replace the rod end. Refer to AMP, see DM n° 39-A-62-22-02-01A-921A-B.
   - 3.2 Examine the bearing of the body end (2) for rotation in the damper seat by looking for slippage marks misalignment. If you find rotation (as shown in figure 9), replace the damper (1). Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A and 39-A-62-22-02-00A-720A-A.
4. Repeat step 3 to inspect the other MR dampers.
5. Return the helicopter to flight configuration and record for compliance with Part IV of this Service Bulletin on the helicopter logbook.
6. Send the attached compliance form to the following mail box:
   cse.aw139.aw@leonardocompany.com
   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART V

1. In accordance with DM 39-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. With reference to figure 10, get access to the work area.
3. With reference to figure 11, do a visual inspection of the lag damper broached ring nut (6).

NOTE

Damper (1) and rod end (3) removal is not necessary to perform the inspection. The parts are shown removed/disassembled for better clarity purposes only.

3.1 With reference to figures 11 and 12, using a mirror, check the four teeth of the broached ring (5) and relative four damper piston slots (4) for damage, correct engagement and alignment.

3.2 In case of findings (a sample of possible damage is shown in figure 13) contact Product Support Engineering (CSE.AW139.AW@leonardocompany.com) for further instruction.

4. Repeat step 3 to inspect the other MR dampers.
5. Return the helicopter to flight configuration and record for compliance with Part V of this Service Bulletin on the helicopter logbook.
6. Send the attached compliance form to the following mail box:
   cse.aw139.aw@leonardocompany.com
   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART VI

1. In accordance with DM 39-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. Put the platform (GG-01-00), or an approved alternative, adjacent to the left side of the fuselage.
3. With reference to figure 16, turn the MR head to move the applicable MR damper above the platform and get access to the work area.
4. With reference to figures 16 thru 18, perform the following checks on the first MR damper:

NOTE

Before starting the friction check, lightly rotate the body end around the damper axis to put it near the middle position (0°).

4.1 Perform a bearing friction torque check of the damper body end according to figure 18 view G. If the value is higher than 30.0 Nm (265.5 lb in), proceed with step 4.1.1, otherwise go to step 4.2.

4.1.1 Replace the MR damper (see AMP DM n° 39-A-62-22-02-00A-520A-A and DM n° 39-A-62-22-02-00A-720A-A).

4.1.2 Go to step 4.3.

4.2 Perform a bearing friction torque check of the damper rod end according to figure 18 view H. If the value is higher than 30.0 Nm (265.5 lb in), replace the damper rod end (see AMP DM n° 39-A-62-22-02-01A-921A-B), otherwise proceed with step 4.3.

4.3 With reference to figures 16 and 17 do a detailed inspection for wear of the damper anti-rotation block as follows:

4.3.1 Mark a reference line on the MR hub lower arm at a distance of 55 mm (2.16 in) from the body end blocking ring, according to figure 17 view E. Use a digital centesimal caliper to measure the distance and an erasable ink pen to mark the reference line.

4.3.2 With reference to figure 16 section D-D, move the body end to the fully up position using a torque wrench, in order to measure dimension "A".

4.3.3 Measure dimension "A" from the lower surface of the MR hub arm to the lower surface of the body end, alongside the reference line previously marked, using a digital centesimal caliper, as shown in figure 17 view F.

4.3.4 Make sure that the measured dimension "A" is lower than 26.90 mm (1.06 in).

4.3.5 With reference to figure 16 section D-D, move the body end to the fully down position using a torque wrench, in order to measure dimension "B".

4.3.6 Measure dimension "B" from the lower surface of the MR hub arm to the lower surface of the body end, alongside the reference line previously marked, using a digital centesimal caliper, as shown in figure 17 view F.

4.3.7 Make sure that the measured dimension "B" is higher than 24.35 mm (0.96 in).

4.3.8 If the dimension measured are not within the given limits, replace the anti-rotation block with a new one. Refer to AMP, see DM n° 39-A-62-22-07-00A-520A-A and DM n° 39-A-62-22-07-00A-720A-A.

5. Repeat steps 3 and 4 until you have checked all the MR dampers.
6. Remove the platform (GG-01-00) from the left side of the fuselage.
7. Return the helicopter to flight configuration and record for compliance with part VI of this Service Bulletin on the helicopter logbook.
8. Send the attached compliance form to the following mail box:
   cse.aw139.aw@leonardocompany.com
   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART VII

1. In accordance with DM 39-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. Put the platform (GG-01-00), or an approved alternative, adjacent to the left side of the fuselage.
3. Get access to the cockpit. Set the rotor brake lever to OFF.
4. With reference to figure 14, turn the MR head to move the applicable MR damper above the platform and get access to the work area.

NOTE

Do not remove the damper rod end (2) from the pitch control lever during this procedure. The damper (1) is shown removed in some figures for better clarity purposes only.

5. With reference to figure 14 section C-C, do a visual inspection of the damper rod end installation.
   - 5.1 Make sure that the special washer P/N 3G6220A05052 is installed.
   - 5.2 If the special washer P/N 3G6220A05052 is present, go to step 6.
   - 5.3 If the special washer P/N 3G6220A05052 is not present, do as follows:
     - 5.3.1 Remove the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A.
     - 5.3.2 Perform disassembly, inspections and assembly of the damper as prescribed by the compliance instructions (paragraph 8) in Annex A.

CAUTION

Install special washer P/N 3G6220A05052 according to BT 139-402 when you install the lag damper at following step 5.3.3.

     - 5.3.3 Install the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-720A-A.
     - 5.3.4 Go to step 7.
6. With reference to figure 14 view A and to figure 15, check the torque of the damper broached ring nut (3) on the first MR damper.

WARNING

MAKE SURE THAT THE ROTOR BRAKE ENGAGES WHEN YOU PERFORM THE TORQUE CHECK. AN INJURY TO PERSONS OR DAMAGE TO THE EQUIPMENT CAN OCCUR IF THE MAIN ROTOR HEAD TURNS.

6.1 Set the rotor brake lever to ON.

6.2 Get access to the damper rod end (2).

NOTE

Identify and record the wiring scheme before removing the safety wire.

6.3 Cut and remove the safety wire from the damper. Discard the safety wire.

6.4 With reference to figures 14 and 15, move the ring nut (3) away from the broaching of the rod end (2) toward the damper body (1). Use a plastic mallet and a soft plunger to disengage it from the broaching of the rod end (2). When you do this operation, make sure not to disengage the ring nut (3) from the lock ring (5).

6.5 Protect the rod end (2) with a film of antifretting tape PERMACEL P422 or equivalent.

CAUTION

To torque the ring nut at following step 6.6, make sure to rotate the ring nut clockwise (looking outboard from the MR hub), according to figure 15.

6.6 Set the torque wrench to 53 Nm (469 lb in), lock the rod end with a spanner, and try to torque the ring nut (3).

6.6.1 Verify that the ring nut (3) does not rotate with respect to the rod end (2).

6.6.2 If rotation is not found go to step 6.7, otherwise proceed with following step 6.6.3.

6.6.3 Remove the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A.

6.6.4 Perform disassembly, inspections and assembly of the MR damper as prescribed by steps 8 thru 23 of the compliance instructions (paragraph 8) in annex A.

6.6.5 Install the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-720A-A.

6.6.6 Go to step 7.

6.7 Torque the ring nut (3) to 63 Nm (558 lb in).

6.8 After torque application, move the ring nut (3) backwards to the damper (1) and do as follows:

6.8.1 Make sure that the broached teeth (4) of the rod end are perfectly aligned to the lock ring (5).

6.8.2 If they are aligned, go to step 6.11, otherwise proceed with step 6.9.

CAUTION

Do not release the torque to align the teeth. Unscrew action will introduce potential loosening of rod end during in flight operation.

6.9 If the teeth are misaligned, increase the torque value to reach the correct alignment, up to a maximum of 80 Nm (708 lb in). Do not exceed 80 Nm (708 lb in).

6.10 If it is not possible to align the teeth within this range, do as follows:

6.10.1 Remove the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-520A-A.

6.10.2 Remove the rod end (2) from the MR damper according to the applicable steps of AMP DM n° 39-A-62-22-02-01A-921A-B.

6.10.3 Perform steps 19 thru 23 of the compliance instructions (paragraph 8) in Annex A.

6.10.4 Install the MR damper. Refer to AMP, see DM n° 39-A-62-22-02-00A-720A-A.

6.10.5 Go to step 7.

6.11 Remove the protective tape from the rod end (2).

6.12 Make sure that there are not scratches or dents on the rod end (2).

6.13 Move the ring nut (3) in its position on the broaching of the rod end (2). Do this until top and bottom holes on the ring nut (3) come in view for the installation of the wire.

6.14 Safety the damper with new safety wire (C241), according to the scheme recorded at step 6.3.

6.15 Record for compliance with part VII of this Service Bulletin on the component logcard.

7. Repeat steps 3 thru 6 until you have checked all the MR dampers.
8. Remove the platform (GG-01-00) from the left side of the fuselage.
9. Return the helicopter to flight configuration.
10. Record for compliance with part VII of this Service Bulletin on the helicopter logbook.

11. Send the attached compliance form to the following mail box:

    cse.aw139.aw@leonardocompany.com

    As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART VIII

1. Perform the torque check on the MR damper according to the compliance instructions (paragraph 8) in Annex A.

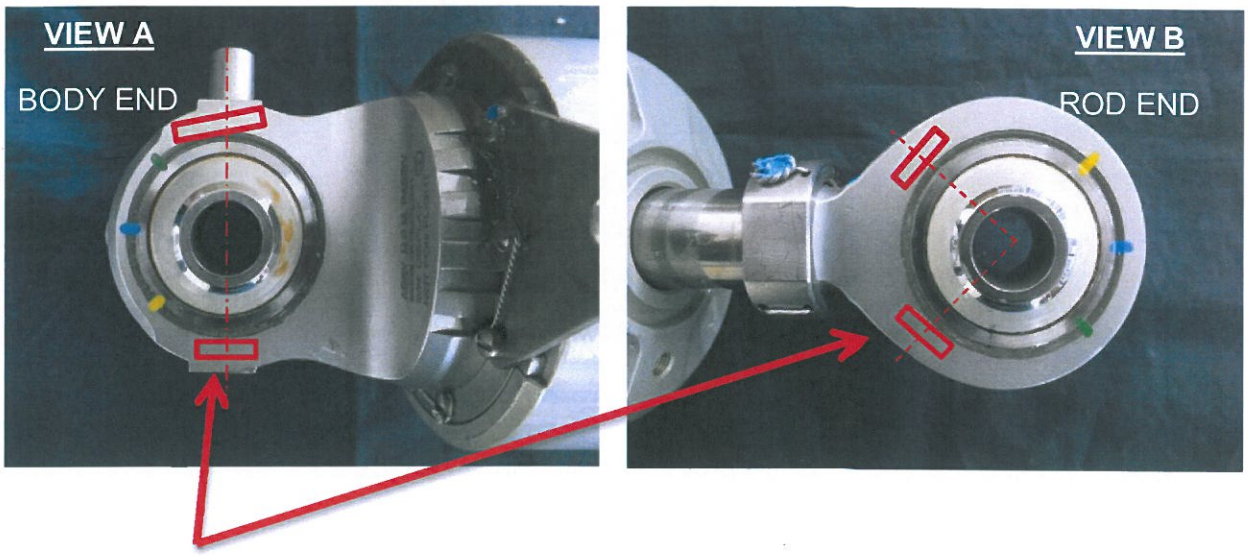
NOTE

If the damper is in new condition (zero FH since new), when performing the torque check according to Annex A, do not apply steps 8.7 thru 8.16.

2. Send the attached compliance form to the following mail box:

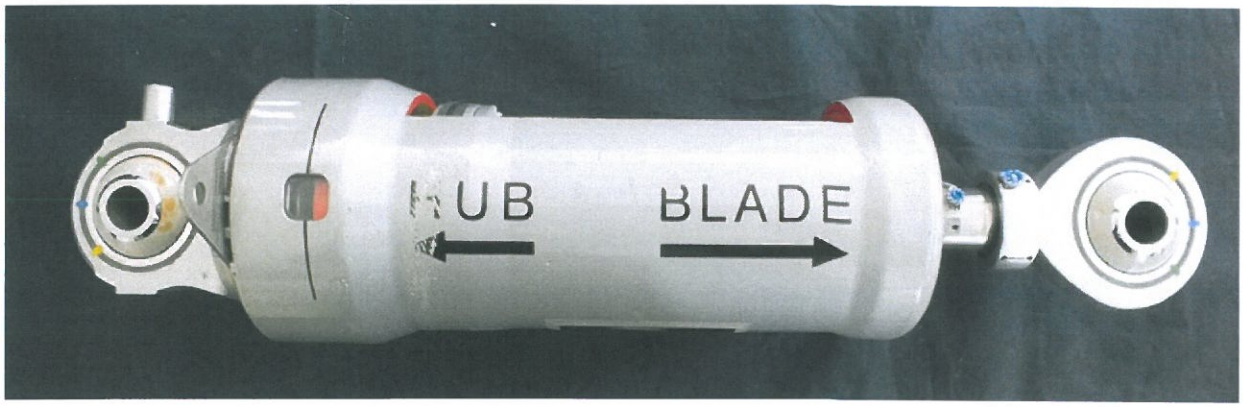
cse.aw139.aw@leonardocompany.com

As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".



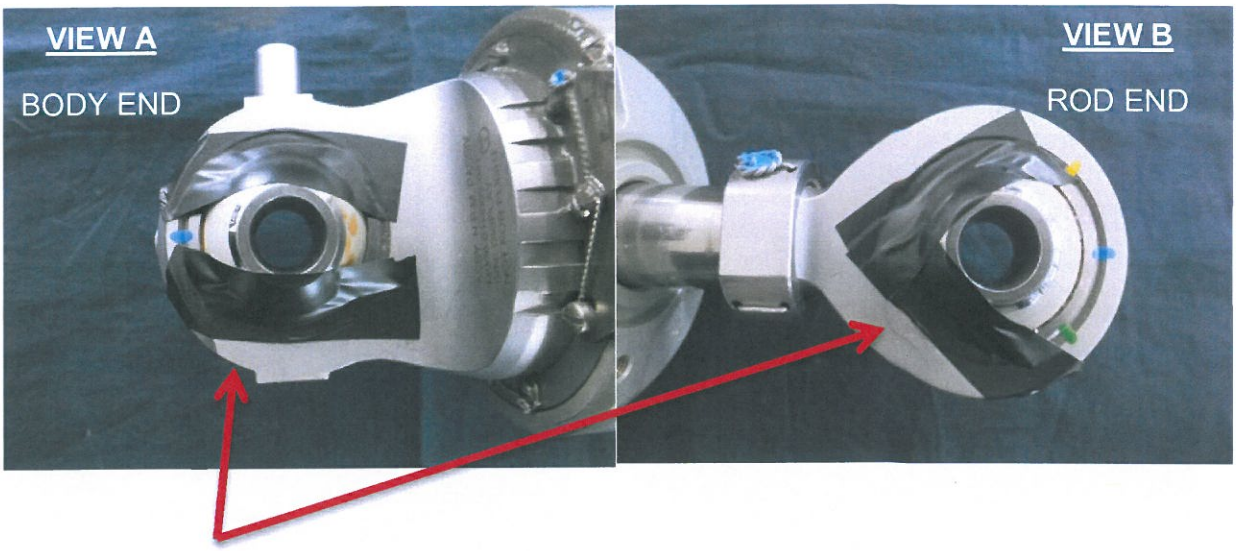
Areas to be inspected (two on body end and two on rod end) shown in red boxes (one side shown, the other is symmetrical)

Figure 1



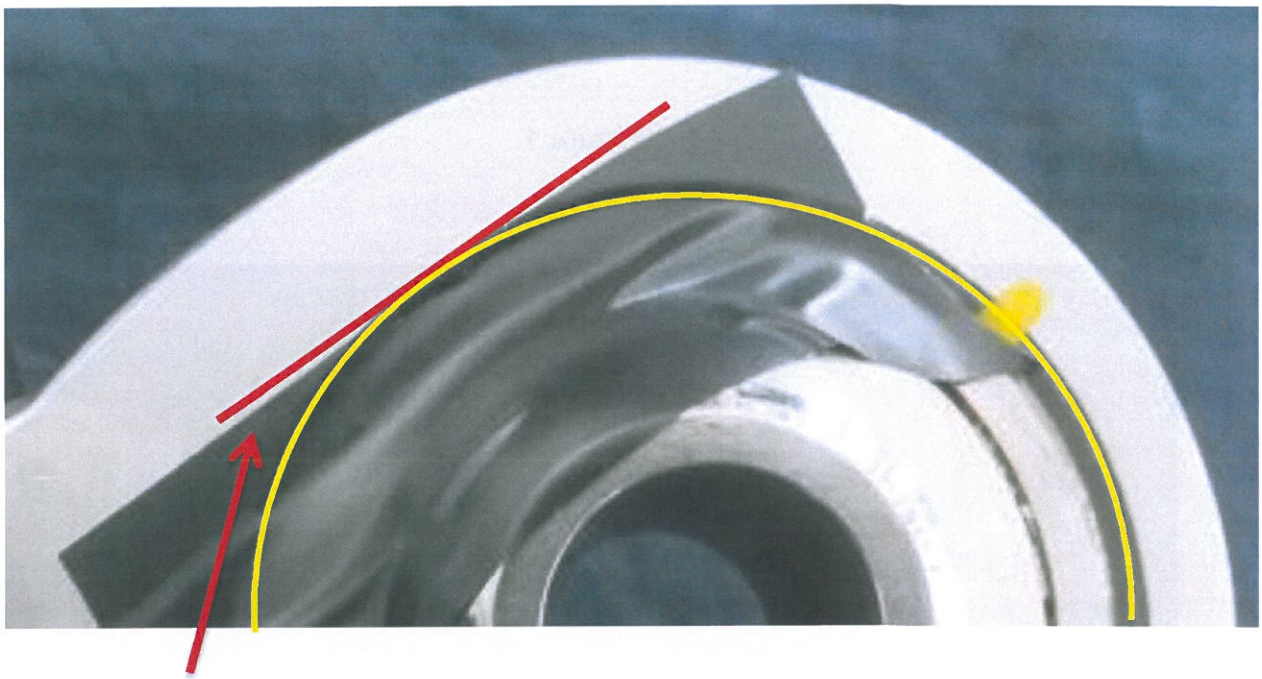
Damper must be removed from the helicopter and positioned on a suitable work bench

Figure 2



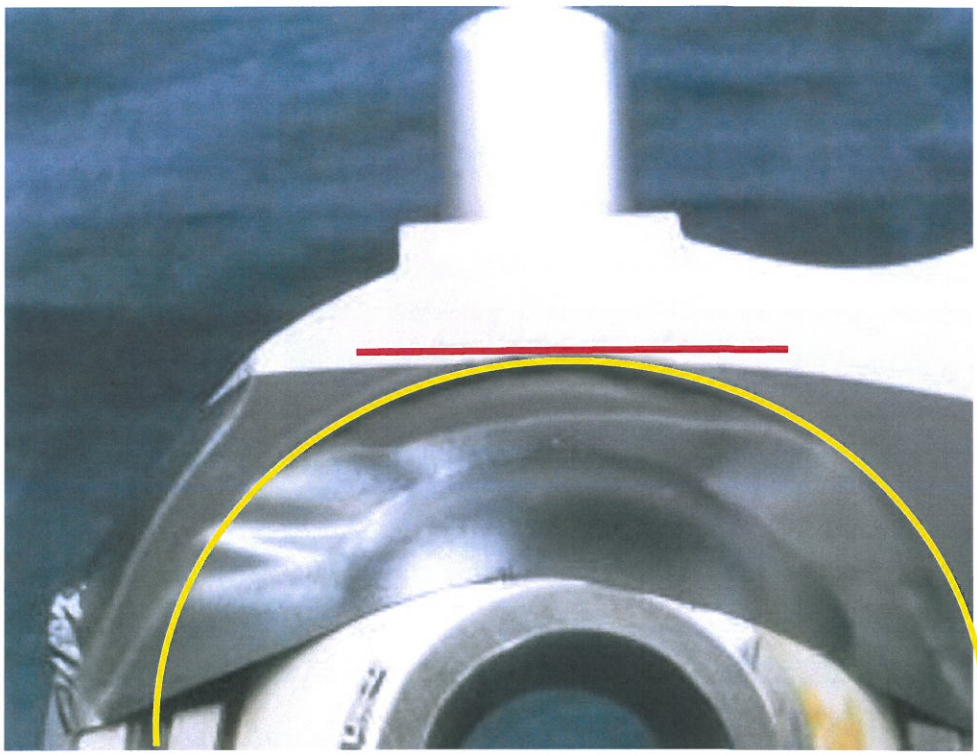
Body end and rod end must be protected with masking tape as shown (on both sides)

Figure 3



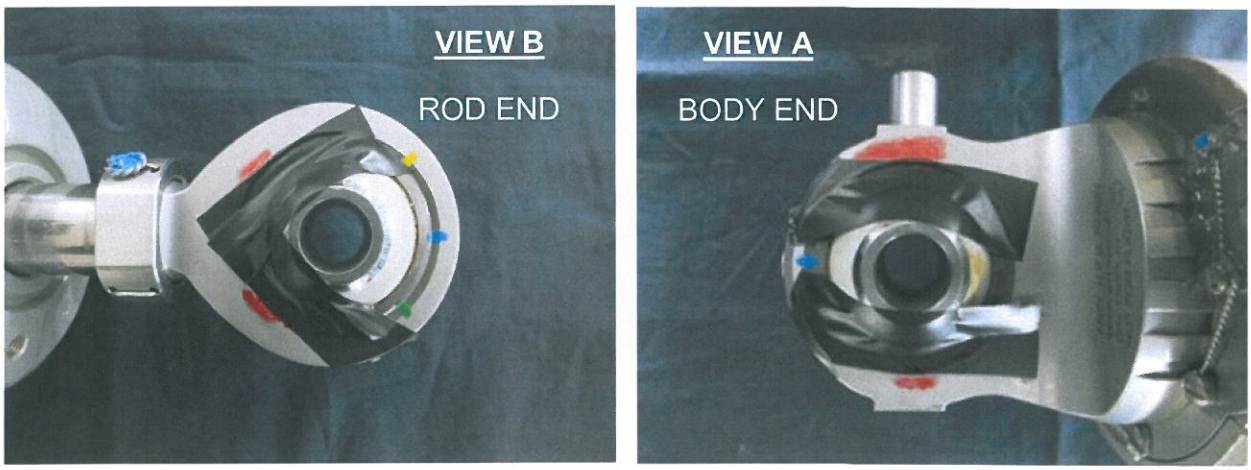
On the rod end apply the masking tape as shown. Red line (shown on the picture for reference only) is tangent to the spherical bearing seat (yellow line, shown on the picture for reference only).

Figure 4



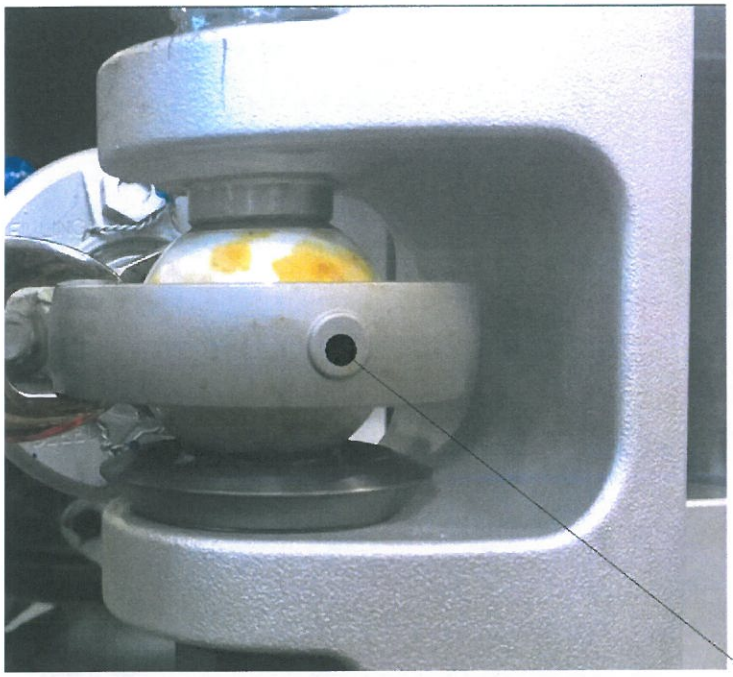
On the body end apply the masking tape as shown. Red line (shown on the picture for reference only) is tangent to the spherical bearing seat (yellow line, shown on the picture for reference only).

Figure 5

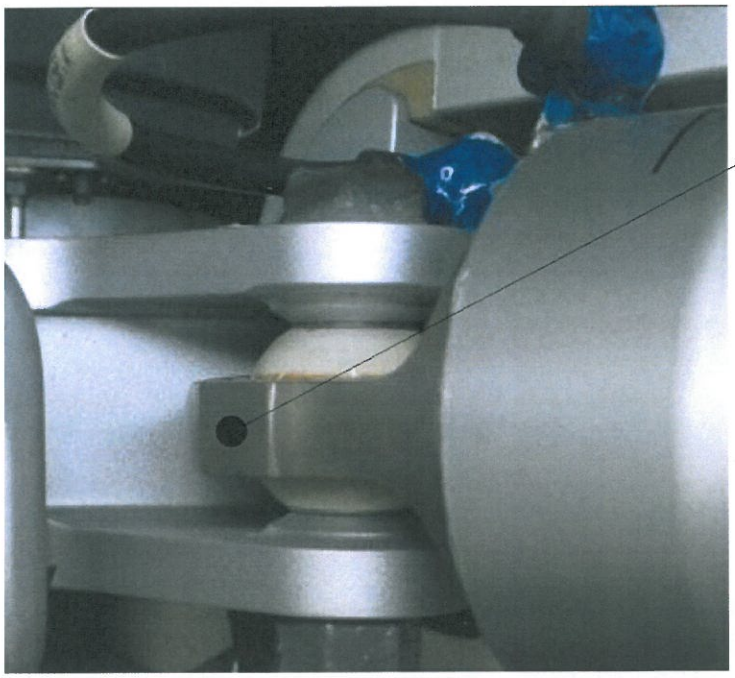


Apply dye penetrant on both sides of both ends in the areas shown.

Figure 6

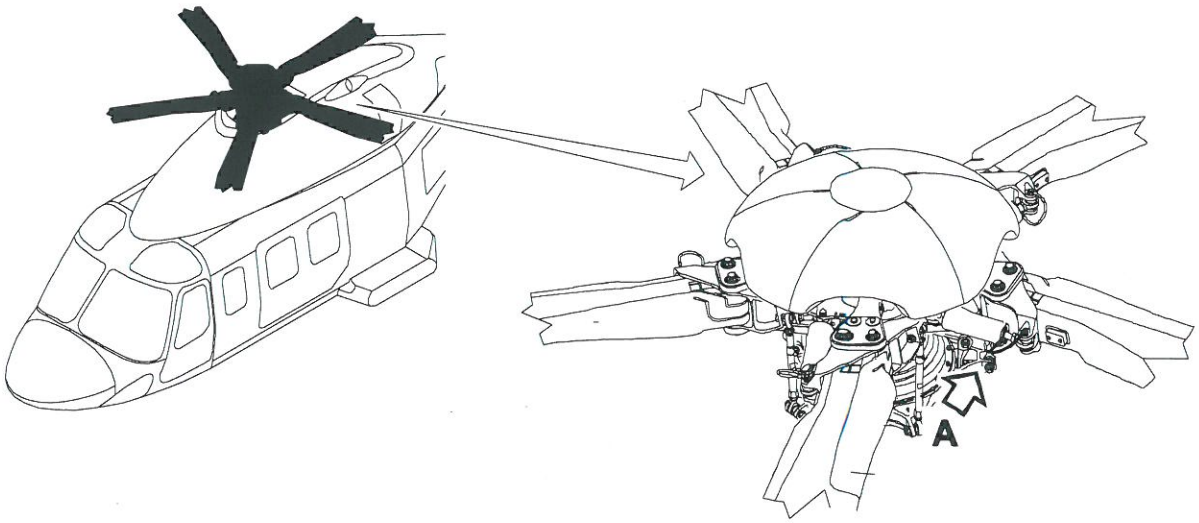


NDT INSPECTION MARKING ON DAMPER ROD END



NDT INSPECTION MARKING ON DAMPER BODY END

Figure 7



A TYPICAL
5 POSITIONS

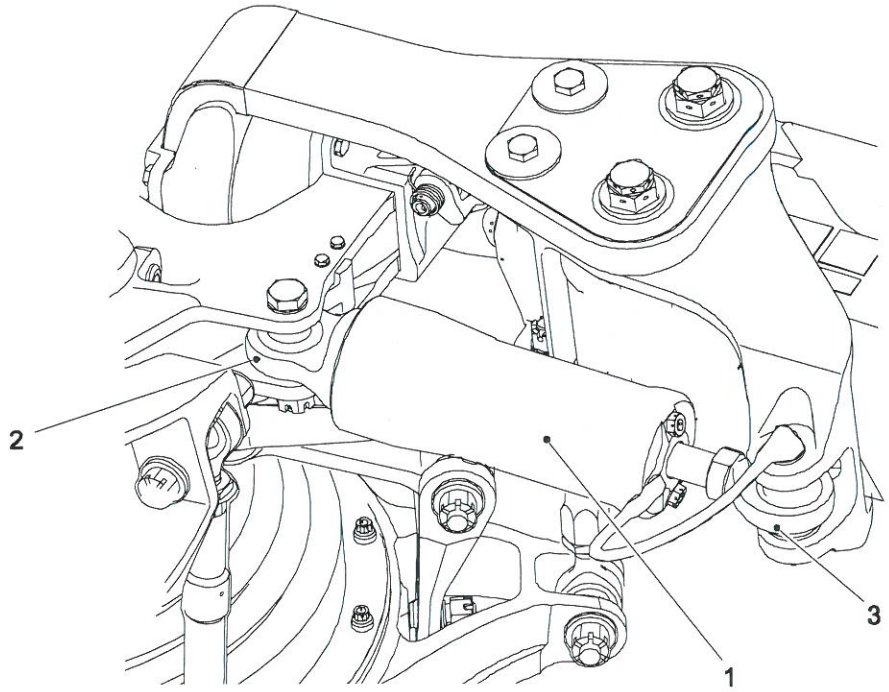
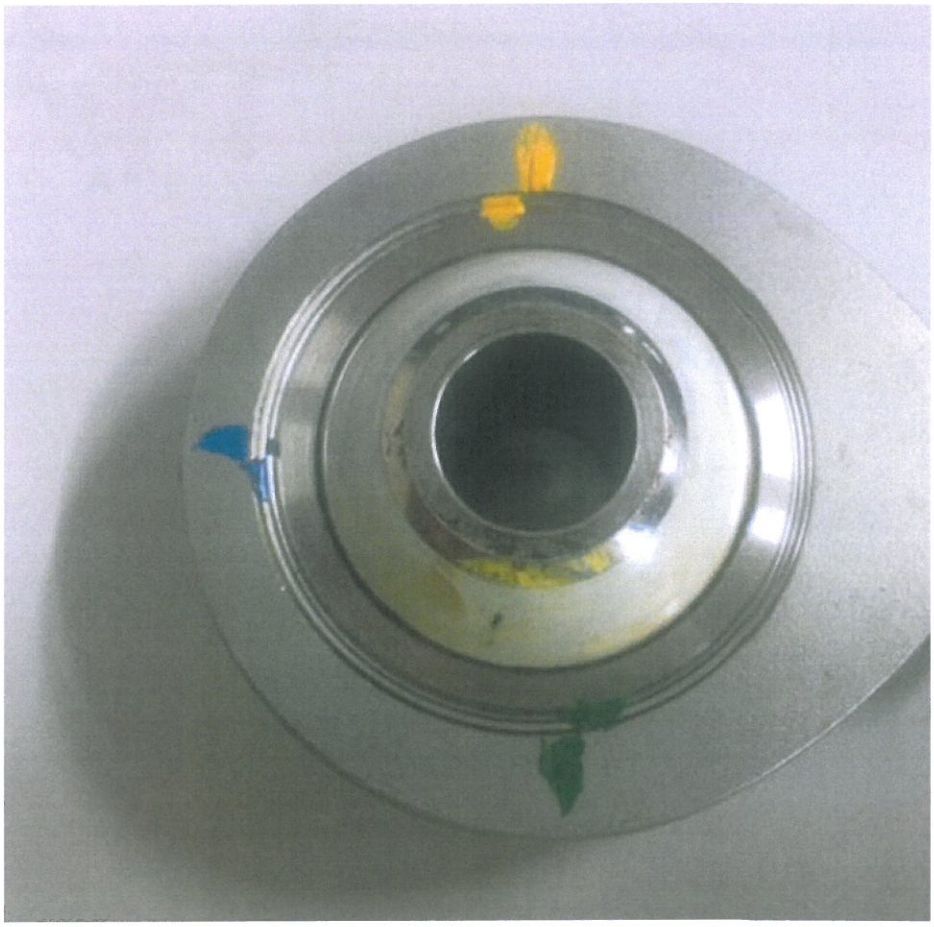
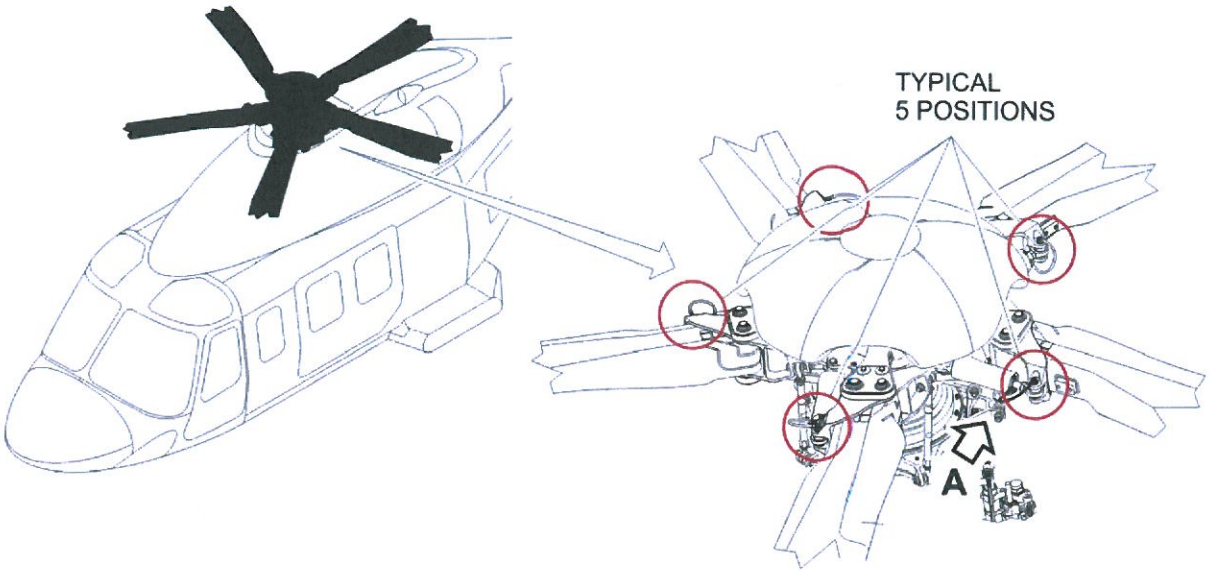


Figure 8



Sample of bearing rotation (slippage marks misalignment)

Figure 9



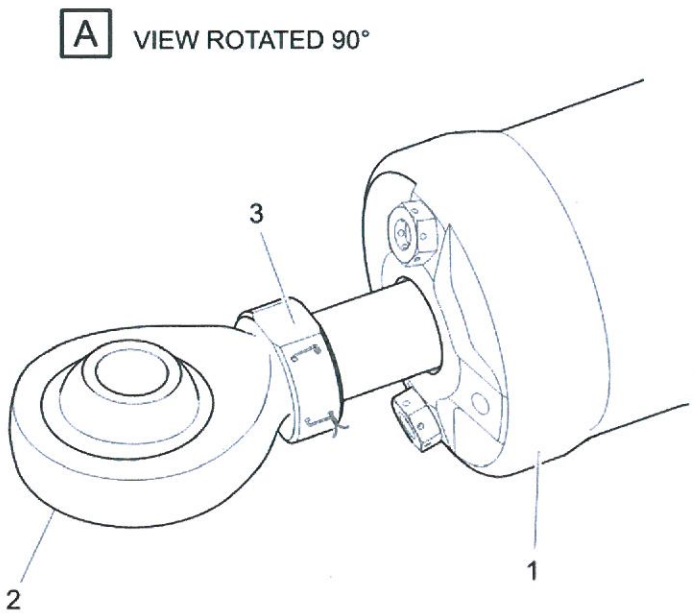


Figure 10

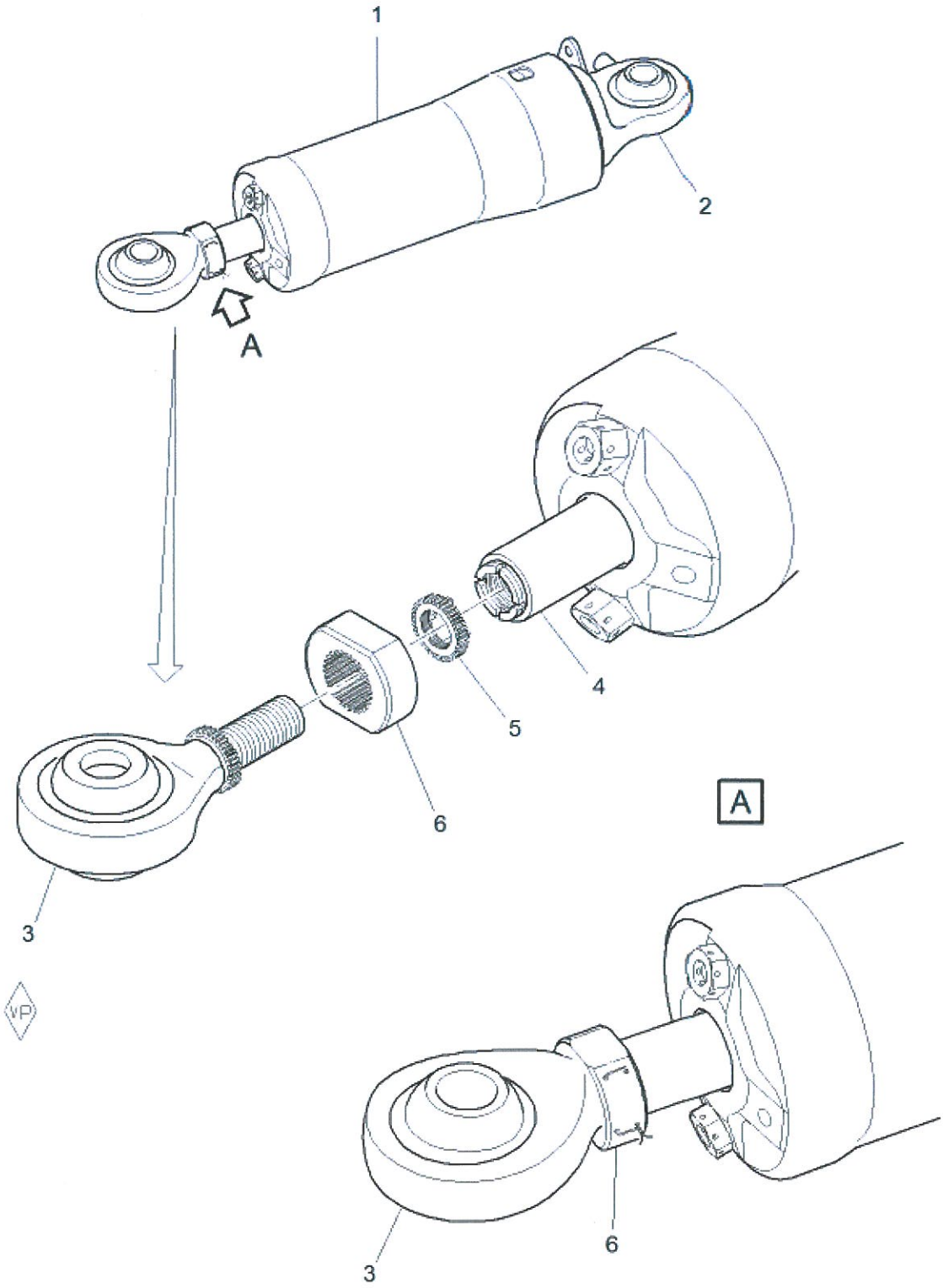
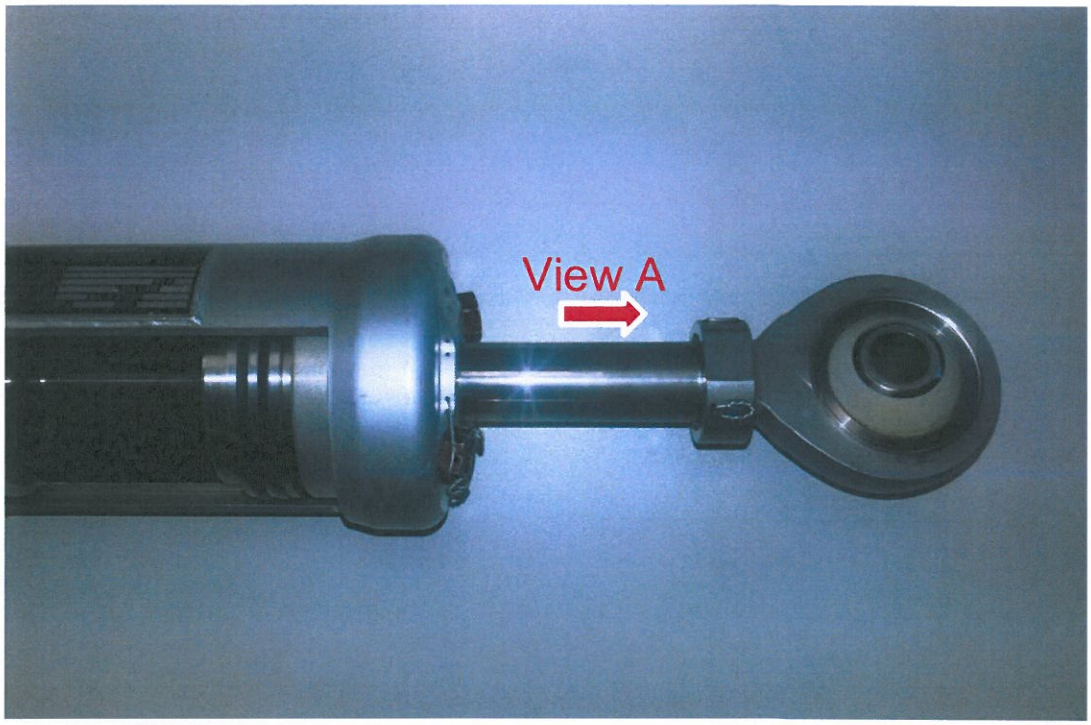
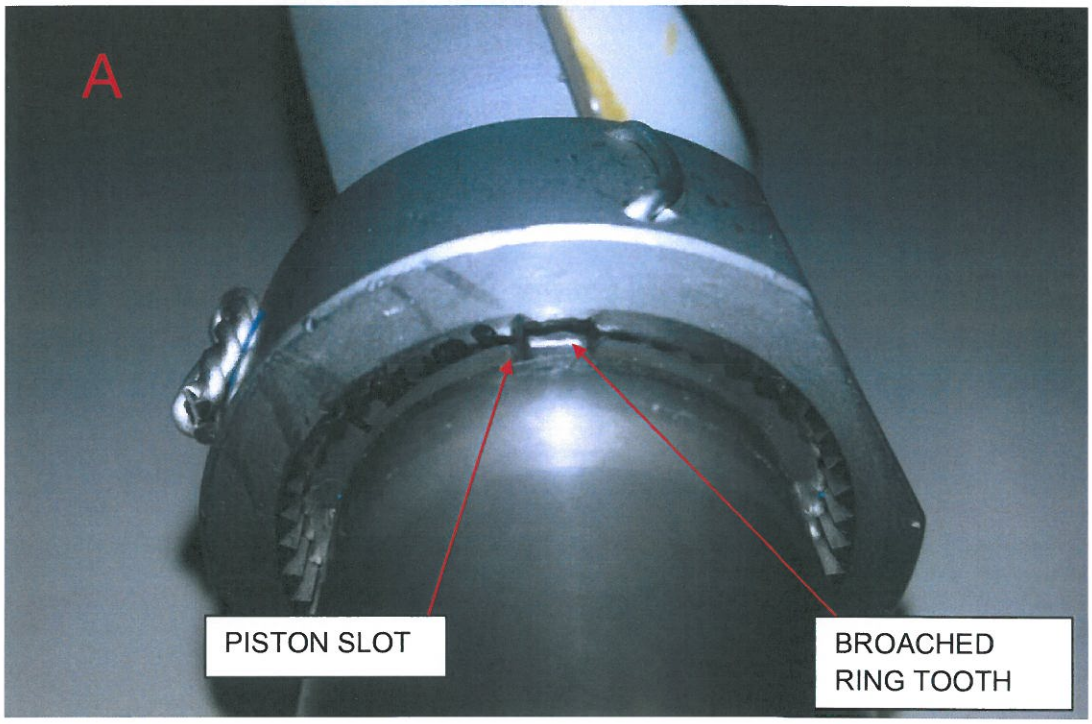


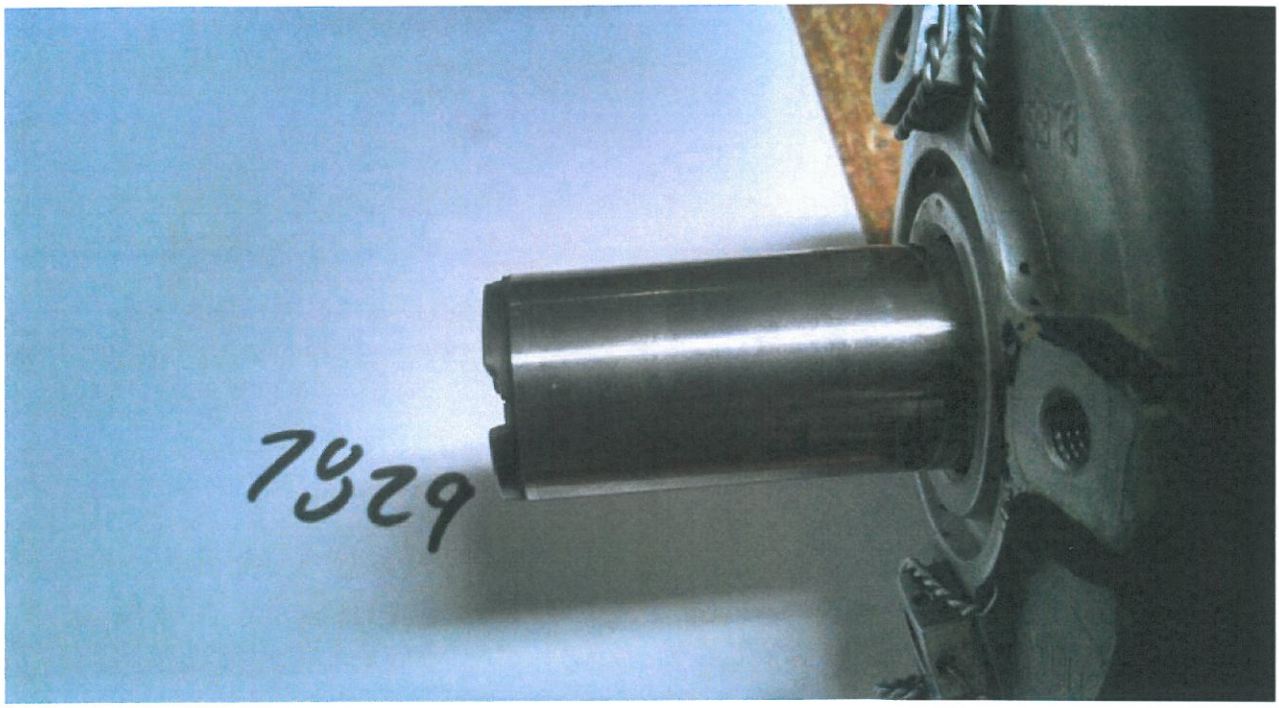
Figure 11





Area to be inspected for damage, correct engagement and alignment

Figure 12



Sample of damage on piston slot

Figure 13

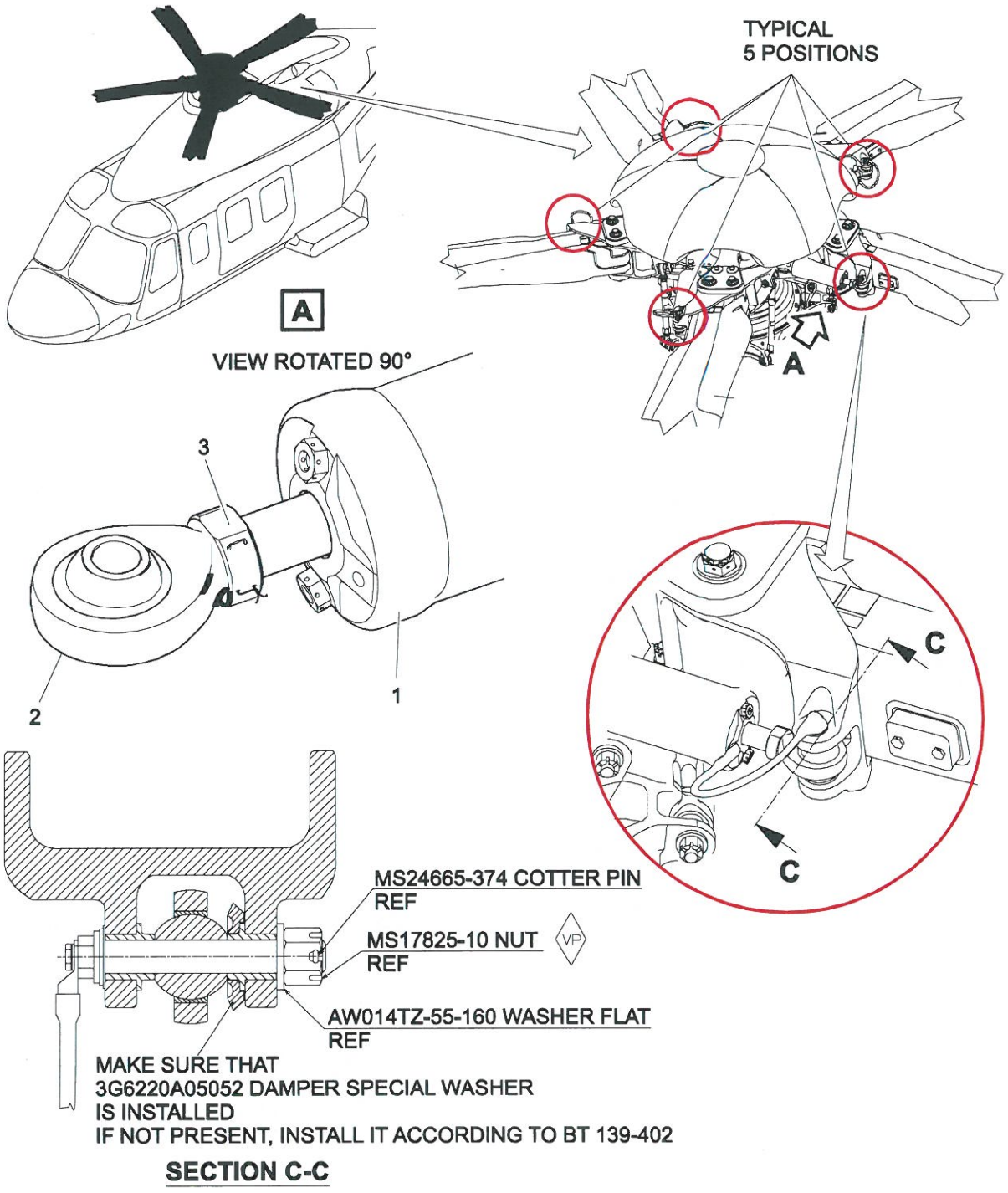
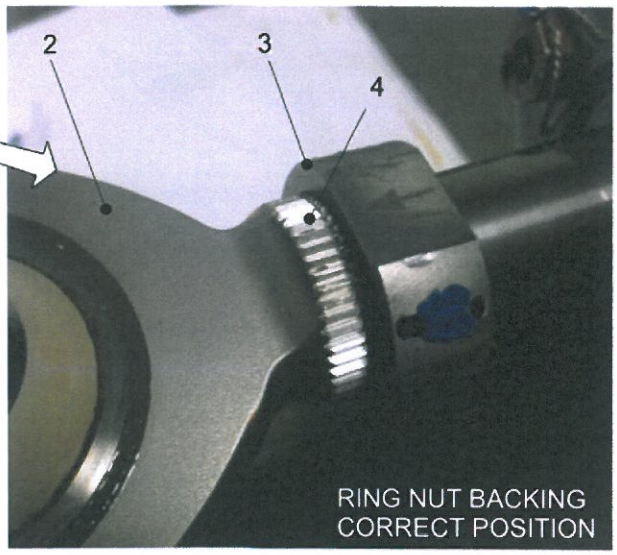

TYPICAL
5 POSITIONS
A
A
VIEW ROTATED 90°
3
2
1
C
C
MS24665-374 COTTER PIN
REF
MS17825-10 NUT
REF
VP
AW014TZ-55-160 WASHER FLAT
REF
MAKE SURE THAT
3G6220A05052 DAMPER SPECIAL WASHER
IS INSTALLED
IF NOT PRESENT, INSTALL IT ACCORDING TO BT 139-402
SECTION C-C

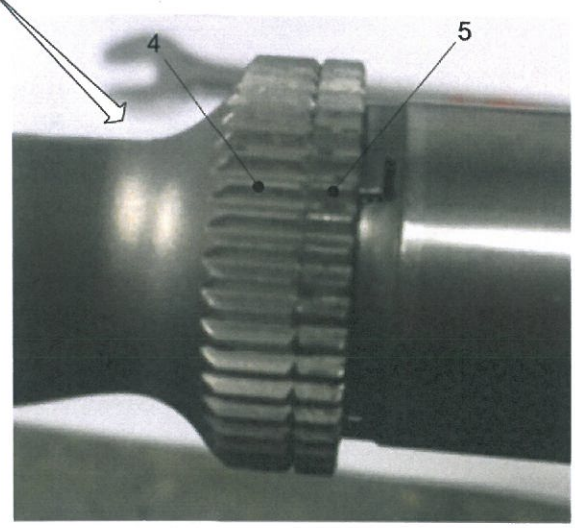
Figure 14

MOVE THE RING NUT (3) AWAY FROM
THE BROACHING OF THE ROD END (2)



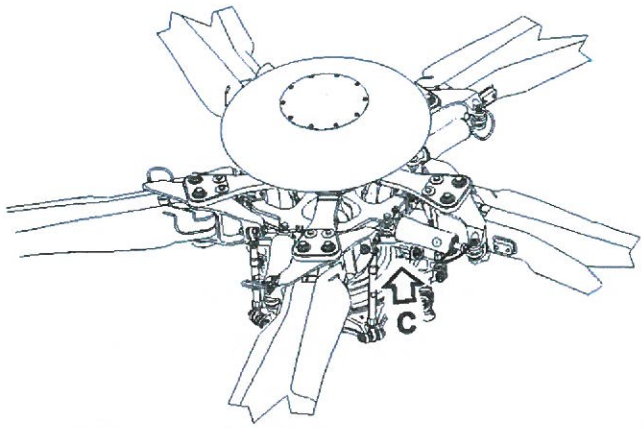
HOLD THE ROD END WITH A SPANNER,
TORQUE THE RING NUT TO 63 Nm (558 lb in)
AS SHOWN (RED ARROW) IN THE PICTURE
(TWO OPERATORS REQUIRED)

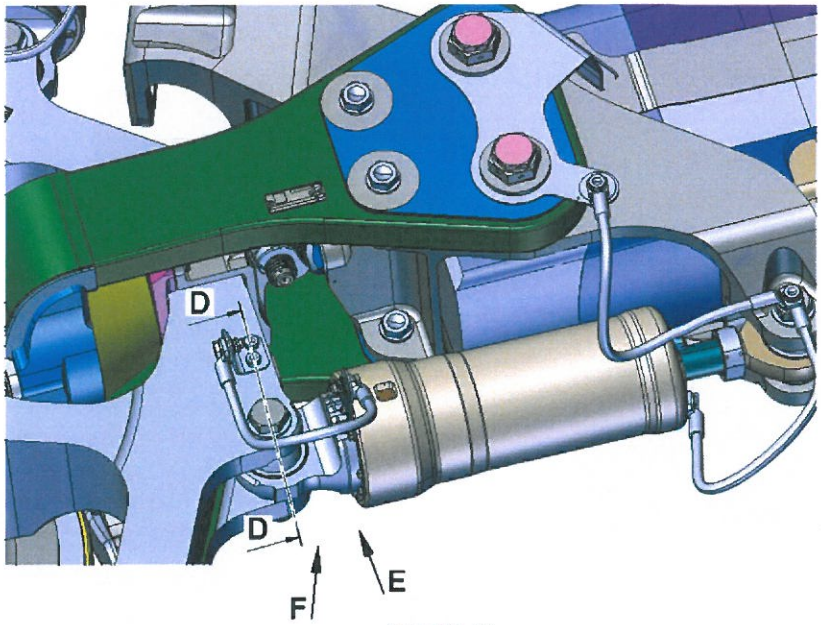
MAKE SURE THAT THE BROACHED TEETH (4)
OF THE ROD END (2) ARE PERFECTLY ALIGNED
TO THE LOCK RING (5),
IT IS NECESSARY TO MOVE THE RING NUT (3)
BACKWARDS TO THE DAMPER TO DO THIS



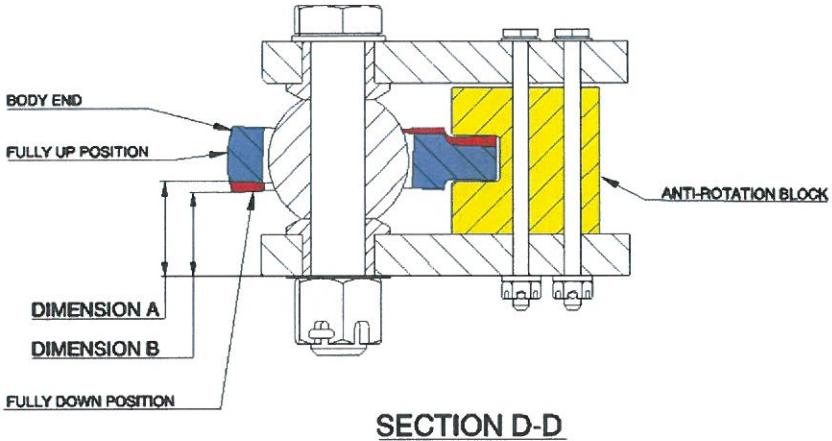
IF THE BROACHED TEETH (4) ARE
NOT CORRECTLY ALIGNED
TO THE LOCK RING (5),
INCREASE THE TORQUE VALUE UP TO
A MAXIMUM OF 80 Nm (708 lb in)

Figure 15





VIEW C
(TYPICAL 5 POSITIONS)



SECTION D-D

Figure 16

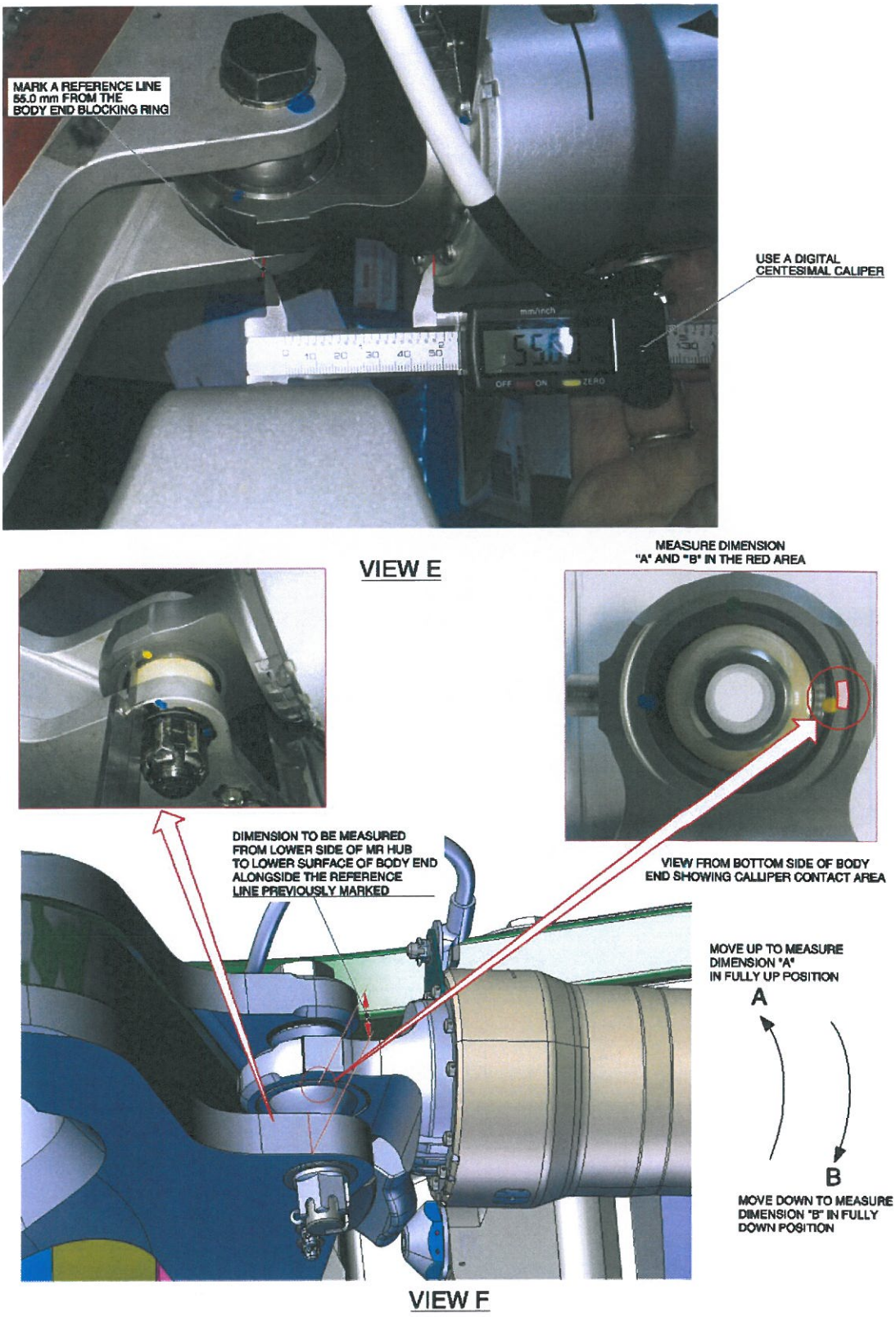

MARK A REFERENCE LINE
55.0 mm FROM THE
BODY END BLOCKING RING
USE A DIGITAL
CENTESIMAL CALIPER
VIEW E
MEASURE DIMENSION
"A" AND "B" IN THE RED AREA
DIMENSION TO BE MEASURED
FROM LOWER SIDE OF MR HUB
TO LOWER SURFACE OF BODY END
ALONGSIDE THE REFERENCE
LINE PREVIOUSLY MARKED
VIEW FROM BOTTOM SIDE OF BODY
END SHOWING CALLIPER CONTACT AREA
MOVE UP TO MEASURE
DIMENSION "A"
IN FULLY UP POSITION
A
B
MOVE DOWN TO MEASURE
DIMENSION "B" IN FULLY
DOWN POSITION
VIEW F

Figure 17

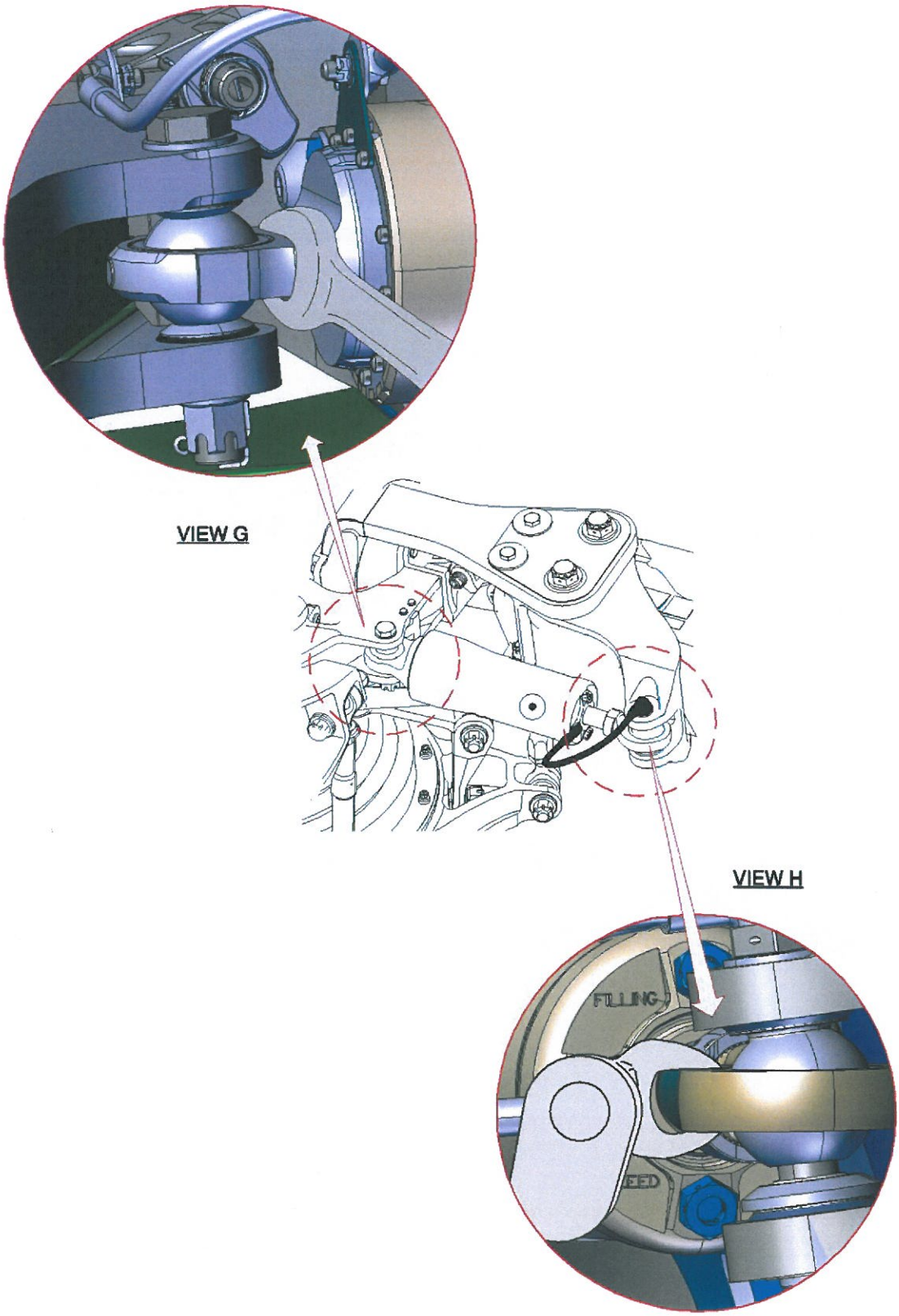
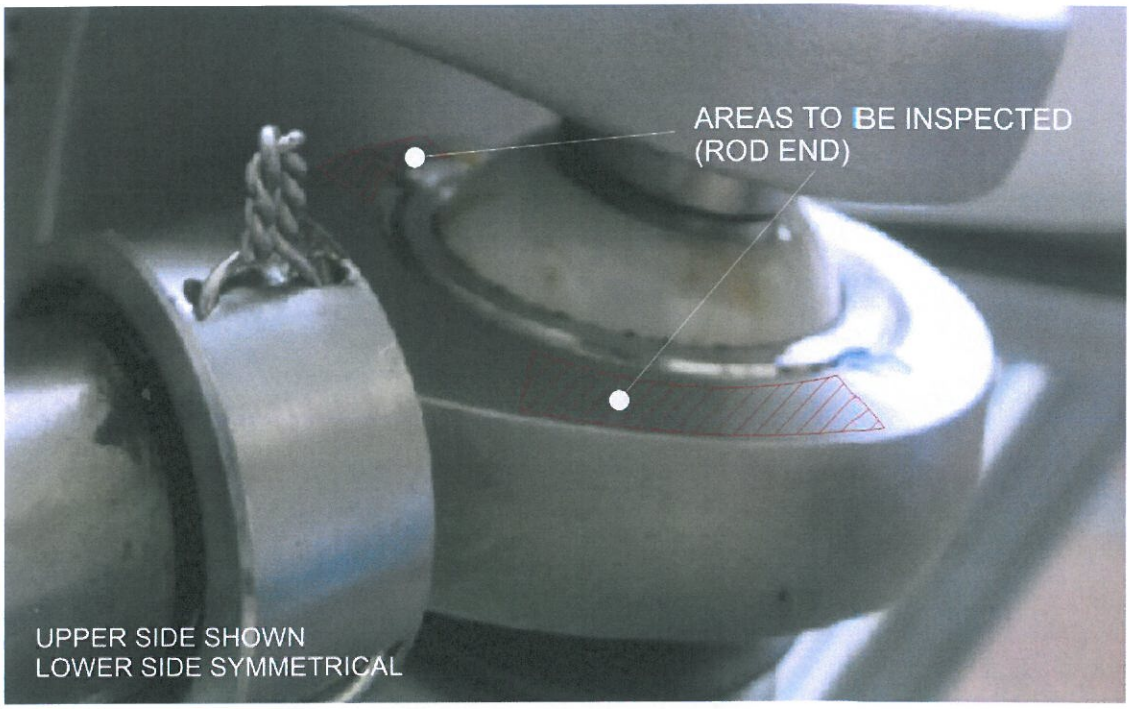


Figure 18


AREAS TO BE INSPECTED
(ROD END)
UPPER SIDE SHOWN
LOWER SIDE SYMMETRICAL

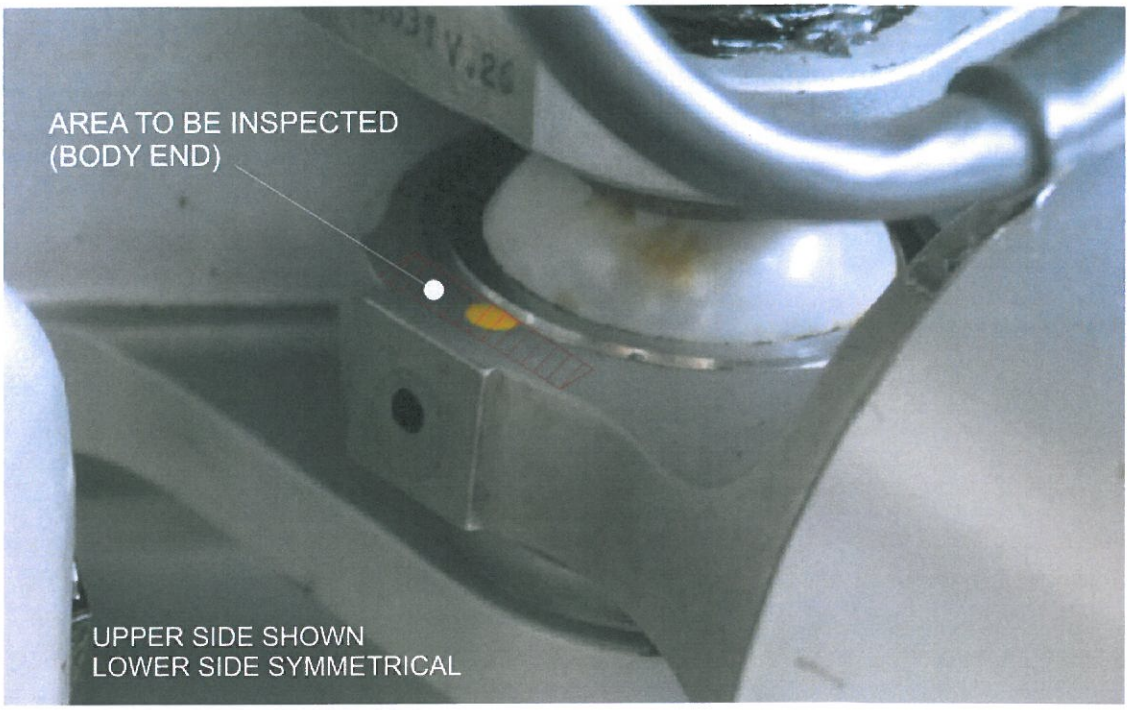

AREA TO BE INSPECTED
(BODY END)
UPPER SIDE SHOWN
LOWER SIDE SYMMETRICAL

Figure 19

ANNEX A

MAG IN SERVICE QUERY RECORD N° ISQR-16-002

MECAER | AVIATION | GROUP

IN SERVICE QUERY RECORD

Report Data			
ISQR n.	ISQR-16-002	ISQR Opening Date	2016-01-25

Affected Item Data		Item Usage Data		Equipment Type			
Item Name	Main Rotor Lag Damper	Item TSN (total FH)	N/A	Damper	☒	LGCP	☐
Item P/N (MAG)	M006-01H001-007/-009	Item total cycles/lndg	N/A	MLG S/A	☐	Brakes	☐
Item P/N (Cust.)	3G6220V01351/1352	Item TSO (FH)	N/A	NLG S/A	☐	HBS	☐
Item S/N	See below			R/A	☐	Steering	☐
				Uplock	☐	Wheels	☐
Installation Data		**A/C Data**		LGCV	☐	FCS/FCR	☐
NHA P/N	N/A	A/C Type	AW139	WBPEM	☐	HSA	☐
NHA Name	AW139 helicopter	A/C S/N	N/A	Ctrl lever	☐	Other (specify)	☐
NHA S/N	N/A	A/C TSN (total FH)	N/A	Skids	☐		

Applicant	
Customer	AgustaWestland
Department	Customer Support & Service
Name / Title	Alessandro Crespi

Query data			
Query ref. info	Email from A. Crespi to M. Cantarella and others 2016-01-25	Attachments	MR Damper AW139 e AW189 - BT Verifica c

Query details
See attached email.

CLASSIFICATION: Level 4

Response			
Response ref. info	Email to A. Crespi 2016-01-27 and 2016-02-01. Email to R. Vanni 2016-02-11	Attachments	

Response details

1. Introduction

The present document provides information requested by AW about the tasks to be performed on the Main Rotor Lag Dampers P/N M006-01H001-007/-009 to make sure that the installation torque applied to the Eye End Assembly is within the reduced range of 60-80 Nm.

2. Applicability

The present instructions apply to :

- All MR dampers P/N 3G6220V01351 (MAG P/N M006-01H001-007) and P/N 3G6220V01352 (MAG P/N M006-01H001-009) up to S/N MCR8764 included, except MR dampers listed in Table 1.
- All MR Dampers P/N 3G6220V01351 (MAG P/N M006-01H001-007) and P/N 3G6220V01352 (MAG P/N M006-01H001-009) that have removed the damper eye end, in accordance to applicable AW139 Aircraft Maintenance Procedure, before the issue of Finmeccanica Helicopter Division Bollettino Tecnico 139-446 (endorsing present instructions).

NOTE: The MRLD exact S/N may be composed of either four or five digits, possibly preceded by letters **MCR** and/or followed by letters **A** and/or **B**. For the purpose of the present instructions, only valid numerical characters are considered, neglecting "MCR", "A", "B" and initial zeros.
Possible examples follow:

- S/N 0272 will be referred to as S/N 272;
- S/N 00344AB will be referred to as S/N 344;
- S/N MCR1848A will be referred to as S/N 1848;
- S/N MCR07568 will be referred to as S/N 7568;
- S/N MCR10755 will be referred to as S/N 10755;

MAG confirms that no duplicates exist in the valid numerical digits of item serialization (that is, only one among S/N 715, S/N MCR0715, S/N MCR00715 or S/N MCR0715AB exists).

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3. References

M006-01H001	MAG Drawing, AW139 Main Rotor Lag Damper, rev. AB
M006-283	MAG Engineering Change Order, AW139 Main Rotor Lag Damper, 9/10/2015
62-21-06	MAG Component Maintenance Manual with IPL, AW139 Main Rotor Lag Damper P/N M006-01H001-007/009 (AGUSTA P/N 3G6220V01351/3G6220V01352) and AW 149/189 MAIN ROTOR HEAD DAMPER P/N M134-01H001-001 (AGUSTA P/N 4F6220V00251), Issue 4 Rev. 3

4. Place of embodiment

Mecaer, AgustaWestland, Helicopter Operator Maintenance

5. Compliance

At the first return to MAG of affected Dampers. According to AgustaWestland dispositions for Dampers installed on helicopters. Before installation for items held in stock as spare.

6. Required Manpower

One half (0,5) maintenance man-hour (MMH) with Damper removed from H/C, potential NDT excluded.

7. Materials Information

a. Required Material

P/N	Description	Qty	Note
MS20995C41	Safety Wire	AR	
M006-01H020-103	Broached Ring	AR	
PD-680	Cleaning solvent	AR	equivalent alternatives may be used
Commercial	Scotch Brite	AR	
Commercial	Solvent Class 2	AR	See step 10c. and related note
Commercial	Penetrant Type 1	AR	See step 10c. and related note
Commercial	Developer Form D	AR	See step 10c. and related note

b. Required Tools

P/N	Description	Qty	Note
Commercial	Torque Wrench	1	50-80 Nm range
Commercial	Wrench	1	33.3mm min. (1.31in.)
Commercial	Hammer	1	
Commercial	Aluminum or Teflon pin	1	
M006-01T029	Locking Tool	1	Alternative method: vise equipped with protective teflon or rubber false jaws
M00601H001001A23L	Wrench tool	1	

8. Compliance Instructions

1. With Damper on ground, proceed as follows. Refer to CMM IPL numeration, as per Figure 1;
2. Manually verify that the Eye End assy (1-60) does not rotate with respect to the Piston. Record the result of this verification;
3. Cut and remove the two "U shape" wire-locking from broached ring nut (1-40), see Figure 2;
4. Install damper on tool P/N M006-01T029 or lock Body End side on a vise equipped with protective teflon or rubber false jaws;
5. Using a hammer and an aluminum or Teflon pin, gently move broached ring nut (1-40) away from the eye end (towards the damper body side) as necessary to disengage the eye end assy (1-60) from the broached ring (1-50). Take care that the broached ring nut (1-40) is still engaged with the broached ring (1-50);

NOTE
Piston shall be adequately extended so to provide sufficient clearance to allow broached ring nut to be moved back.

6. If locked on a vise, remove damper from the vise and lock broached ring nut (1-40) on the vise. Otherwise, lock broached ring nut (1-40) with a wrench;
7. Set torque wrench to 50 Nm and, by using wrench tool P/N M00601H001001A23L, try to torque eye end (1-60). Verify that the Eye End assy (1-60) does not rotate with respect to the Piston. If Eye End assy (1-60) rotates with respect to the Piston, proceed to step 8. If no rotation is detected, proceed to step 17. Record the result of this verification;

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8. Unscrew eye end assy (1-60), remove broached ring (1-50) and broached ring nut (1-40);
9. Clean eye end assy (1-60), broached ring (1-50) and broached ring nut (1-40) and the internal threaded section of the damper piston with cleaning solvent PD-680 or equivalent and dry thoroughly with dry, filtered compressed air;
10. With reference to Figure 3:
    a. Inspect broached ring (1-50) for evidence of wear and damages, with particular attention to the four pins engaging the piston grooves. Refer to Figure 4 for an example of acceptable broached ring. In presence of wear or damages replace it with a new one.
    b. Visually inspect damper piston, in the locking grooves area, for wear, damages and cracks. Refer to Figure 4 for an example of acceptable piston. In presence of damages replace the damper.
    c. In case of rotation detected during verifications performed at steps 2 or 7, perform a fluorescent penetrant NDT inspection of piston extremity area, in accordance with ASTM E1417 using a solvent Class 2, a penetrant Type 1, Method C, Level 2 or 3 with a developer in Form D - no cracks are allowed.

NOTE

All the products listed in the SAE AMS2644 QPL (Qualified Products List) and qualified as Type 1, Level 2, Methods A B or D, may also be used for this inspection only if applied in accordance with the procedures used for method C (penetrant excess removal with solvent).

CAUTION

ON COMPLETION OF PENETRANT INSPECTION CAREFULLY CLEAN THE PART IN ORDER TO REMOVE ANY RESIDUE OF FLUORESCENT PRODUCT.

11. Install broached ring nut (1-40) on the damper piston rod; orienting the arrow, if marked, to the eye end. If arrow is not marked, broached ring nut (1-40) may be installed both ways;
12. Install broached ring (1-50) on the piston;
13. Install by hand the eye end assy (1-60) on the piston. It must be possible to smoothly screw the eye end. If it is possible to screw the eye end assy (1-60) until abutment and last thread fillet engagement by hand, proceed to step 15. Otherwise, proceed to step 14;
14. Unscrew the eye end assy (1-60) and brush the threaded part with Scotch Brite and return to step 13;
15. Make sure broached ring is axially aligned with the piston. Engage broached ring nut (1-40) on the broached ring (1-50). Take care not to engage the eye end assy (1-60);
16. Install damper on tool M006-01T029 or lock broached ring nut on a vise or with a wrench;
17. By using wrench tool P/N M00601H001001A23L, torque eye end (1-60) to 60 Nm (531 lb.in).If broached ring (1-50) and eye end (1-60) broachings are not correctly aligned, increase the load up to achieve the correct alignment, without exceeding 80 Nm (708 lb.in). In case broaching cannot be aligned within this range proceed to step 18. Otherwise, proceed to step 21;

CAUTION

NEVER TRY TO ALIGN COMPONENT BROACHINGS BY UNSCREWING EYE END, IT CAN CAUSE AN UNCONTROLLED TORQUE LOSS.

18. Loosen and remove Eye End (1-60);
19. Disengage broached ring nut (1-40) from broached ring (1-50);
20. Remove broached ring (1-50) and rotate it by 90°. If broached ring (1-50) has been already mated to piston in all four possible positions, replace broached ring (1-50) with a new one. Proceed to step 13;
21. Move the broached ring nut (1-40) towards the eye end assy and verify its correct positioning;
22. Using wire MS20995C41, safety wire the broached ring nut (1-40) and the eye end assy (1-60) in two positions (refer to Figure 2);

NOTE

Limited axial movement of broached ring nut (1-40) after lockwiring is acceptable.

23. Record AW Service Bulletin embodiment by marking the number of Finmeccanica Helicopter Division Bollettino Tecnico endorsing present instructions (BT 139-446, Part III) on item Log Card.

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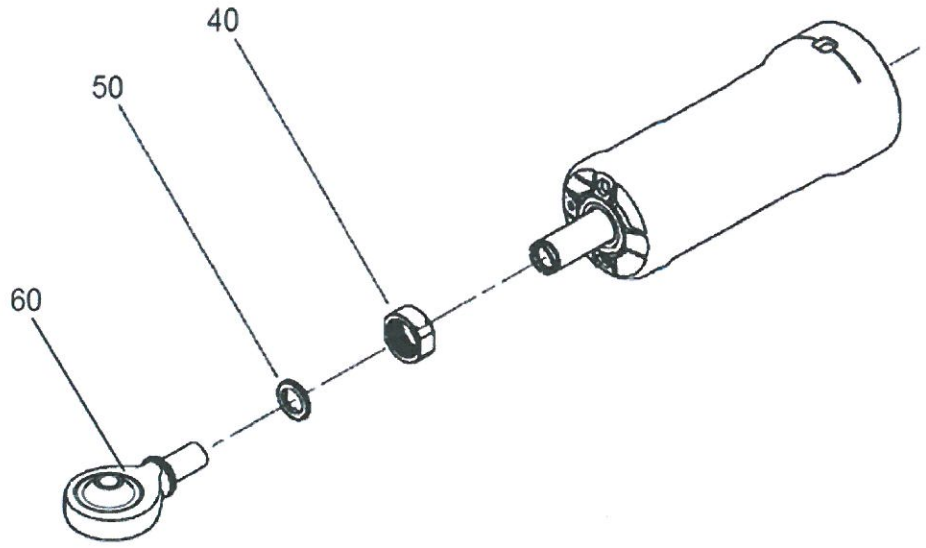

Figure 1 - IPL Items identification

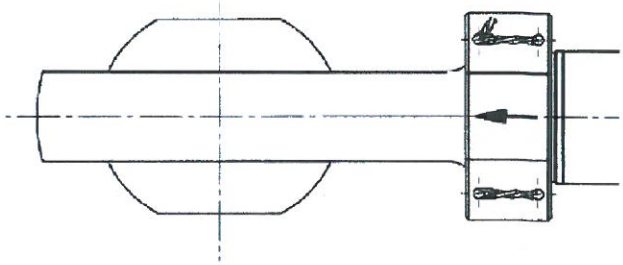

Figure 2 - Eye End lockwiring - 2 positions, "U" shape - Internal path

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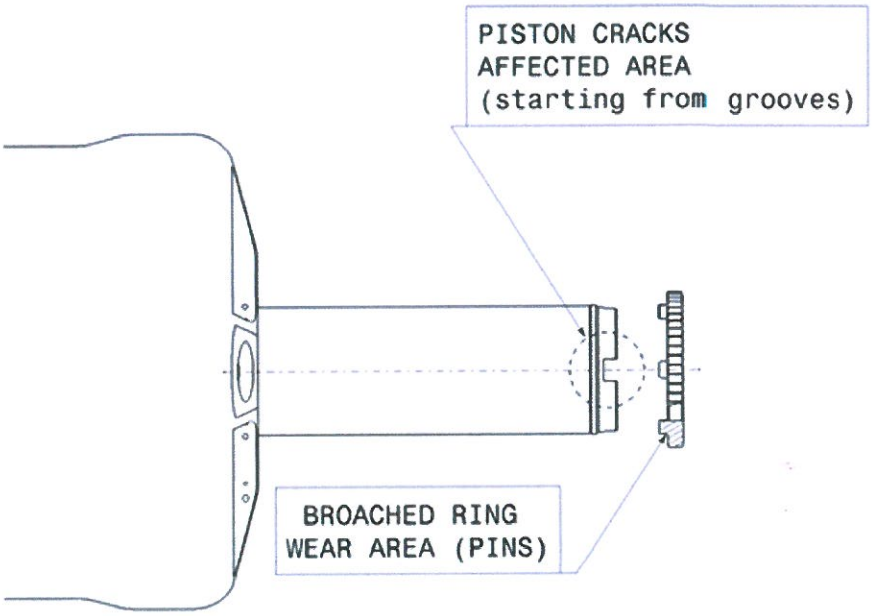

Figure 3 - Inspection details

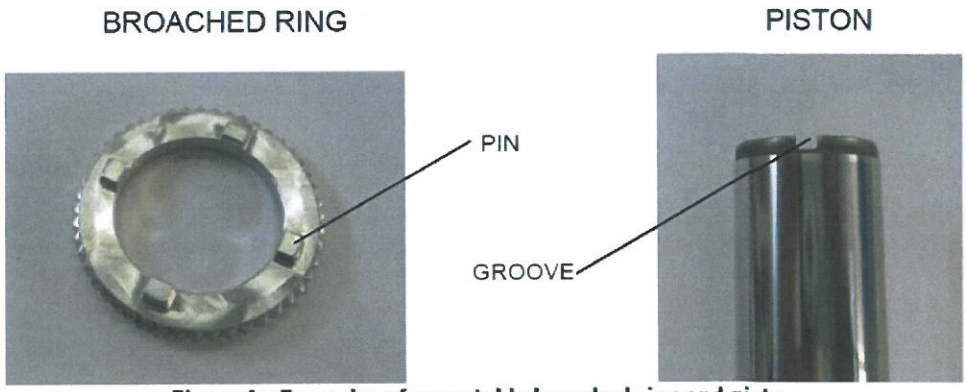

Figure 4 - Examples of acceptable broached ring and piston

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S/N	S/N	S/N	S/N	S/N	S/N	S/N
64	830	1495	2228	5020	5911	6921
91	848	1497	2231	5055	5918	6935
117	851	1505	2236	5063	5947	6937
147	884	1507	2251	5100	5950	6944
148	901	1517	2255	5114	5961	6957
152	903	1530	2259	5126	5978	6958
161	917	1532	2267	5131	5990	6959
165	918	1540	2275	5153	5992	6969
167	920	1560	2277	5168	6022	6992
180	937	1562	2295	5187	6037	6994
183	957	1563	2296	5194	6081	7052
192	977	1565	2300	5196	6098	7062
193	992	1567	2315	5233	6113	7076
200	998	1579	2318	5245	6121	7089
201	1007	1580	2333	5250	6136	7113
202	1008	1586	2346	5273	6138	7123
223	1030	1590	2420	5283	6168	7130
224	1035	1600	2425	5285	6175	7131
233	1049	1604	2431	5304	6184	7132
264	1051	1656	2438	5307	6225	7133
266	1054	1667	2450	5308	6229	7160
267	1059	1673	2451	5310	6243	7180
276	1080	1691	2458	5312	6257	7199
306	1094	1714	2495	5340	6260	7202
320	1099	1739	2506	5349	6264	7243
330	1102	1742	2515	5365	6295	7273
336	1107	1745	2519	5367	6312	7412
349	1109	1747	2524	5369	6314	7462
361	1118	1767	2530	5385	6334	7478
366	1121	1781	2532	5414	6345	7490
396	1124	1786	2536	5422	6371	7491
414	1128	1796	2543	5466	6373	7492
420	1158	1797	2545	5495	6409	7493
424	1160	1799	2557	5498	6419	7534
431	1179	1813	2563	5508	6469	7578
447	1203	1824	2582	5519	6509	7598
453	1204	1848	2583	5521	6521	7621
473	1214	1856	2584	5528	6551	7635
476	1218	1857	2585	5536	6574	7645
484	1227	1860	2595	5545	6577	7646
490	1237	1870	2599	5556	6579	7648
492	1248	1871	2616	5571	6597	7654
498	1251	1884	2623	5589	6616	7674
515	1273	1888	2626	5594	6628	7678
550	1276	1897	2628	5600	6629	7690
572	1277	1911	2629	5605	6645	7721
582	1279	1926	2632	5630	6646	7748
586	1283	1941	2640	5631	6658	7780
587	1305	1957	2656	5641	6659	7855
593	1317	1959	2662	5643	6660	7859
602	1325	1974	2676	5645	6662	7860
603	1328	1987	2677	5648	6673	7862
604	1330	1995	2680	5651	6675	7998
644	1364	2005	2695	5684	6738	8029
671	1371	2031	2697	5691	6739	8063
687	1379	2044	2700	5708	6740	8088
692	1384	2046	2702	5723	6742	8095
694	1394	2059	2704	5724	6769	8112
700	1396	2067	2710	5746	6780	8162
702	1398	2078	2711	5747	6781	8190
707	1421	2110	2719	5794	6786	8223
719	1427	2120	2751	5795	6826	8364
736	1429	2142	2756	5796	6838	8365
747	1447	2156	2771	5815	6882	8402

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770	1448	2165	2777	5819	6888	8630
780	1458	2172	2786	5820	6889	
783	1477	2197	2809	5824	6893	
796	1484	2200	2845	5836	6896	
797	1487	2206	2856	5868	6897	
824	1494	2219	4836	5869	6906	

Table 1 - List of S/N excluded from these instructions (confirmed having 60-80Nm applied)

Follow up required ☐ (see dedicated section below)

Signature		
Na M.		

Follow up			
Ref. Document		Responsible	
Name	Signature		Follow up Closing Date

ANNEX B

MR DAMPER EDDY CURRENT INSPECTION

REQUIRED EQUIPMENT

For this inspection the following equipment is required:

- ✓ Eddy Current instrument model MIZ-21 SR manufactured by Zetec Inc. (US) (see NOTE below),
- ✓ 90° pencil, absolute shielded probe with frequency range 200kHz-2MHz (manufactured by VM Products Inc. USA with adaptor VM99Z21-M/H for Zetec instrument) and relevant cable (see NOTE below),
- ✓ a flat calibration block be made in 15-5PH Steel with a reference notch of 0.5 mm depth manufactured by electro discharge machining (see figure B3),
- ✓ adhesive PTFE tape to protect the tip of the probe from wear damage,
- ✓ Solvent or aliphatic naphtha (C059).

NOTE

Other instruments and probes can be used provided that the following mandatory conditions are observed:

- ✓ the probe is absolute and shielded type with central frequency range of 2.0MHz;
- ✓ the system "instrument plus probe" shall obtain equivalent results from the calibration;
- ✓ the setup is at least carried out by a Level 2 in accordance with EN4179/NAS410 and the relevant Work Instruction is approved by the Level 3 in accordance with EN4179/NAS410.

COMPLIANCE INSTRUCTIONS

WARNING

THE INSPECTIONS PERFORMED IN ACCORDANCE WITH THIS PROCEDURE SHALL BE CARRIED OUT BY PERSONNEL QUALIFIED AT LEAST LEVEL 2 IN THE EDDY CURRENT METHOD IN ACCORDANCE WITH THE REQUIREMENTS OF EN4179/NAS410.

NOTE

As required by PART I, PART II and PART III of this Service Bulletin, the inspection areas are localised on the body end and rod end close to the spherical bearing. Refer to figures B1 and B2 to identify the areas on body end and rod end, respectively.

CAUTION

Make sure that the solvent does not come in contact with the spherical bearing liner.

1. Make sure that the whole surfaces of the areas of inspection are free from any grease, scale, conductive sealants or other excessive contaminants that can interfere with the inspections. If necessary, clean the surface on both sides with a clean cloth (C011) soaked with solvent. Let the solvent air dry.

CAUTION

During the inspection, it is important to:

- always maintain the probe as perpendicular as possible to the surface;
- move it slowly and uniformly;
- take care to the signal from the edge effect.

2. Connect the probe on the instrument by relevant cable.
3. Switch on the instrument and set up the parameters listed in figure B4.
4. Perform instrument calibration as follows:

NOTE

The calibration shall be carried out before the inspection and rechecked after the end of the inspection; it shall be performed on the requested reference block in accordance with steps 4.1 thru 4.3.

4.1 Put the sensor of the probe on the reference standard away from the notch.

4.2 Press the compensation key and adjust the phase of the instrument in a way that the lift-off signal results in horizontal deflection from the centre to the left, so that it is clearly distinguished from the defect indication (see trace A on Figure B4),

4.3 Perform the scanning inspection on the reference block to verify that, in correspondence of the reference notch 0.5 mm deep, a vertical deflection signal and at least of four main divisions of the screen or at least 80% of full screen is obtained (see trace B on Figure B4).

5. Perform the inspection as follows:

NOTE

Figures B1 and B2 are related to body end and rod end, respectively. Performing the inspection described in steps 5.1 thru 5.4, refer to the applicable figure for the component to be inspected.

5.1 Put the probe on the area identified "balancing/compensation" in figure B1 / B2 and perform the balancing/compensation. Adjust the phase in a way that the lift-off signal results in horizontal deflection.

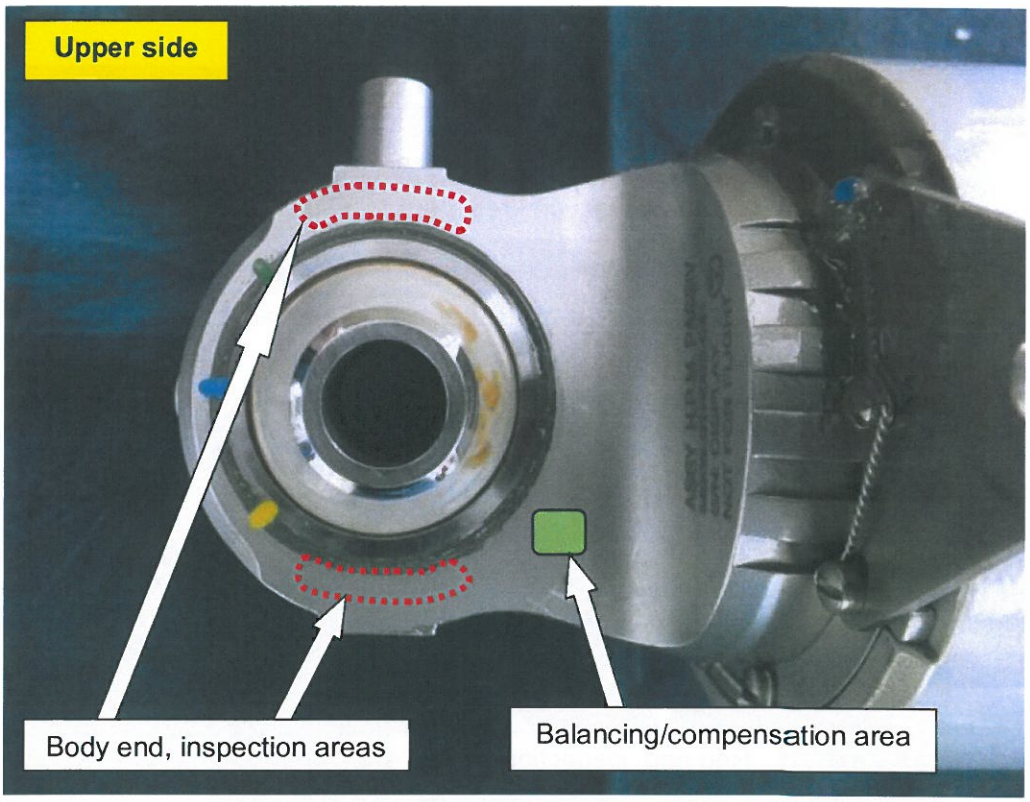
5.2 Perform the detailed examination on the inspection areas identified in figure B1 / B2 using circular path directions and, if possible, using the chamfering edge to drive the sensor.

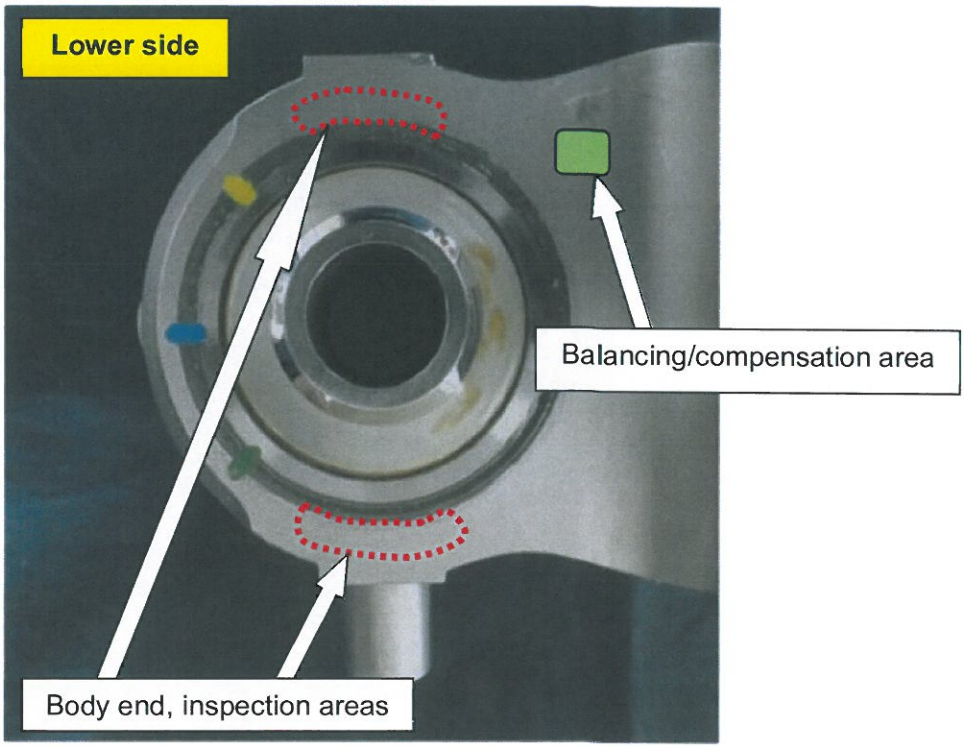
NOTE

Each indication of crack is typically associated with a rapid variation of the signal on the screen in the direction close to that due to the reference notch.

5.3 Process and consider relevant any vertical deflection, unless it can be attributed to lift-off or edge effect. If any vertical deflection is found, verify the instrument calibration and repeat the inspection to confirm the crack.

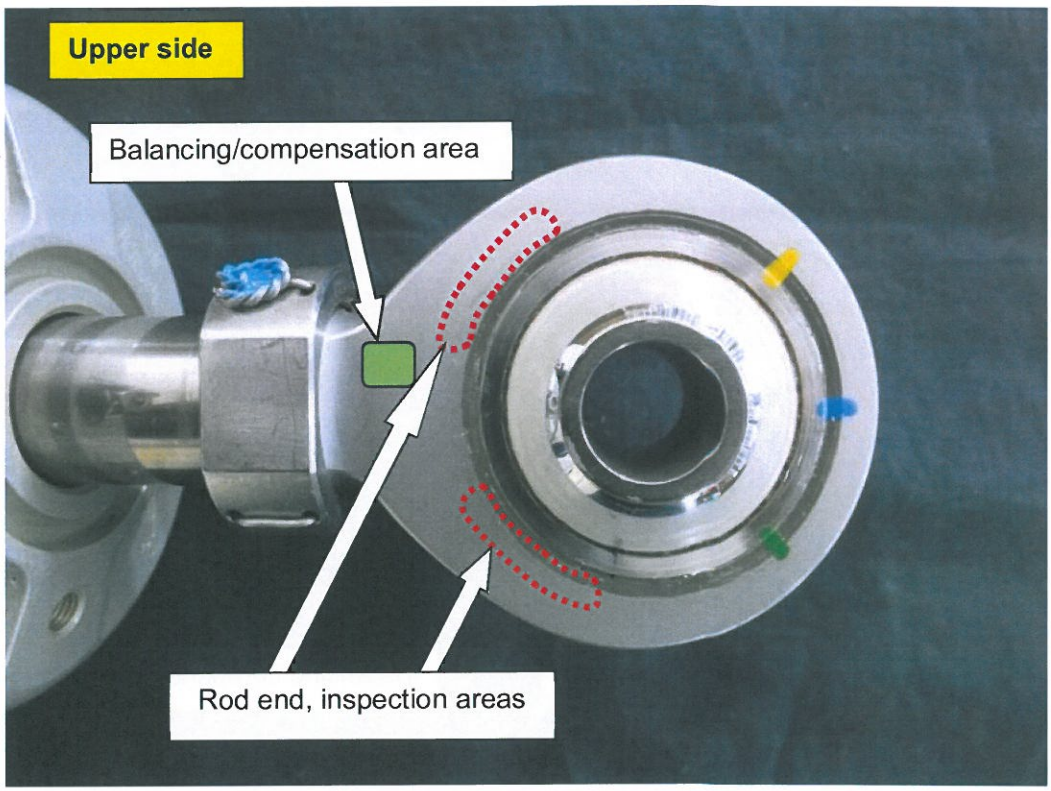
5.4 Recheck the instrument calibration as described in step 4.

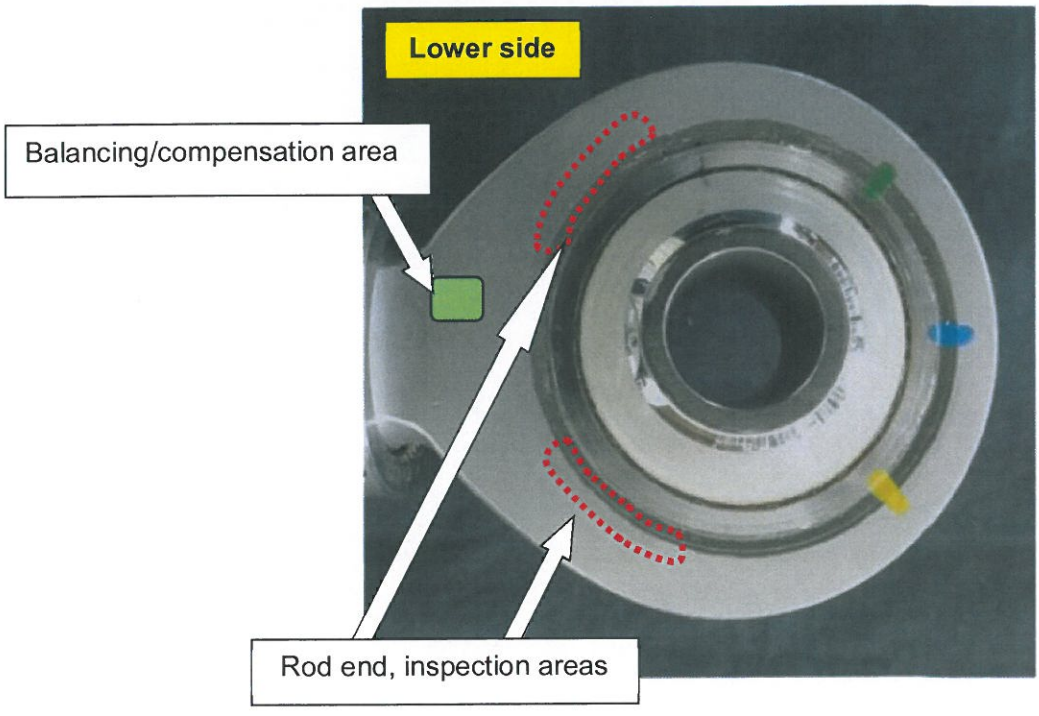




Areas of inspection and balancing for Body end

Figure B1

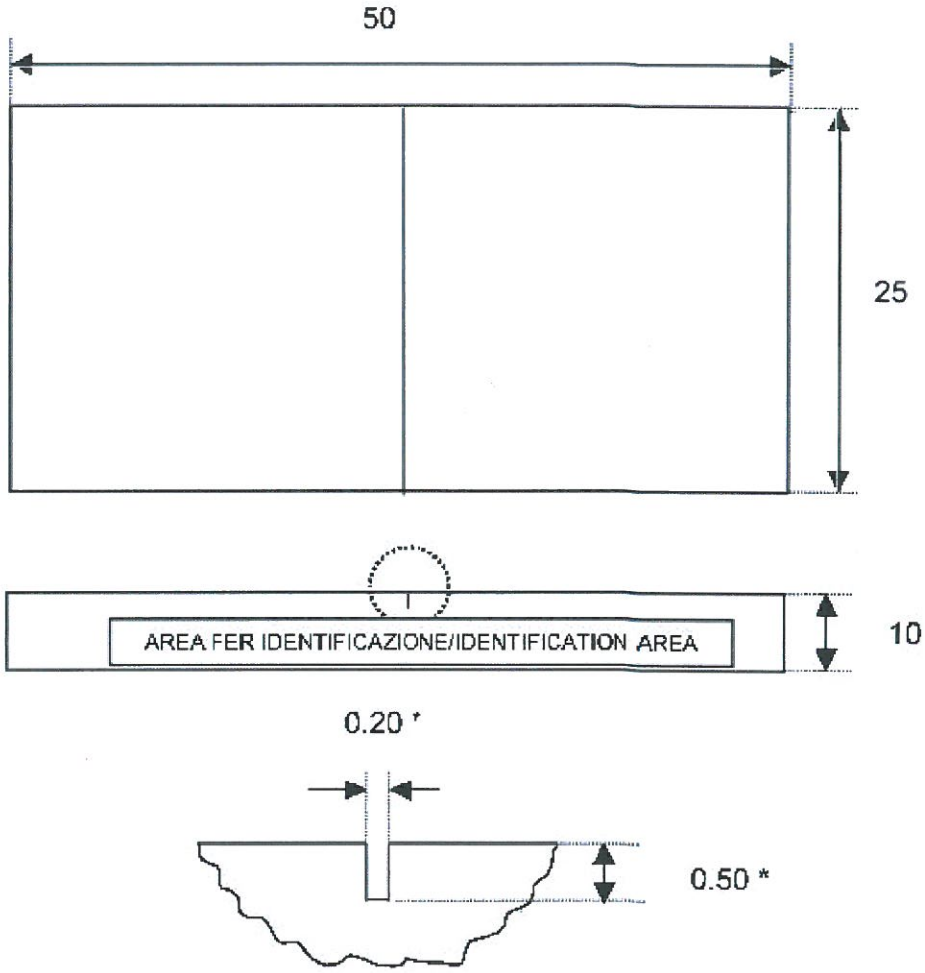




Areas of inspection and balancing for Rod end

Figure B2

REFERENCE STANDARD BLOCKS FOR EDDY CURRENT



NOTE

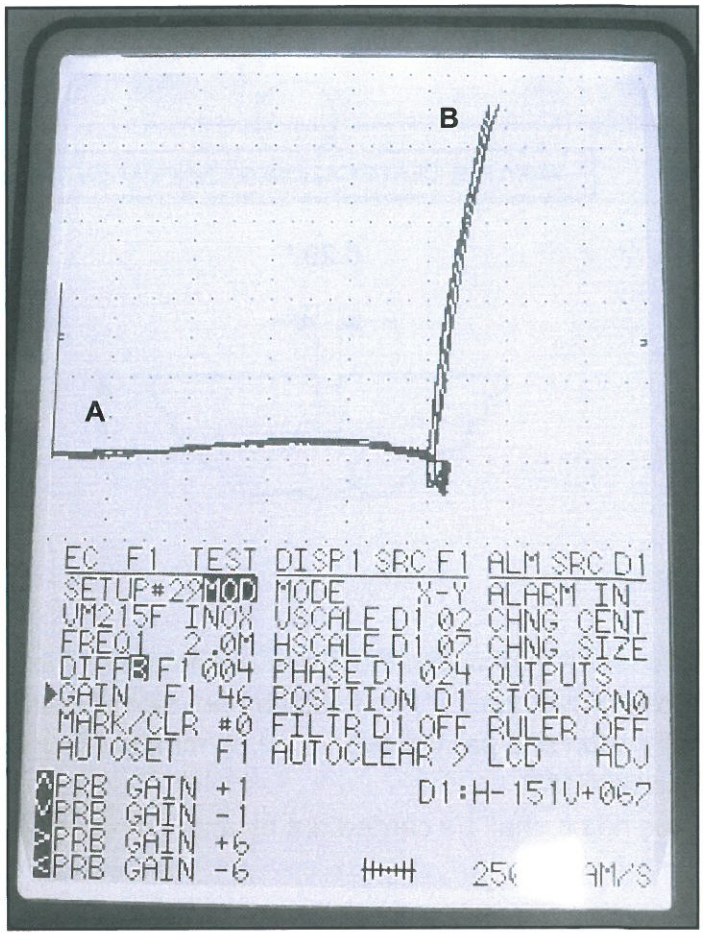
- The dimensions are in mm with ± 0,7 mm of tolerances for all the dimensions a part from those of the notch (*) that shall be not higher than ± 0.02 mm; the surface shall be flat and parallel within ± 0.05 mm; the roughness shall be equal or better than 63 RMS.
- The reference notch shall be carried out by machining or EDM

Figure B3

SETUP PARAMETERS FOR THE ZETEC "MIZ-21 SR" INSTRUMENT

90° absolute and shielded probe

EC F1	TEST	DISP1	SRC F1	ALM SRC	D1
SETUP#	#29	**MODE**	X-Y	**ALARM**	IN
CONFIG NAME	neglect	**V SCALE D1**	02	**CHNG**	CENT
FREQ1	2.0M	**H SCALE D1**	07	**CHNG**	SIZE
DIFFR F1	004	**PHASE D1**	024 (horizontal, as necessary)	**OUTPUT**	S
GAIN F1	46	**POSITION D1**	neglect	**STOR**	SCN0
MARK/CLR	# 0	**LPS**	000 250	**RULER**	OFF
AUTOSET	F1	**SCREEN A**	ON	**LCD**	ADJ



Typical signal from the calibration (A = lift-off signal, B = indication from reference notch 0.5 mm deep).

Figure B4

LEONARDO
HELICOPTERS

AgustaWestland Products

Please send to the following address:	SERVICE BULLETIN COMPLIANCE FORM	Date: 15/11/2022
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	Number: 139-450	
	Revision: 0 MAY 28, 2019	

Customer Name and Address:	Telephone:
GALAXY AEROSPACE (M) SDN.BHD. SUITE 11-14, MRO CENTRE MALAYSIA INTERNATIONAL AEROSPACE CENTRE SULTAN ABDUL AZIZ SHAH AIRPORT 47200 SUBANG, SELANGOR DARUL EHSAN MALAYSIA.	Fax: B.T. Compliance Date: 15/11/2022

Helicopter Model	S/N	Total Number	Total Hours	T.S.O.
AW 139	31763	838	300:40	N/A

Remarks:

BT 139-450 COMPLIED SATISFACTORY I.A.W BT 139-450 REVISION: 0 MAY 28, 2019 COMPLIANCE INSTRUCTIONS.

15/11/22
M
SHRE

L12 LM

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.