

Temporary Maintenance Instruction TMI 139-552

Root end bushings (main rotor blade) - Replacement (remove and install a new item)

All AW139 Helicopters

The technical content of this document is approved under the authority of DOA nr. EASA.21J.005.

The present TMI will be evaluated for its introduction in the standard set of Technical Publication.

If no further notice is received, the present document expires on: February 22nd, 2023.

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Introduction

This TMI provides the instructions to perform the replacement of the root end bushings on the main rotor blades P/N 3G6210A00131, P/N 3G6210A00134 and P/N 4G6210A00132.

All the information reported in the subsequent pages will be introduced within next issue of pertinent technical publication.

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References

Table 1 References

Data module/Technical publication	Title
39-A-62-11-01-00A-361A-C	Main rotor blade - Profiles and twist angles - Dimensions check
39-A-62-11-01-00A-37DA-C	Main rotor blade - Static balance
39-A-62-11-01-13A-921A-C	Anti-fretting plates (main rotor blade) - Replacement (remove and install a new item)

Preliminary requirements

Required Conditions

Table 2 Required conditions

Action/Condition	Data module/Technical publication
None	

Support Equipment

Table 3 Support Equipment

Name	Identification No.	Quantity
Pin, blade bushing installation	3G6210A00131A554C	1
Support, root blade	3G6210A00131A554D	1
Stand, main rotor blade	3G6210A00131A554E	1

Supplies

Table 4 Supplies

Name	Identification No.	Quantity
Solvent	C005	AR
Cheesecloth	C028	AR
Primer	C042	AR
Aliphatic naphtha	C059	AR
Acetone	C087	AR
Primer	C553	AR

Spares

Table 5 Spares

Name	Identification No.	Quantity
Root end bushing (with final internal diameter)	3G6210A01251	2
	3G6210A01252	
	3G6210Z00351	
	3G6210Z00352	
	3G6210Z00451	
	3G6210Z00452	
Root end bushing	3G6210A01251A2	AR
	3G6210A01252A2	
	3G6210Z00351A2	
	3G6210Z00352A2	
	3G6210Z00451A2	
	3G6210Z00452A2	

Safety conditions

WARNING

The materials that follow are dangerous. Before you do this procedure, make sure that you know all the safety precautions and first aid instructions for these materials:

- Solvent (C005)
- Primer (C042)
- Aliphatic naphtha (C059)
- Acetone (C087)
- Primer (C553) .

Procedure

- 1 Put the main rotor blade (1, [Fig 1](#)) on the Stand, main rotor blade (3G6210A00131A554E) and the Support, root blade (3G6210A00131A554D) , or on an applicable work table.
 - 2 Remove the two root end bushings (2) by a manual removal of the roving material.
 - 3 Fully clean the bushing seats with a clean Cheesecloth (C028) moist with Acetone (C087) or Solvent (C005) or Aliphatic naphtha (C059) .
 - 4 Inspect the bushing seats, do as follows:
 - 4.1 Examine the bushing seats for nicks and scratches.
 - 4.2 Measure the diameter of the bushing seat with a two probes gauge at 0°, +45°, -45°, +90° with respect to the spanwise axis.
 - 4.3 If at least one of these conditions occurs:
 - the maximum and/or minimum measured diameters are not within one of the given intervals (refer to Table 6 - Bushing seat diameters and bushing external diameters);
 - damage to the bushing seat is found.continue with [Step 5](#).
- Note**
Procedure in [Step 5](#) is also applicable if you will install bushings where the internal diameter must be reworked (part numbers with suffix “A2”), even if there are no damages to the bushing seat and maximum and minimum measured diameters are in the permitted limits.
- 4.4 If bushings with final internal diameter (part numbers without suffix “A2”) are available and all these conditions occur:
 - the maximum and minimum measured diameters are within one of the given intervals (refer to Table 6 - Bushing seat diameters and bushing external diameters);
 - no damage to the bushing seat is found.continue with [Step 6](#).
- 5 Installation of the root end bushings (with seat and/or bushing reworking).
 - Note 1**
The machining of the seats and/or the bushings requires an applicable tool necessary for the dimensional check.
 - Note 2**
If bushings with final internal diameter (part numbers without suffix “A2”) will be installed, it is very important to obey all the requirements given in [Fig 1](#) during the reworking of the seats.
- 5.1 Remove the anti-fretting plates (3) from the main rotor blade. Refer to the applicable steps of DM 39-A-62-11-01-13A-921A-C.
- 5.2 Mill the bushing seat to the necessary diameter as given in Table 6 - Bushing seat diameters and bushing external diameters.

- 5.3 Do the selection of the new Root end bushing (with final internal diameter) (3G6210A01251) or Root end bushing (3G6210A01251A2) as a function of the bushing seat diameter shown in Table 6 - Bushing seat diameters and bushing external diameters.

Table 6 Bushing seat diameters and bushing external diameters

Bushing Part Number	Bushing Seat Diameter		External Bushing Diameter	
	mm	in	mm	in
3G6210A01251 3G6210A01251A2 3G6210A01252 3G6210A01252A2	43.000 to 43.025	1.6929 to 1.6939	43.026 to 43.042	1.6939 to 1.6946
3G6210Z00351 3G6210Z00351A2 3G6210Z00352 3G6210Z00352A2	43.300 to 43.325	1.7047 to 1.7057	43.326 to 43.342	1.7057 to 1.7064
3G6210Z00451 3G6210Z00451A2 3G6210Z00452 3G6210Z00452A2	43.600 to 43.625	1.7165 to 1.7175	43.626 to 43.642	1.7176 to 1.7182

- 5.4 Clean the new root end bushings (2) and their related seats with a clean Cheesecloth (C028) moist with Acetone (C087) or Solvent (C005) or Aliphatic naphtha (C059) .
- 5.5 Apply the Primer (C042) or the Primer (C553) on the bushing seats in order to facilitate the installation.
- 5.6 Carefully install the root end bushings (2) in their related seats with the Pin, blade bushing installation (3G6210A00131A554C) or an equivalent tool. Make sure to hold the blade (1) correctly not to cause damage to the root.
- 5.7 Install new Anti-fretting plates (3) on the main rotor blade. Refer to the applicable steps of DM 39-A-62-11-01-13A-921A-C. During milling operations you must obey the requirements given in [Fig 1](#) .
- 5.8 If bushings with internal diameter to be reworked (part numbers with suffix “A2”) were installed, ream the root end bushings (2) to get an internal diameter of 33,000 thru 33,025 mm (1.2992 thru 1.3002 in) and make sure that you agree with the requirements given in [Fig 1](#) .
- 5.9 Do the measurements that follow and make sure that:
- The dimensions of the root end bushings installation are in the tolerance and limits shown in [Fig 1](#) (Section A-A);
 - The applicable tolerance of the distance between two points as interception of axes of two bushings with the middle plane between top and bottom blade hole plates must be ± 0.06 mm (0.002 in).
- If the dimension “X” is not in the permitted tolerance, do the dimension check of the profiles and twist angles, refer to 39-A-62-11-01-00A-361A-C. The permitted limit for the sweep angle is $\pm 2,6$ mm (0.10 in).

- 5.10 Do the check of the sweep angle and the static balance of the main rotor blade. Refer to 39-A-62-11-01-00A-37DA-C.
- 5.11 Record on blade log card the replacement of root end bushings.
- 6 Installation of the root end bushings (without seat and bushing reworking).
- 6.1 Select a new Root end bushing (with final internal diameter) (3G6210A01251) according to the Table 7 - Bushing seat diameters and bushing external diameters.

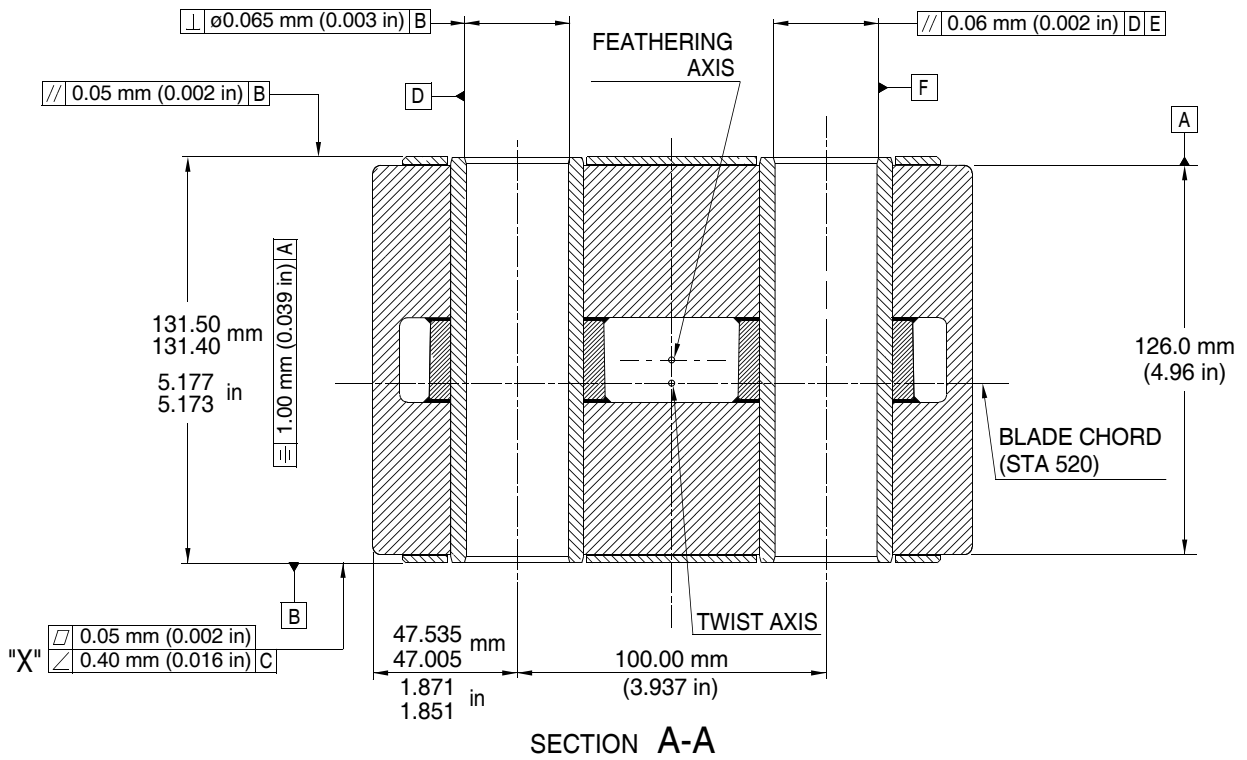
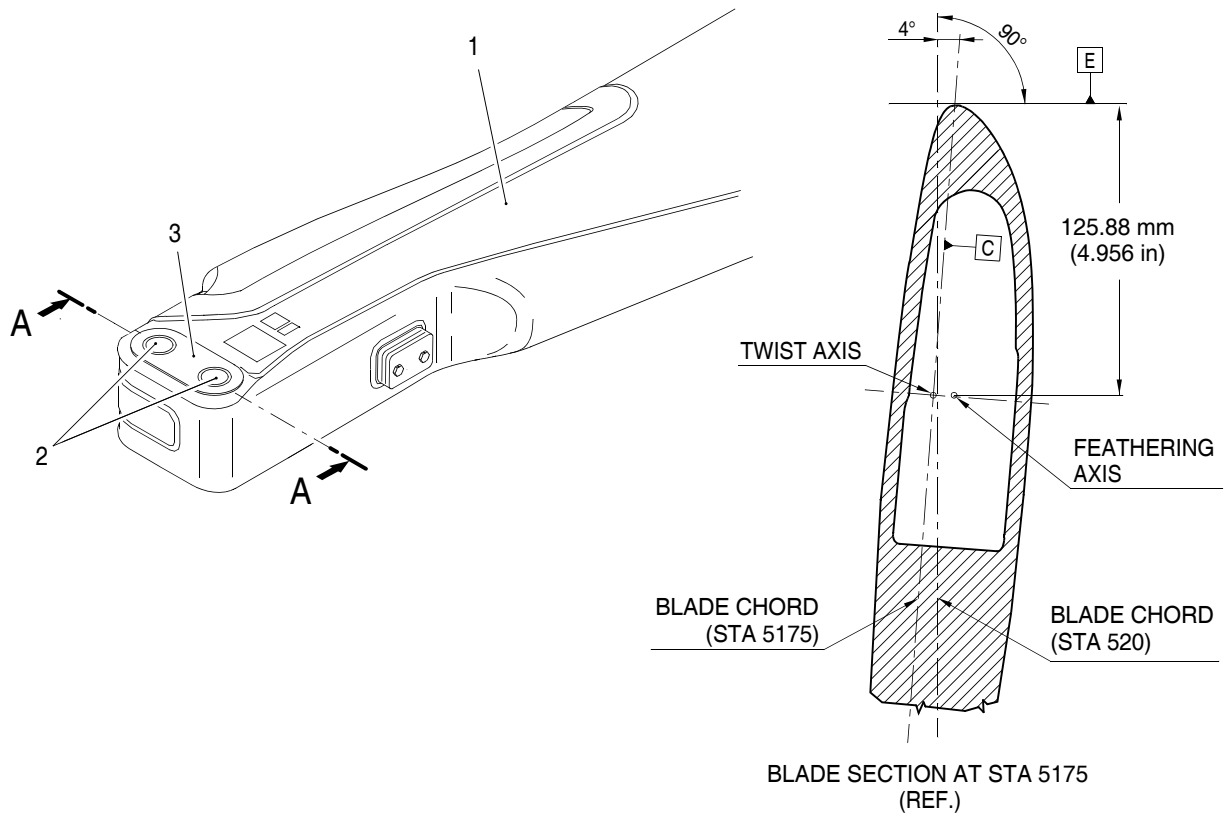
Table 7 Bushing seat diameters and bushing external diameters

Bushing Part Number	Bushing Seat Diameter		External Bushing Diameter	
	mm	in	mm	in
3G6210A01251 3G6210A01252	43.000 to 43.025	1.6929 to 1.6939	43.026 to 43.042	1.6939 to 1.6946
3G6210Z00351 3G6210Z00352	43.300 to 43.325	1.7047 to 1.7057	43.326 to 43.342	1.7057 to 1.7064
3G6210Z00451 3G6210Z00452	43.600 to 43.625	1.7165 to 1.7175	43.626 to 43.642	1.7176 to 1.7182

- 6.2 Clean the new root end bushings (2) and their related seats with a clean Cheesecloth (C028) moist with Acetone (C087) or Solvent (C005) or Aliphatic naphtha (C059) .
- 6.3 Apply the Primer (C042) or the Primer (C553) on the bushing seats in order to facilitate the installation.
- 6.4 Carefully install the root end bushings (2) in their related seats with the Pin, blade bushing installation (3G6210A00131A554C) or an equivalent tool. Make sure to hold the blade (1) correctly not to cause damage to the root.

Requirements after job completion

No conditions.



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Fig 1 Root end bushings (main rotor blade) - Replacement (remove and install a new item)