

Temporary Maintenance Instruction TMI 139-567

Tachometer (MT34) - Install procedure.

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: May 24th 2024.

2023-05-24

Introduction

This TMI provides the instructions and requirements to perform the Tachometer (MT34) - Install procedure.

Following procedures contained in this TMI updates and supersedes the contents of the relative Data Modules inside IETP:

ANNEX	DATA MODULE CODE	DATA MODULE TITLE
Annex 1	39-A-31-32-16-00A-720A-K	Tachometer (MT34) - Install procedure
Annex 2	39-A-31-31-00-00A-421T-A	Transmission vibration monitoring (TVM) system - Fault Code 31-00096 – Fault isolation procedure

The content of this TMI will be endorsed within the applicable Maintenance Manual at the earliest opportunity.

Tachometer (MT34) - Install procedure

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References

Table 1 References

Data Module	Title
39-A-00-20-00-00A-120A-A	Helicopter safety - Pre-operation (make helicopter safe for maintenance)

Table 2 Access points

Access Panel / Door Id	Data Module
No Access Point	

Table 3 Zones

Access Panel / Door Id	Data Module
No Zones	

Preliminary Requirements

Required Conditions

Table 4 Required Conditions

Conditions	Data Module/Technical Publication
The helicopter must be safe for maintenance	39-A-00-20-00-00A-120A-A

Support Equipment

Table 5 Support Equipment

Nomenclature	Identification No.	Qty
Platform	GG-02-00	1
Spatula (plastic)	ZZ-00-00	1
Micrometer	ZZ-00-00	1

Supplies

Table 6 Supplies

Nomenclature	Identification No.	Qty
Cleaning solvent	C010	AR
Lint-free cloth	C011	AR
Sealing compound	C065	AR
Grease	C115	AR

Spares

Table 7 Spares

Nomenclature	Identification No.	Qty
Tachometer	31-32-01-01 -003	AR
Packing, preformed	31-32-01-01 -006	AR

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:

- [Cleaning solvent \(C010\)](#) .
- [Sealing compound \(C065\)](#)
- [Grease \(C115\)](#) .

Procedure

- 1 During this procedure, you must remove the caps from the electrical connectors. Do this immediately before you connect each electrical connector.
- 2 Put the [Platform \(GG-02-00\)](#) adjacent to the right side of the fuselage.
- 3 Clean the tachometer (MT34) (2, [Figure 1](#)) and the related mating area on the main gearbox (6) with the [Lint-free cloth \(C011\)](#) and the [Cleaning solvent \(C010\)](#) .

WARNING

Be careful when you use the compressed air. Dust and particles can cause injury to your eyes. Always use applicable protective goggles.

- 4 Dry the parts you cleaned with the compressed air until you remove all the solvent.
- 5 If this is not the first installation on MGB, continue with the [step 7](#).
- 6 If this is the first installation on MGB, do as follows:
 - 6.1 If the tool P/N 3G6320A00134A670B (7) is not available continue with the [step 7](#).
 - 6.2 If the tool P/N 3G6320A00134A670B (7) is available, temporarily install the tachometer (2) without its packing in the main gearbox (6). Do not torque the nuts (4) at this time.
 - 6.2.1 Make sure the clearance between the prod of the tachometer (10) and the gear tip (9) is 1.00 thru 1.5 mm (section Z-Z, [Figure 1](#)).

6.2.2 Calculate the clearance (11, [Figure 1](#)) applying the formula (B - C) - A = 1.0 / 1.5:

LEGEND

A = Distance between support plane and the tachometer (2).

B= Distance (measured with the [Micrometer \(ZZ-00-00\)](#)) between the external plane of the tool P/N 3G6320A00134A670B (7, [Figure 1](#)) and the external diameter of the gear tip (9).

C = Measure marked on the tool P/N 3G6320A00134A670B (7).

6.2.3 Record the real calculated clearance:

- If the clearance is in the limits, continue with the [step 7](#).
- If the clearance is not within the limits, replace the tachometer (2) with a new item and do steps [step 6.2.1](#) thru [step 6.2.3](#) again.

7 Lubricate the new [Packing, preformed \(31-32-01-01 -006\)](#) with the [Grease \(C115\)](#) .

8 Put the packing (1) in the related groove of the tachometer (2).

9 Install the tachometer (2) in its housing on the main gearbox (6).

10 Attach the tachometer (2) to the main gearbox (6) with the two washers (5) and the two nuts (4).

11 Torque the two nuts (4) to 3.4 thru 4.5 N m (30 thru 40 lbf in).

12 Apply the [Sealing compound \(C065\)](#) on the parts that follow:

- On the mating edge between the tachometer (2) and the main gearbox (6)
- On the washers (5) and the nuts (4).

Use the [Spatula \(plastic\) \(ZZ-00-00\)](#) to apply the sealing compound.

13 Connect the connector MT34P1 (3) to the tachometer (2).

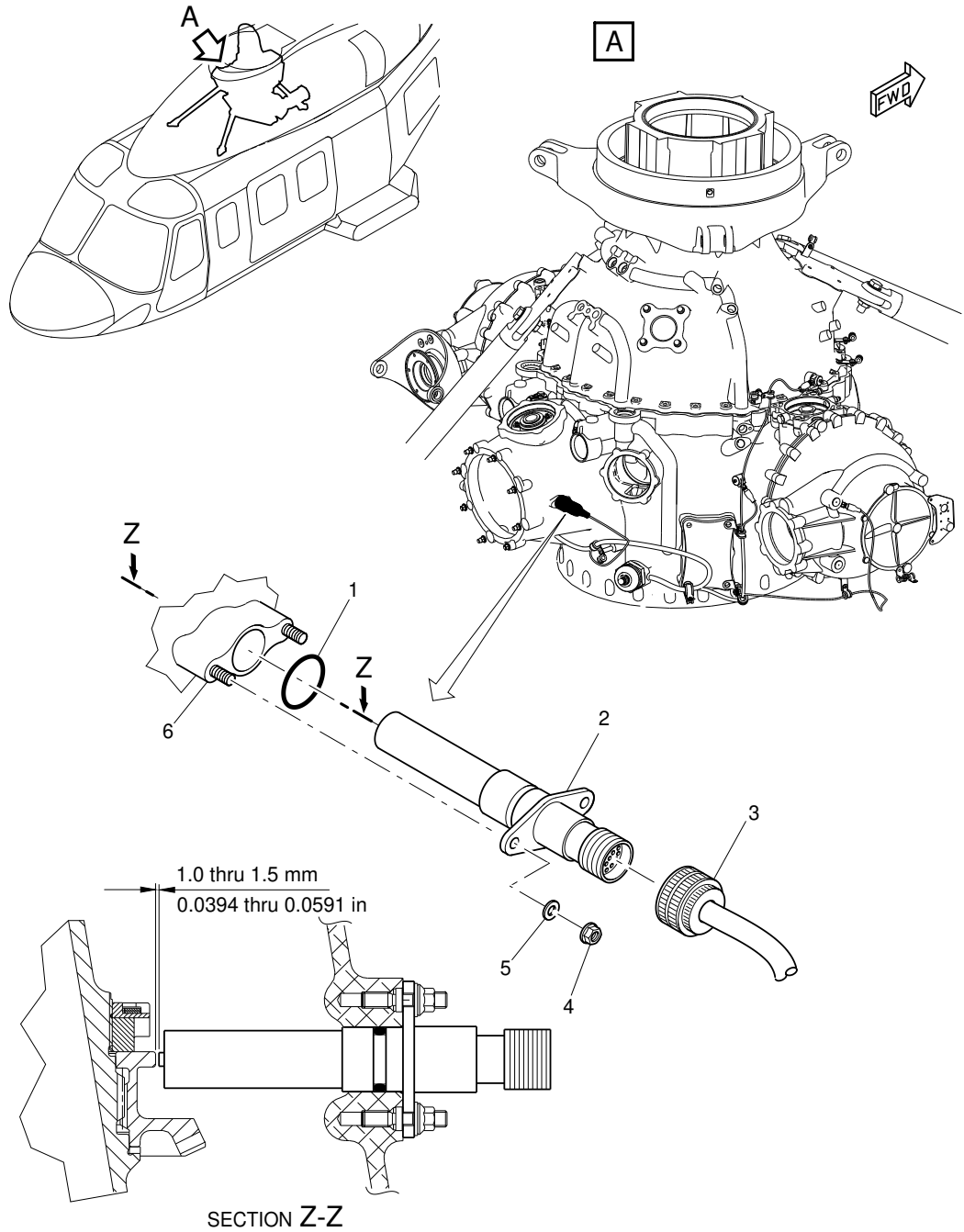
Requirements After Job Completion

1 Remove all the tools and the other items from the work area. Make sure that the work area is clean.

2 Install the access door 473AL. Refer to [39-A-06-41-00-00A-010A-A](#)

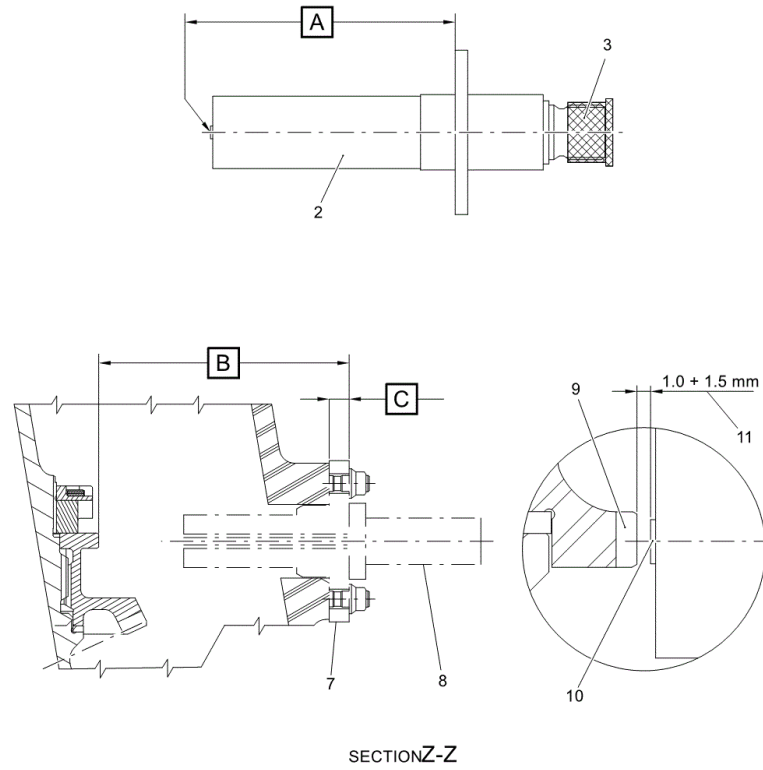
3 [With HUMS kit] If this was the first installation on MGB and the sensor MT34 was installed without use of the tool 3G6320A00134A670B: Download HUMS data and upload to Heliwise after next flight. Tell LHD HUMS about the tachometer installation to make sure that the HUMS data are correct.

4 Remove the platform from the right side of the fuselage.



ICN-39-A-313216-G-00001-05213-A-01-1

Figure 1 (Sheet 1 of 2) Accelerometer (MT34) - Install procedure



ICN-39-A-313216-G-00001-33613-A-001-01

Figure 1 Accelerometer (MT34) - Install procedures (Sheet 2 of 2)

Transmission vibration monitoring (TVM) system - Fault Code 31-00096 - Fault isolation procedure

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Table 1 References

Data Module	Title
39-A-00-20-00-00A-120A-A	Helicopter safety - Pre-operation (make helicopter safe for maintenance)
39-A-20-50-02-00A-251A-A	Electrical connectors - Clean with chemical agent
39-A-31-32-16-00A-520A-K	Tachometer (MT34) - Remove procedure
39-A-31-32-16-00A-720A-K	Tachometer (MT34) - Install procedure
39-B-31-32-16-00A-520A-K	Tachometer (MT34) - Remove procedure
39-B-31-32-16-00A-720A-K	Tachometer (MT34) - Install procedure

Table 2 Access points

Access Panel / Door Id	Data Module
No Access Point	

Table 3 Zones

Access Panel / Door Id	Data Module
No Zones	

Preliminary Requirements

Required Conditions

Table 4 Required Conditions

Conditions	Data Module/Technical Publication
The helicopter must be safe for maintenance	39-A-00-20-00-00A-120A-A

Support Equipment

Table 5 Support Equipment

Nomenclature
No Support Equipment

Supplies

Table 6 Supplies

Nomenclature	Identification No.	Qty
Cleaner	C583	AR

Spares

Table 7 Spares

Nomenclature
No Spares

Safety Conditions

WARNING

The **Cleaner (C583)** is a dangerous material. Before you do this procedure, make sure that you know all the safety precautions and first aid instructions for the cleaner.

Procedure

- 1 Description

If in the HUMS Download Log, the message “TACH AZ3 FAIL” is in view on the CDU/DTU panel after the HUMS system built in test and/or Arising FAULT-31-00096 highlights that there should be an issue on the sensor MT34 (Tachometer AZ3/MGB Tachometer) installation.
- 2 Troubleshooting actions
 - 2.1 In front of this kind of issue, a depth inspection of the sensor MT34 is suggested.
 - 2.2 OPTION 1. (SHORT NOSE) do the steps that follow:
 - 2.2.1 Remove the tachometer AZ3/MT34. Refer to data module [39-A-31-32-16-00A-520A-K](#).
 - 2.2.2 Visually examine the connector MT34P1 for integrity of the backshell and possible internal pin plays or pin swap. Clean the surface of the connector MT34P1, refer to data module [39-A-20-50-02-00A-251A-A](#). Apply the **Cleaner (C583)** .

Note

The continuity check shall be performed with connectors not connected.

- 2.2.3 Do a continuity/non-continuity check between the connector MT34P1 and the connector A54P1:
 - Do a continuity check on the shields of the connectors
 - Do a pin to pin check on the connectors
 - Do a non-continuity check on the sensor’s connector between each pin and any other pin and the shield, check is not passed, do a depth check at the intermediate connectors.

MT34P1	P32/J32	J72/P72	A54P1	Condition
A	14	Y	98	Continuity
B	13	X	97	Continuity

- 2.2.4 If NFF is the result, install the sensor MT34 accordingly to the procedure given in [39-A-31-32-16-00A-720A-K](#) (See ANNEX 1 of this TMI). During the installation, do the tolerance check of the distance shown in the Figure 1 Section Z-Z of that data module as follows:
 - 2.2.4.1 Calculate the protrusion of the pin of sensor MT34 from the sensor body Use an applicable caliper fitted by the depth probe.

2.2.4.2 Measure the tolerance as a difference from the tooth crest (in view inside the tachometer housing hole) and the MGB carter where the sensor is installed.

2.2.5 If the problem will persist, replace the MT34 tachometer with a new item.

2.2.6 Tell the LHD if the failures will stay in view after the given troubleshooting actions.

2.3 OPTION 2. (LONG NOSE) do the steps that follow:

2.3.1 Remove the tachometer AZ3/MT34. Refer to data module [39-B-31-32-16-00A-520A-K](#).

2.3.2 Visually examine the connector MT34P1 for integrity of the backshell and possible internal pin plays or pin swap. Clean the surface of the connector MT34P1, refer to data module [39-A-20-50-02-00A-251A-A](#). Apply the [Cleaner \(C583\)](#) .

Note

The continuity check shall be performed with connectors not connected.

2.3.3 Do a continuity/non-continuity check between the connector MT34P1 and the connector A54P1:

- Do a continuity check on the shields of the connectors
- Do a pin to pin check on the connectors
- Do a non-continuity check on the sensor’s connector between each pin and any other pin and the shield, check is not passed, do a depth check at the intermediate connectors.

MT34P1	P244/J244	J216/P216	A54P1	Condition
A	26	P	98	Continuity
B	27	ϱ	97	Continuity

2.3.4 If NFF is the result, install the sensor MT34 accordingly to the procedure given in [39-B-31-32-16-00A-720A-K](#).

2.3.5 **Keep HUMS data under Close Monitoring regime for at least subsequent 10 FH.** If the problem will persist, replace the MT34 tachometer with a new item.

2.3.6 Tell the LHD if the failures will stay in view after the given troubleshooting actions.

Requirements After Job Completion

1 Remove all the tools and the other items from the work area. Make sure that the work area is clean.