

<b>Title: IVO-prop gearbox overhaul</b>		
<b>AG-SB-2017-05-B-EN</b>		<b>Compliance Category:</b>
<b>Applicability</b>		<b>A - MANDATORY</b>
<b>Aircraft type &amp; model:</b> Any AutoGyro type fitted with IVO-prop DL3-68 VP-propeller	<b>Aircraft serial Nos. affected:</b> Any AutoGyro type fitted with IVO-prop DL3-68 VP-propeller	<b>B - RECOMMENDED</b>
The maintenance manual to be referenced is this stated or subsequent issue.		<b>C - OPTIONAL</b>
The maintenance manual to be referenced is this stated or subsequent issue. As per AutoGyro website		
This form is the response from AutoGyro GmbH either against a problem found in the product in service requiring a containment or rectification action, or as service information for aircraft modification incorporation. For help, contact AutoGyro on 49(0)5121 88056-00, or email <a href="mailto:airworthiness@auto-gyro.com">airworthiness@auto-gyro.com</a> .		

**Documentation (Service Bulletin Completion action)**

The accomplishment of this Service Bulletin, or the decision of its rejection, must be properly documented, if such procedure is required by the relevant authority

**Category Codes**

A – Mandatory – failure to comply result in a significant reduction of flight safety, injury or death

B – Recommended – failure to comply may result in reduced safety margin, injury and/or equipment damage

C - Optional – improves operating behavior, reliability and/or maintainability

<b>Chief Certification Officer</b>	<b>Chief Technical Officer</b>

<b>Contact &amp; Info:</b> <a href="mailto:airworthiness@auto-gyro.com">airworthiness@auto-gyro.com</a> <a href="http://www.auto-gyro.com">www.auto-gyro.com</a>	<b>AutoGyro GmbH</b> Dornierstr. 14 31137 Hildesheim
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**Reason and overview of the Service Bulletin (cause of problem if known)**

A number of IVO-prop DL3-68 variable pitch propellers on AutoGyro gyroplanes have suffered drive motor failure. This has been investigated by AutoGyro and it has been established that:

- The tightness of the three nuts at the end of the gearbox assembly can adversely influence the axial load incurred by the internal thrust bearings, leading to premature wear and excessive current draw by the motor.
- The grease used by the OEM is better replaced by a Molykote type grease

This SB-2017-05-B addresses these issues and results in improved reliability of the IVO-prop pitch-change mechanism. If necessary a replacement motor may be fitted.

**Manpower estimates**

The task may only be performed by an organization or individual entitled and trained to do:  
Line maintenance

Estimated man-hours to complete the task as a stand-alone item are: 2 - 3 hours

**Tooling required**

Hand tools including Imperial-sized spanners and sockets

**Weight and Balance Effects**

No effect

**Manuals affected**

POH AutoGyro and MMM AutoGyro are not affected.

**Previous Modifications that affect the SB**

None

**Accomplishment instructions (Action required to implement this bulletin):**

Effective date of this SB is 16 October 2017  
To maintain warranty, this SB is to be implemented within the next 5 flight hours.

There is no relevant AD or other outside body documentation to be referenced.

**Instructions**

Refer to IVO-prop manual for further information

1. Position the aircraft on level ground and apply the parking brake/chock the wheels. Remove engine cowlings for access to the propeller hub (see aircraft AMM)
2. Verify that the two Mag-switches and the Master Switch are OFF
3. Using a suitable marker pen or adhesive tape mark the spinner/propeller/hub relationship to ensure precise replacement (particularly the blades, which are numbered 1,2,3)
4. Remove the spinner
5. Remove the brush carrier and tie to one side

6. Remove the propeller complete by releasing (progressively) the six 3/8" AN hex bolts/nuts and transfer to the workbench. DO NOT REST THE PROPELLER ON THE BLADE TIPS.
7. Making reference to the propeller manual remove the three blades then the motor/gearbox assembly



Motor/gearbox assembly removed

8. Using a 1/2" AF spanner progressively release the three nuts. Tap and pull the end cap then the sleeve off the protruding studs to expose the electric motor



9. Using a plastic mallet tap the end of the leadscrew through the flange until the motor and planetary gearbox are released. **Caution – do not drop the gears! NOTE! The small gear on the end of the motor is a slide fit!**



10. There are three layers of gears. During dismantling and cleaning be sure to keep the layers together as a set.



11. Using suitable solvent (e.g., Amberklene LO30) or brake cleaner thoroughly clean all grease from the gearbox assembly and motor mounting plate.

12. The leadscrew/nut assembly cannot be dismantled so clean as an assembly and use compressed air to remove any debris. Ensure that the parts spin freely and smoothly. For information a sectioned view of this assembly is shown below



13. If a new motor is to be fitted remove the centre pinion then release the two cap-screws retaining the electric motor into the mounting plate. Feed the two electrical cables through the correct holes and fit the new motor to the mounting plate ensuring that the correct PCD threaded holes are selected and Loctite 243 is applied to the threads





14. Visually inspect the gearbox components for burrs (remove as necessary) then re-pack the gearbox assembly with Molykote BR2 Plus (or equivalent) and re-lubricate the leadscrew assembly with Molykote and internal thrust bearings with Ballistol oil (Part number 88-00-00-S-31816)
15. Refit the small gear to the motor shaft and reassemble in reverse order. The self-locking nuts may be re-used provided they are undamaged, have sufficient residual torque and Loctite 243 is applied to the threads. Progressively tighten these ½"AF nuts to 10Nm only
16. Using a supply fused at 10A apply 12VDC to the two leads and verify that the leadscrew spins freely in both directions. **Caution: the torque reaction is significant – hold the motor/gearbox securely**
17. Rebuild the propeller and fit to the mounting flange in accordance with the propeller manual and related service bulletins, ensuring the nylocks have sufficient residual torque or are replaced with new nuts. Refit the brush carrier in accordance with the propeller manual.
18. Following safe practice a qualified gyroplane pilot or appropriate person must ground-test the propeller in accordance with the instructions in the Pilots Handbook, ensuring that fine pitch selected in the cockpit gives propeller fine pitch (in case the wires are reversed. If this is the case, swop-over the connections to the brush-box)
19. Refit the engine cowlings and spinner (if fitted) in accordance with the aircraft AMM.
20. Update aircraft and propeller documents accordingly.
21. Flight test the aircraft to ensure proper flight operation.

**Material information (Parts required to be made to implement this service bulletin):**

No parts made during embodiment

**List of components (with purchasable part nos)**

Consumables used:

Molykote BR2 Plus (or equivalent)

Ballistol oil (88-00-00-S-31816)

suitable solvent (e.g., Amberklene LO30) or brake cleaner

Loctite 243 (88-00-00-S-30483)

If required:

3-off Replacement AN365-524 (aka MS21044-N5 or 94-104) or equivalent nyloc nuts if originals found unusable

Improved electric motor for IVO-prop (61-20-00-S-31624).

**Contact & Info:**

airworthiness@auto-gyro.com

www.auto-gyro.com

**AutoGyro GmbH**

Dornierstr. 14

31137 Hildesheim

**Interchangeability**

Not affected

**Parts disposition**

- a) Disposal requirements – Normal waste
- b) Environmental hazards of parts containing hazardous materials - None
- c) Scrap requirements (e.g. mutilate scrapped items beyond use) – Not applicable