

RotorSport UK Ltd Service Bulletin

Title: Pre-rotator bendix shaft retention		
SB No.: 086 Iss1	Related documents MC No: None CCAR No.: 060	Compliance Category: OPTIONAL or RECOMMENDED or MANDATORY
Applicability		
Aircraft type & model: MTOsport, Calidus, Cavalon MT-03	Aircraft serial Nos. affected: Any a/c manufactured before 7/14 If a replacement bendix shaft has been fitted since original build.	
This form is the response from RotorSport UK Ltd 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 RotorSport on 44(0)1588 650769, or email info@rotorsport.org.		
<p><u>Reason and overview of the Service Bulletin (cause of problem if known)</u></p> <p>Analysis of incident reports made to Auto-Gyro has found that pre-rotator bearings may fail due to wear/debris resulting from the pre-rotator bendix shaft turning in the upper bearing's inner race. This may be evidenced by an uneven wear pattern on the ring gear. Use of Loctite 638 Retainer when assembling the shaft into the bearing eliminates the design clearance (for assembly) between the two, and bonds the shaft securely to the bearing. This SB-086 recommends that this standard be embodied on all aircraft at the next 100hr/Annual service.</p> <p>NB: If damage is found during the Service the bendix shaft and bearing will require replacement.</p>		
<p><u>Approval</u></p> <p>The technical content of this document is approved under the authority of the UK CAA Design Organisation Approval Ref: DAI/9917/06</p>		
<p><u>Manpower estimates</u></p> <p>Accomplishment of this Service Bulletin requires the following personnel</p> <p style="margin-left: 20px;">(i) A3-7 (or equivalent) authorised engineer to approve the work carried out.</p> <p>Estimated man-hours to complete the task as a standalone item are; 0.5hours</p> <p>Task limitation – task inspection may only be carried out by authorised A3-7 (or equivalent) engineer</p>		
<p><u>Tooling required</u></p> <p>Hand tools as required</p>		
<p><u>Weight and Balance Effects</u></p> <p>No effect</p>		
<p><u>Manuals affected</u></p> <p>The aircraft AMM's are affected by reference to visual inspection of the ring gear and the need for Loctite 638 during assembly of the shaft to the bearing:</p> <p>MT-03 RSUK0012 Iss9 MTOsport RSUK0044 Iss7 Calidus RSUK0061 Iss7 Cavalon RSUK0288 Iss2 The Pilots Handbooks are not affected.</p>		
<p><u>Previous Modifications that affect the SB</u></p> <p>None</p>		

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Accomplishment instructions (Action required to implement this bulletin):

The effective date of SB is 22.08.14.

There is no relevant MPD or other outside body documentation referenced.

Procedures

- 1 Inspect the wear pattern and gear mesh of pre-rotator upper engagement.
- 2 If the wear pattern is uneven (see Fig. 1) the condition of the bendix shaft must be inspected, otherwise this is optional. Remove the lower bearing (see relevant AMM) and ensure that the shaft is, in the free load condition, centrally positioned in the bearing seating. If free play in the upper bearing is present, the following must be carried out:
- 3 **Free play due to bearing abrasion:** Replace upper bearing (see relevant AMM) and on re-assembly retain the bendix shaft with Loctite 638 into the upper bearing. Reassemble lower bearing.
- 4 **Free play due to abrasion of the bendix shaft by the ball bearing inner ring:** On re-assembly retain the bendix shaft with Loctite 638 into upper bearing. Reassemble lower bearing.
If free play is greater than 1/10 mm, then replace the bendix shaft with a new part and retain in the upper bearing with Loctite 638.
- 5 If in doubt, contact RSUK customer support.
- 6 Thoroughly clean the bendix gear and ring gear and lubricate in accordance with the AMM. Without the engine running, check that the bendix rises into engagement with the ring gear when pre-rotation is activated.
- 7 If the aircraft is a Cavalon or Calidus, check the pre-rotator torque iaw SB-087.

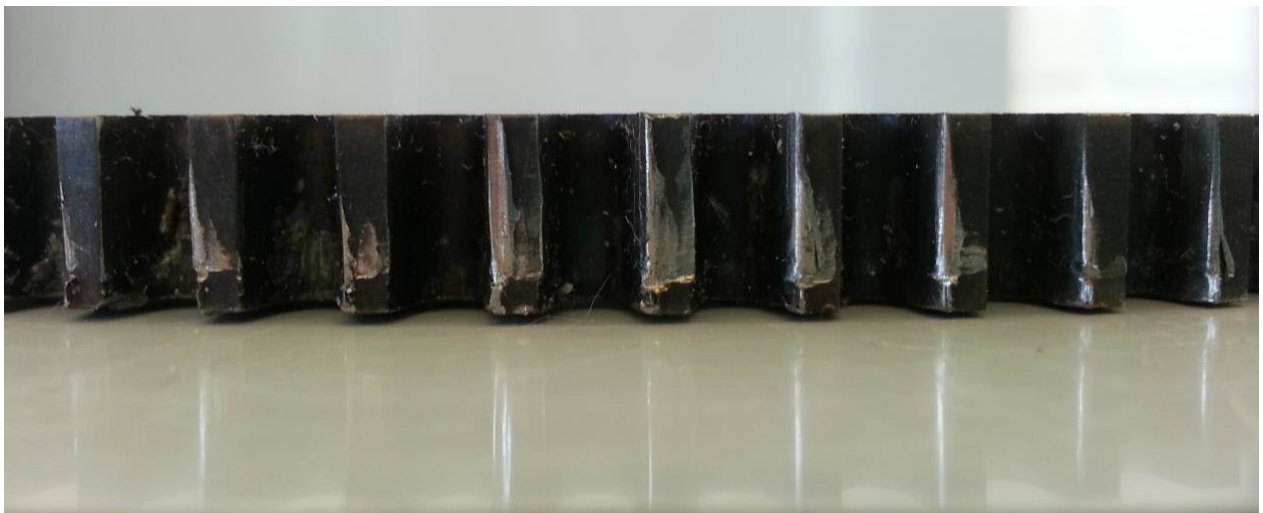



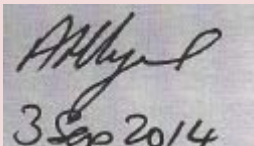
Fig. 1 - Wear Pattern (uneven)

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<u>Material information (Parts required to be made to implement this service bulletin):</u> No parts manufactured during embodiment of this Service Bulletin		
<u>List of components (with purchasable part nos)</u> Loctite 638 High-strength retainer RSD4662 If shaft or bearings require replacement then the following are also required: M.RK67.06.13 Bendix shaft (MTOsport) M.RK67.06.09 Bearing 6200ZZNR (MTOsport) C.RK40.25.13 Bendix shaft (Calidus) C.RK40.25.04 Bearing 6200ZZNR (Calidus) V.RK208.12.13 Bendix shaft (Cavalon) V.RK208.12.04 Bearing 6200ZZNR (Cavalon)		
<u>Interchangeability</u> Not affected		
<u>Parts disposition</u> a) Disposal requirements (whether discard or re-use) – dispose-of removed parts by return to RSUK. – subject to inspection and service history the failed parts may be replaced under warranty. b) Environmental hazards of parts containing hazardous materials - none c) Scrap requirements (e.g. mutilate scrapped items beyond use) – not applicable.		

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<u>Documentation (Service Bulletin Completion action)</u>		
<p>a) Entries are required within the aircraft logbooks, eg the Authorised Person has to certify that the work is completed by writing 'SB-086 Pre-rotator bendix shaft retention incorporated' in the aircraft logbook white pages, and record the action in the pink pages entitled 'Aircraft Modifications'. Both entries must be signed by the Authorised Person together with their Authorisation number.</p> <p>b) Completion of the SB worksheet attached, This must contain a PMR statement, and a final check item that no tools or equipment have been left within the aircraft.</p>		

Document approval signatures			
Engineering Manager	CVE (as required)	Chief Test Pilot (if flight performance or safety effect)	Head of Airworthiness
	Not required as no structural change	Not required as no effect on flight characteristics	

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Service Bulletin implementation Worksheet			
Aircraft type:	Serial no:	G-	
Worksheet completed by:		Document ref:	
Worksheet cross-checked by (if applicable):		SB-086 Iss1	
Purpose – record service bulletin implementation actions taken to inspect aircraft and return to service.			
Maintenance manual referred-to and issue level/date:	MT-03 - RSUK0012 Iss 9 MTOsport - RSUK0044 Iss7 Calidus – RSUK0061 Iss7 Cavalon RSUK-288 Iss2 (Delete as applicable)		
Note: attach SB sheets to this document			
Task	Notes	Eng'r check/date	Inspector check/date
State condition of ring gear	Even wear/uneven wear		
State condition of upper bearing	Satisfactory Not satisfactory and replaced		
State condition of bendix shaft	Satisfactory Not satisfactory and replaced		
Loctite 638 used on bendix shaft	Batch number or use-by date		
Bendix gear/ring gear lubricated and engagement satisfactory			
Customer acceptance:			
Name:		Aircraft hobbs meter reading:	
Signature/date:		Confirm logbooks annotated:	
Permit Maintenance Release:			
<i>'The work recorded above has been completed to my satisfaction and in that respect the aircraft is considered fit for flight. I confirm that no tools, equipment or debris have been left in the aircraft'</i>			
Engineer signature and date:		Location where work completed	
CAA (or equivalent) Authorisation code :			