

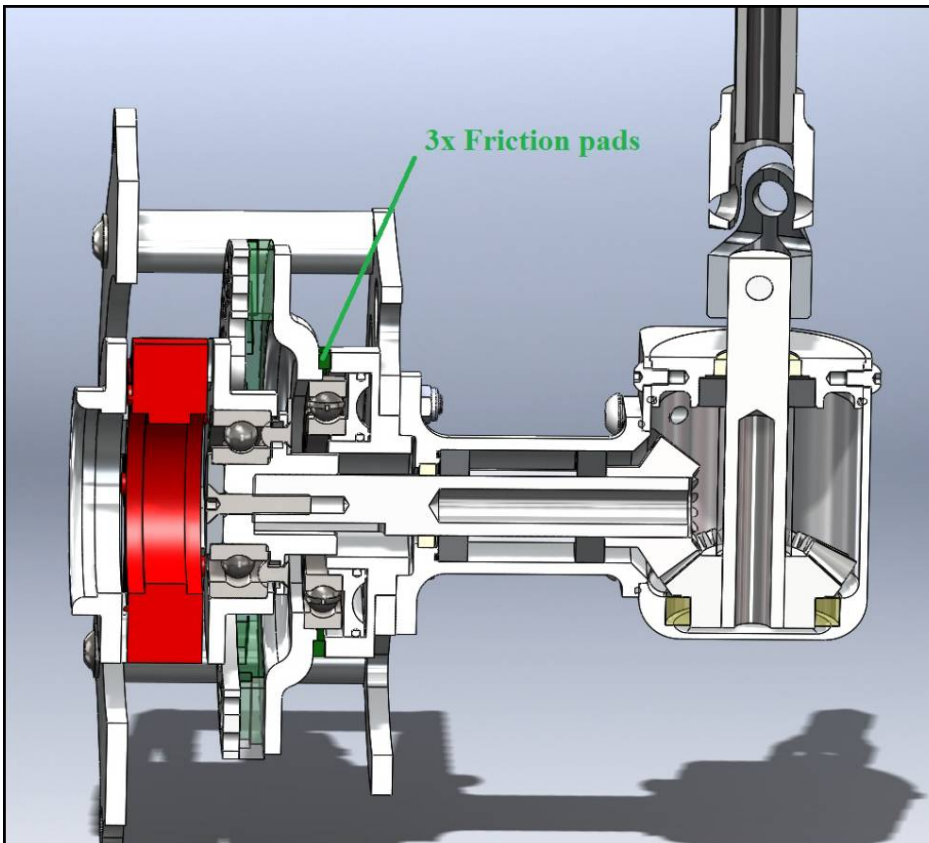
# RotorSport UK Ltd Service Bulletin

<b>Title: Pre-rotator clutch/brake</b>		
<b>SB No.: 076 Iss1</b>	<b>Related documents</b> MC No: MC-260 CCAR No.: CCAR-048	<b>Compliance Category:</b> <b>OPTIONAL</b> <del>or</del> <b>RECOMMENDED</b> or <b>MANDATORY</b>
<b>Applicability</b>		
<b>Aircraft type &amp; model:</b>  Cavalon	<b>Aircraft serial Nos. affected:</b>  All prior to RSUK/CVLN/009	

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.

## **Reason and overview of the Service Bulletin (cause of problem if known)**

The pneumatically operated pre-rotator clutch of Cavalon aircraft contains sealed-ball-bearings and there have been a few instances of bearing-drag resulting in the drive shafts rotating in flight. By means of three friction pads bonded to the rear of the moving friction-plate it is positively braked when in the clutch-released condition. This service bulletin SB-076 describes how to change the friction plate, or the entire pre-rotator clutch/gearbox assembly (at the discretion of the engineer)



## **Approval**

The technical content of this document is approved under the authority of the UK CAA Design Organisation Approval Ref: **DAI/9917/06**

## **Manpower estimates**

Accomplishment of this Service Bulletin requires the following personnel

- (i) A3-7 Authorised engineer

and estimated manhours to complete the task as a standalone item are; 3hours

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<b>Aircraft type &amp; model:</b>  Cavalon	<b>Aircraft serial Nos. affected:</b>  All prior to RSUK/CVLN/009	
<b><u>Tooling required</u></b> General hand tools Crankshaft locking screw V.WZ3028 Installation aid dog-gear V.WZ3024 Torque wrench for 140Nm		
<b><u>Weight and Balance Effects</u></b> No change		
<b><u>Manuals affected</u></b> Cavalon POH RSUK0287 and AMM RSUK0288 are not affected		
<b><u>Previous Modifications that affect the SB</u></b> None		
<b><u>Accomplishment instructions (Action required to implement this bulletin):</u></b> Effective date of this SB-076 is 07.01.14. There is no relevant MPD or other outside body documentation to be referenced.  Task limitations – may be carried-out by any A3-7 approved person.  Procedure <ol style="list-style-type: none"> <li>1. Demount engine cowlings according to Cavalon AMM RSUK0288</li> <li>2. Disconnect battery earth lead</li> <li>3. Demount M8x20 screw plug (Fig. 2) with seal ring from the crankcase. Turn the crankshaft by propeller into the top dead centre position (TDC) of cylinders 1 and 2. TDC can be checked with the aid of a lamp through the opening of the removed screw, if the crankshaft recess is in the required position. If the crankshaft is in the correct position screw V.WZ3028 into position so that the crankshaft is locked (Fig 3).</li> <li>4. Disconnect the oil pipes from the oil tank, seal the open ends with a plastic bag/cable tie and move to one side. Remove the oil tank</li> <li>5. Remove the drip tray from the right-hand carburettor and place to one side.</li> <li>6. Release the self-locking nuts from the right-hand rubber/metal engine mountings, enabling the engine to be pushed to one side by the propeller hub</li> <li>7. Remove the screws from the mounting plate, and extract the whole pre-rotator clutch/gearbox assembly at the same time as releasing the vertical splined coupling.</li> <li>8. Working on the bench remove the central screw and replace the friction plate with the new item, using Loctite 638 on the threads. If the screw is damaged in any way replace with new.</li> <li>9. Before refitting the clutch/gearbox carry-out a torque check on the drive dog by means of the special tool and torque wrench. The dog must resist 140Nm without movement. If movement occurs, the drive dog must be removed, the mating threads thoroughly cleaned/degreased and tested for correct fit to contact with the flange on the crankshaft, then replaced using Loctite 648 (only) and tightening to 140Nm. When correctly fitted it should not be possible to insert a feeler gauge 0.05mm between the dog and the flywheel (Fig 6).</li> <li>10. Remove the crankshaft locking pin and refit the M8x20 blanking plug using a new copper washer if required. Tighten to 15Nm.</li> <li>11. Replace the clutch/gearbox assembly, engaging the splined coupling at the same time</li> <li>12. Using new all-metal self-locking nuts tighten the engine mountings as firmly as possible by hand (the area is inaccessible for torque wrench)</li> </ol>		

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<ol style="list-style-type: none"> <li>13. Replace the oil tank and reconnect the oil pipes</li> <li>14. Reconnect the battery earth terminal</li> <li>15. Turn the engine (in the correct rotation) and check the oil level in the normal way, bleeding the oil pipes if required.</li> <li>16. Check that the pre-rotator drive shafts are braked by attempting to turn by hand.</li> <li>17. With the master switch on and the stick held fully forward verify that on selecting "pre-rotate" the pre-rotator bendix gear rises into engagement, and by hand check that the pre-rotator shafts can rotate. Switch off the master-switch.</li> <li>18. Replace the engine cowlings</li> <li>19. In a safe area and with the aid of a trained gyro pilot verify that the pre-rotation function is correct and there are no leaks from the oil fittings.</li> </ol>		

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**ILLUSTRATIONS**

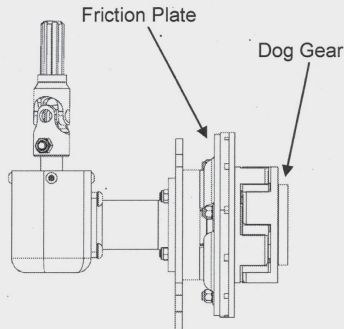


Fig. 1 - Pneumatic Clutch III

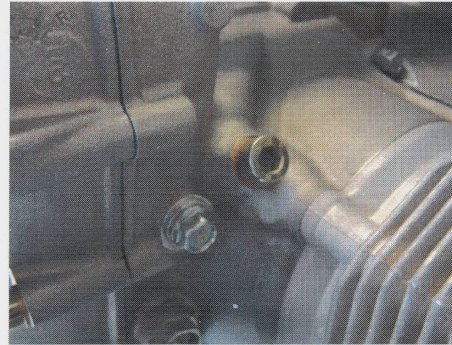


Fig. 2 - M8x20 screw plug



Fig. 3 - Thread Pin M8x50

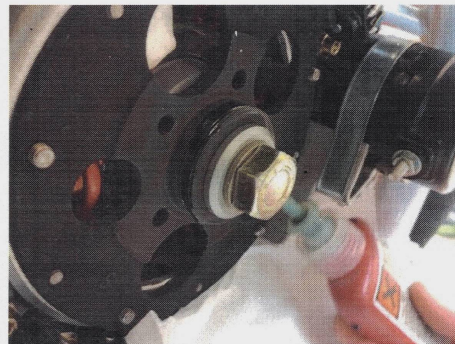


Fig. 4 - Loctite 648 on inner and outer thread



Fig. 5 - Torque dog gear with 140 Nm

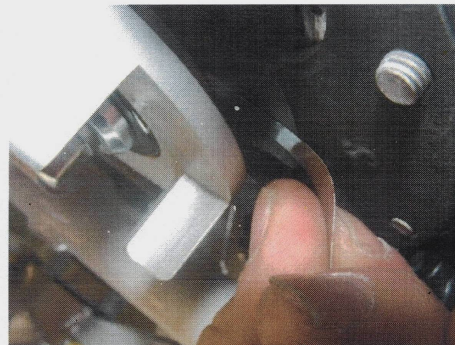


Fig. 6 - Correct mounting position

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

No parts manufactured during embodiment of this SB-076.

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

Friction plate assembly BG1714 Iss A002 or complete pre-rotator clutch/gearbox assembly (a.k.a.Pneumatic coupling III) BG3792

**Interchangeability**

Not affected

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<b><u>Parts disposition</u></b>		
<p>a) retain the removed friction plate for return to RotorSport/Auto-Gyro</p> <p>b) Environmental hazards of parts containing hazardous materials - none</p> <p>c) Scrap requirements – dispose of the used self-locking nuts in standard waste</p>		
<b><u>Documentation (Service Bulletin Completion action)</u></b>		
<p>a) Entries within the aircraft logbooks, eg CAA BCAR A3-7 Authorised Person to certify that the work is completed by writing '<i>SB-076 Pre-rotator clutch/brake incorporated</i>' in the aircraft logbook white pages, and record the action in the pink pages entitled 'Aircraft Modifications'. Both entries must be signed by the CAA Authorised Person together with their CAA Authorisation number.</p> <p>b) Completion of an SB worksheet (reference if attached, This contains a PMR statement, and a final check item that no tools or equipment have been left within the aircraft)</p>		

Document approval signatures			
<b>Engineering Manager</b>	<b>CVE (as required)</b>	<b>Chief Test Pilot (if flight performance or safety effect)</b>  Not required	<b>Head of Airworthiness</b>

# RotorSport UK Ltd Service Bulletin

Service Bulletin implementation Worksheet			
Aircraft type:	Serial no:	G-	
Worksheet completed by:		Document ref:	
Worksheet cross-checked by (if applicable):		SB-076	
Purpose – record service bulletin implementation actions taken to inspect aircraft and return to service.			
Maintenance manual referred-to and issue level/date:	Cavalon – RSUK0288 Iss3		
<b>Note: attach SB sheets to this document</b>			
Task	Notes	Eng'r check/date	Inspector check/date
Pre-rotator clutch/gearbox removed and condition satisfactory			
Clutch/brake function bench-assembled satisfactorily	Loctite 638 batch reference		
Torque check 140Nm satisfactory			
or	-----	-----	-----
Drive dog removed/refitted and checked	Loctite 648 batch reference		
Pre-rotator clutch/gearbox refitted satisfactorily			
Crankshaft locking pin removed and blanking plug refitted			
New self-locking nuts fitted and engine mountings secured			
Oil tank refitted and oil level checked			
Pre-rotation brake effective and rotation function correct			
Customer acceptance:			
Name:		Aircraft hobbs meter reading:	
Signature/date:		Confirm logbooks annotated:	
Permit Maintenance Release:			
<b><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></b>			
Engineer signature and date:		Location where work completed	
CAA Authorisation code :			