RotorSport UK Ltd Service Bulletin

Title: Pre-rotator clutch torque check		
SB No.: 087 Iss2	**Related documents** MC No: None CCAR No.: None	**Compliance Category:** ~~**OPTIONAL**~~ or **RECOMMENDED or** ~~**MANDATORY**~~
Applicability		
Aircraft type & model:	**Aircraft serial Nos. affected:**	
Cavalon **Calidus**	**Any a/c manufactured before 7/14** **Any a/c manufactured after RSUK/CALS/021 and before 7/14. Any aircraft retrofitted with Pneumatic Coupling III under MC-212**	

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)

All Cavalon aircraft and later Calidus aircraft have a miniature pressure regulator in the pneumatic supply to the pre-rotator clutch (also evidenced by a black pre-rotator interlock push-button on the instrument panel). The clutch is combined with a right-angle gearbox under part number BG3792 (Pneumatic coupling III).
During aircraft assembly the pressure regulator has been set to 6.5-7.0bar (PDCD-092 refers) as this provides a suitable clutch engagement rate, but it has now been found that more progressive clutch engagement (with associated. lower pre-rotator drive shock) is obtained if the regulator is adjusted to give a specific clutch slip-torque.
This SB-087 describes how to set the required torque.

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 (or equivalent) authorised engineer

Estimated man-hours to complete the task as a standalone item are; 0.5hours

Task limitation – task inspection may only be carried out by authorised A3-7 (or equivalent) engineer

Tooling required

Hand tools as required
Setting gauge pre-rotator V.WZ3021 (consists of torque tool, air-pressure gauge and pneumatic fittings)

Weight and Balance Effects

No effect

Manuals affected

The aircraft AMM's are affected by reference to the torque checking process
Calidus RSUK0061 Iss7
Cavalon RSUK0288 Iss2
The Pilots Handbooks are not affected.

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Previous Modifications that affect the SB

See also SB-076 “Pre-rotator clutch/brake” and cross-reference in SB-086 Iss1 “Pre-rotator bendix shaft and bearings”

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) Position the aircraft on level ground and apply the wheel brakes to prevent unexpected movement. Use the rotor tie-down bag to stabilise the rotor and disengage the rotor brake by selecting “Flight”. Chock the propeller to prevent rotation (in normal direction), using soft packing material to ensure that the blades cannot be damaged

Typical propeller chocking arrangement

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2) Remove the mast cowling to gain access to the upper pre-rotator drive

Cavalon cowling (either one or two-piece)

Calidus cowling

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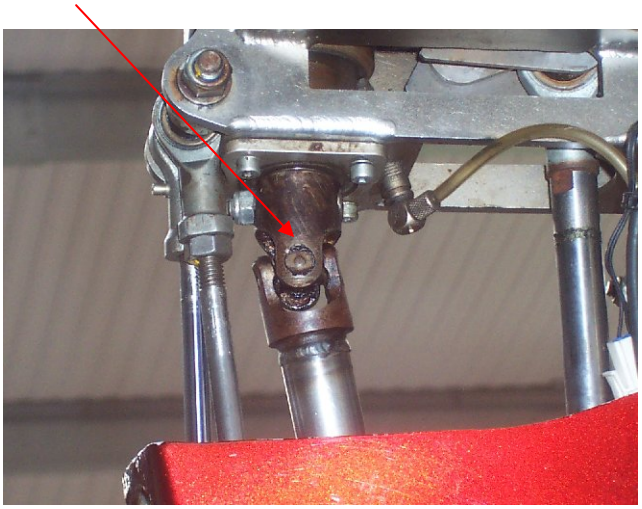
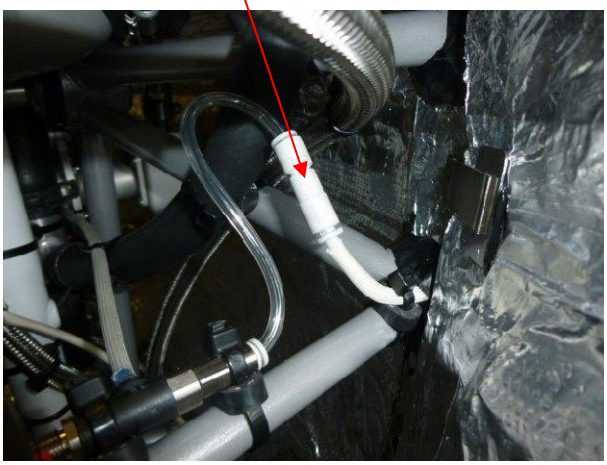
3) Release the nyloc nut and remove the bolt attaching the upper prerotator shaft to the bendix drive. Mark the relationship between the shaft parts with paint or similar for re-assembly, and lift the rotor head to release the shaft coupling. Lay the shaft to one side.



4) Fit the non-return valve adjacent to the pressure regulator



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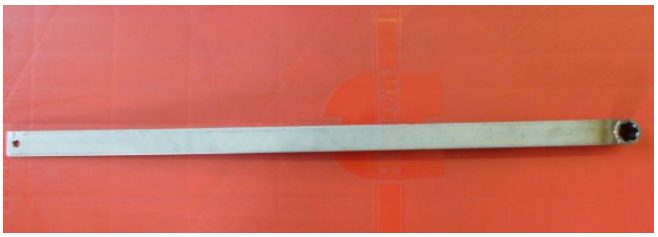
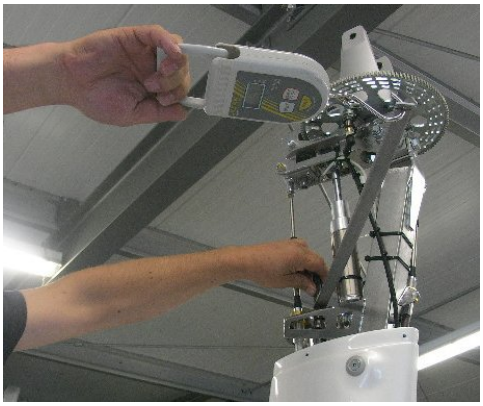
5) Fit the T-piece between the pneumatic clutch and the pressure regulator then attach the pressure gauge.

6) Turn on the master switch (CAUTION: DO NOT INADVERTENTLY ENTER THE START POSITION) and holding the front stick fully forward select pre-rotation so that the delivered air pressure is trapped by the non-return valve and displayed by the pressure gauge. Record the achieved pressure.

7) Using the torque tool and a spring balance turn the pre-rotator shaft until the pre-rotator clutch slips. If necessary adjust the pressure regulator to achieve:
Spring balance 80N +/-0 5N x 0.5m lever arm = 40Nm +/-2.5Nm





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alternatively use torque wrench adaptor RSD7233 for a direct reading 40Nm

8) When adjustment is complete lock the pressure regulator and mark with torque-seal varnish. Record the pressure setting.

9) Remove the special tools, the pressure gauge, T-piece and check-valve.

10) Grease the splined shaft with LM grease (RSD4530) and fit to the bendix shaft in the same orientation as it was removed, using a new nyloc nut. Ensure that the bolt-head and nut have adequate clearance for rotation.
NB: if MC-260 has been embodied it will not be possible to rotate the shaft unless the pre-rotator clutch is engaged and its brake released.

Material information (Parts required to be made to implement this service bulletin):
No parts manufactured during embodiment of this Service Bulletin

List of components (with purchasable part nos)
M6 nyloc nut RSD6008

Interchangeability
Not affected

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Parts disposition

a) Disposal requirements (whether discard or re-use) – discard used nyloc nut in normal waste
b) Environmental hazards of parts containing hazardous materials – not applicable
c) Scrap requirements (e.g. mutilate scrapped items beyond use) – not applicable.

Documentation (Service Bulletin Completion action)

a) Entries are required within the aircraft logbooks, eg Authorised Person has to certify that the work is completed by writing 'SB-087 Iss1 Pre-rotator torque check' 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.

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.

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	14/11/14

Service Bulletin implementation Worksheet

Aircraft type:	**Serial no:**	**G-**
Worksheet completed by:		**Document ref:**
Worksheet cross-checked by (if applicable):		**SB-087 Iss1**
Purpose – record service bulletin implementation actions taken to inspect aircraft and return to service.		
Maintenance manual referred-to and issue level/date:	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
Record pressure setting as-found			
Record slip torque figure and pressure setting implemented			
All tools and fittings removed			
Drive coupling greased and re-fitted			
Mast cowling(s) refitted			

Customer acceptance:	
Name: Signature/date:	Aircraft hobbs meter reading: Confirm logbooks annotated:
Permit Maintenance Release: ***'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'***	
Engineer signature and date: CAA (or equivalent) Authorisation code :	Location where work completed