



Service Bulletin

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Title: Deltajet 500 BMW gearbox propeller shaft rear oil seal and roller bearing

Classification: ~~ESSENTIAL~~ / ~~RECOMMENDED~~ / INFORMATION

Applicable to Aircraft: (include any specific restrictions, hours, serial numbers etc.)
All BMW-powered DeltaJet 500 StingRay aircraft

Description of defect, implications:

During the warm-up period prior to a flight test, a 'whirring' noise was noticed when the revs were increased from tickover to approx. 3,000 rpm. Upon investigation, the rear prop shaft seal was slightly proud of the aluminium housing. With the propeller held firmly, lateral movement (side-to-side) could be felt and seen on the prop shaft as it exits the rear of the gearbox.

Inspection of another BMW-powered DeltaJet 500 StingRay (approx. 10 hours flight time that had not been flown for some days) showed a clearly visible oil leak emanating from the rear oil seal and tracking downwards across the aluminium gearbox casing (Fig. 1). Again, when the propeller was held firmly, a small amount of lateral play was found.

It should be noted that a small amount of backlash (rotational movement) is normal for all gearboxes and should not be confused with the lateral movement described above.



Fig. 1 External oil leak



Fig. 2 oil seal and retaining ring

When the first gearbox was stripped down and the oil seal removed, it was found that the inner metal retaining ring did not fit properly into the rubber oil seal (Fig. 2). The metal retaining ring is like a 'top hat' and should fit inside an internal groove in the oil seal. This is the probable cause of the oil leak noticed, although it does not appear to affect all gearboxes.

Enquiries with the gearbox manufacturer (TakeOff-ul, Germany) found that it had received a new batch of oil seals from their supplier in early 2023 with no mention of a design change. A new type of metal retaining ring designed to fit the current oil seal has been manufactured and is now fitted to all new gearboxes. The change was also adopted for gearboxes already in TakeOff's stock, which were disassembled and re-manufactured with new oil seals and retaining rings. However, a small number of gearboxes appear to have been fitted to the BMW engine before the change in the oil seal was noticed, and therefore they have the old retaining ring design with the new oil seal design, resulting in an oil leak.

Loss of oil over an extended period will lead to damage to the gearbox and possible failure in flight.

The original occurrence of lateral movement of the propeller occurred on a gearbox where a retaining ring of the old design had been replaced with the new retaining ring design. To do this a collar on the prop shaft must be removed and then re-fitted using Loctite. Failure to apply Loctite was determined to be the cause of the lateral movement as the collar moved out of position.

Rectification Action:

Before further flight:


- All owners should inspect their gearbox and inform Flylight Airsports if an oil leak is present as shown in Fig. 1 above.
- Even if no oil leak is present, all owners should check for any lateral movement of the prop shaft as it exits the gearbox and inform Flylight Airsports if found.
- All pilots should add these checks to their preflight inspection and inform Flylight Airsports if either an oil leak or lateral movement of the prop shaft develops.
- If either an oil leak or lateral movement is present the aircraft must not be flown.

For all units found to have either an oil leak or lateral play, replacement oil seals and any other internal parts that may be found to have been affected will be supplied and fitted.

For reporting and further information please contact Rob Grimwood 07786 034439

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Approved by: Accountable Manager, Chief Design Engineer or Quality Manager signature, date

 10/11/2023.