

AAIB Bulletin No: 12/95

Ref: EW/G95/07/19

Category: 1.3

Aircraft Type and Registration: Renegade Spirit UK, G-MWNR

No & Type of Engines: 1 Rotax 582 piston engine

Year of Manufacture: 1991

Date & Time (UTC): 23 July 1995 at 1500 hrs

Location: Cublington Airstrip, Bedfordshire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - None

Nature of Damage: Landing gear collapsed, damage to lower wings and fuselage, engine crankcase ruptured

Commander's Licence: Private Pilot's Licence

Commander's Age: 52 years

Commander's Flying Experience: 350 hours (of which 210 were on type)
Last 90 days - 30 hours
Last 28 days - 7 hours

Information Source: Aircraft Accident Report Form submitted by the pilot and enquiries by the AAIB

Whilst climbing out downwind after takeoff, the engine of G-MWNR suddenly lost power at about 400 feet agl. The pilot positioned for a tight curved approach back to the runway and the engine stopped completely. He states that he still had enough height and airspeed to reach the runway but, upon rounding out for touchdown at a height of about 3 feet, he encountered turbulence and despite full aft control input the aircraft contacted the ground heavily and the landing gear collapsed. Both the pilot and the passenger evacuated the aircraft without injury.

Upon examination, the engine was found to have a split crankcase due to failure of the No 1 connecting rod big-end. Although no statistics appear to be available, the Popular Flying Association advise that there is a history of big-end failures on Rotax 582 engines due to worn bearings. This is particularly the case for engines installed in heavier aeroplanes and when used in the training role when extended running at high power is required. The largest service centre for Rotax engines in the UK, to which the engine was sent for examination, has devised an instrument for testing the combined

big/little-end bearing clearances which they say has proved extremely effective in predicting failures before they occur.

Called the 'Cyclone Conrod Bearing Clearance Tester' the device is illustrated in Figure 1. Essentially it is a dial gauge mounted on an extension tube which screws into the spark-plug holes and bears on the piston crown at top dead centre. A syringe is used to suck/blow the piston up and down and the difference in gauge readings is converted into combined bearing clearance. It is recommended that this check be performed every 12.5 flight hours when the plugs should be removed for inspection in accordance with the Rotax service schedule. Maximum wear figures are given with the instrument but records should also be kept so that any trend can be detected in advance. It is understood that the Popular Flying Association agree that this device has been effective in preventing failures of this nature and intend to publish an article to this effect in their magazine *Popular Flying*.

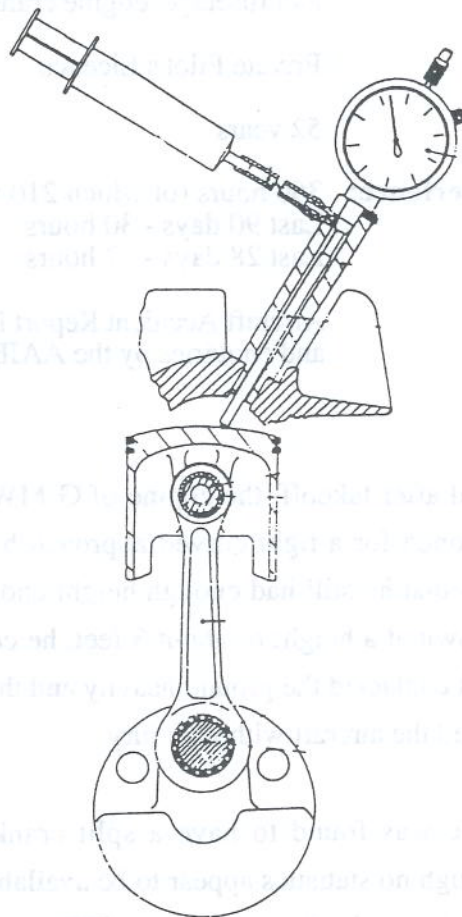


Figure 1 The Cyclone Conrod Bearing Clearance Tester for Rotax engines