

No: 8/92

Ref: EW/G92/05/31

Category: 1c

Aircraft Type and Registration: Denney Kitfox Mk 3, G-DJNH

No & Type of Engines: 1 Rotax 582 piston engine

Year of Manufacture: 1991

Date & Time (UTC): 30 May 1992 at 1500 hrs

Location: Downwood, Dorset

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - None Passengers - None

Nature of Damage: Damage to propeller, wingtips and landing gear

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 46 years

Commander's Flying Experience: 14,000 hours (of which 28 were on type)
Last 90 days - 200 hrs
Last 28 days - 70 hours

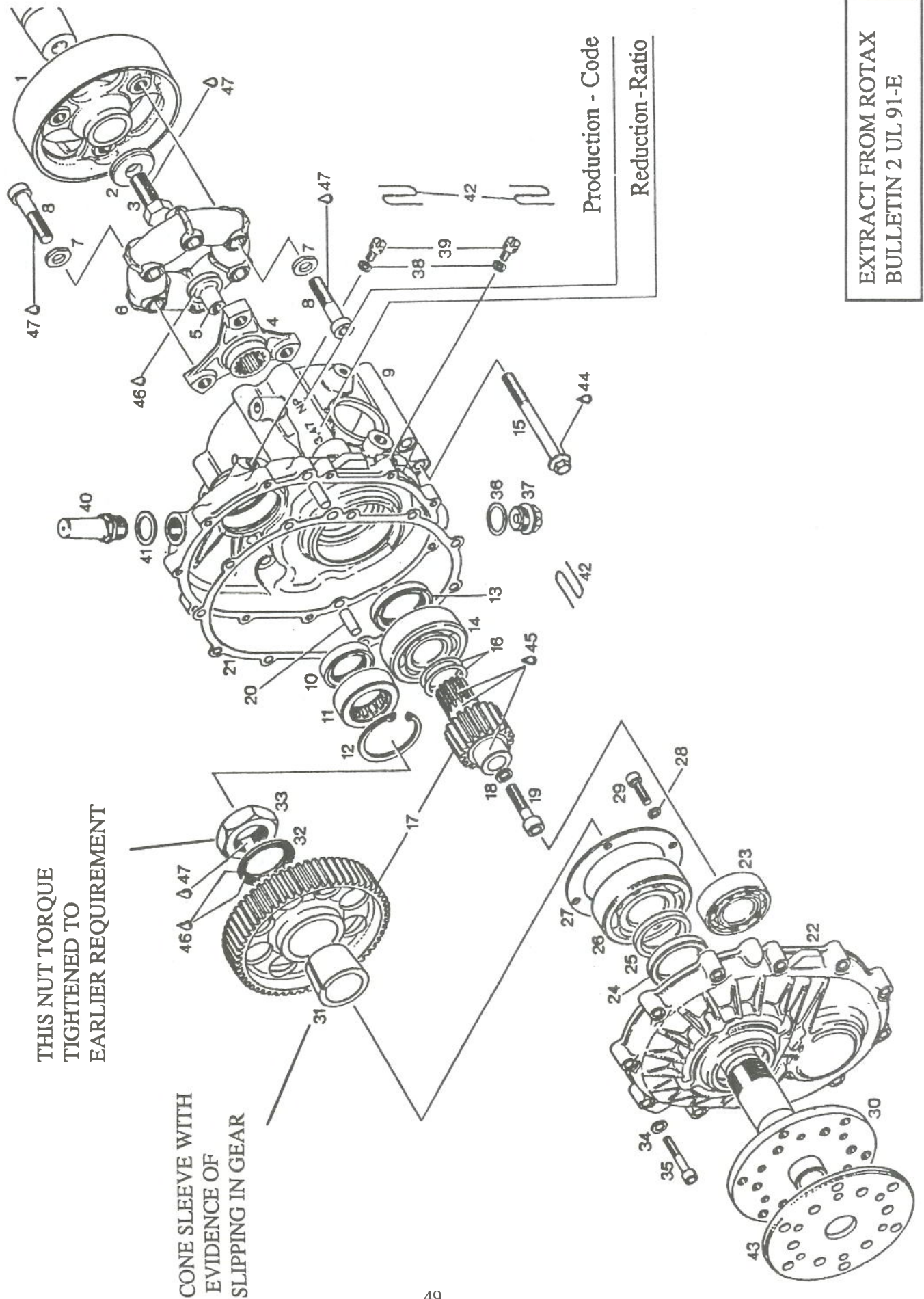
Information Source: Aircraft Accident Report Form submitted by the pilot and AAIB enquiries and visits.

The aircraft had been flown several times on the day of the accident and had performed normally from the grass strip in use, with two persons on board. On the accident flight the aircraft had carried the pilot and passenger, each weighing 160 lb, and 50 lb of mogas, giving a total weight of about 900 lb, well below the 1050 lb maximum weight. The outside air temperature was reported as 16°C. The pilot stated that the aircraft took longer than usual to gain airspeed during the take-off and the climbout was 'sluggish'. During the approach to land, considerably more power than usual was required to maintain airspeed. The runway was observed to be obstructed during the latter stages of the approach and so the pilot initiated a go-around, but although the tachometer indicated in excess of 8000 rev/min, the engine developed little thrust. The aircraft narrowly cleared a hedge at the end of the strip and was landed ahead in an adjoining field, still at 'full power', and sustained damage to the landing gear, wingtips and propeller. There were no injuries and no fire.

The aircraft was fitted with a Rotax 582 two cylinder two-stroke engine. The engine had a type "C" reduction gearbox to which was fitted a three bladed wooden propeller. The propeller blades were of the fixed-pitch type, but were adjustable on the ground. The propeller hub-to-gearbox bolts should be

torqued to 100 inch pounds, and the propeller blade clamping bolts to 120 inch pounds torque. All the bolts were found to be well below the specified torques, although in part this could have been due to the damage sustained in the landing. The blade clamping bolts should be check-tightened daily, however this requires removal of the spinner. In addition, it was observed that tightening the blade clamping bolts would result in reducing the torque in the hub-to-gearbox bolts. These are wire-locked and so require some engineering skill to tighten and re-lock properly. The blade angles were checked as closely as practicable and found to be about 17 degrees for each blade, measured at the 75 % radius position. On dismantling the hub, no internal evidence of movement of any of the blades was found. The correct procedure for establishing the blade angle is to set one blade on the bench to 10° and then to fit the propeller to the aircraft and construct a floor standing gauge to match that blade. The other two blades are then set to the gauge. An engine run is then required to check the static power, which should be 6400 rev/min. The blades should then be uniformly adjusted to obtain the required static engine power. On this aircraft 17 degrees of blade angle had been found suitable, and is typical in this application. Turning the propeller by hand caused the crankshaft to rotate as normal, with no abnormality apparent. However during this investigation the UK distributor for Rotax engines, Cyclone Hovercraft Ltd., advised that the type "C" gearbox was the subject of a Rotax "Service Information Leaflet" 2 UL 91E, dated February 1991. This Leaflet, which had been supplied to all recorded owners of such engines in the UK, stated that this type of gearbox could 'slip' due to insufficient torquing of a nut on the output shaft. It required the torque to be increased from 190 Newtonmetres (Nm) to 300 Nm. The gearbox was therefore dismantled and examined by the UK Rotax distributor, who confirmed that the nut torque was low, *ie* between 150 and 200 Nm, and that the drive had slipped, leading to the loss of thrust reported by the pilot. The accompanying diagram shows the gearbox and output shaft nut.

The engine records showed that it had not been supplied by the UK distributor, but had been originally delivered to the American distributor with a type "B" gearbox. Because the engine had entered the UK by such a route, the UK distributor had not supplied service information. Such information can be obtained by other Rotax owners in the UK through contact with the distributor.



EXTRACT FROM ROTAX
BULLETIN 2 UL 91-E