

ACCIDENT

Aircraft Type and Registration:	Zenair CH 750, G-CIJZ	
No & Type of Engines:	1 Rotax 912ULS piston engine	
Year of Manufacture:	2015 (Serial no: LAA 381-15118)	
Date & Time (UTC):	17 December 2021 at 1350 hrs	
Location:	2 miles west of Wideford Hill, Orkney	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Landing gear damaged and seized engine	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	68 years	
Commander's Flying Experience:	13,968 hours (of which 29 were on type) Last 90 days - 29 hours Last 28 days - 12 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

Approximately 15 minutes into a flight the pilot detected a hot smell and a lack of engine oil pressure. With high vibration and smoke entering the cockpit, the pilot shut down the engine. During the subsequent forced landing the aircraft landed heavily in soft ground damaging the landing gear.

Subsequent inspection of the engine found that a brass pipe connecting the oil pressure transducer to the engine had failed in fatigue causing loss of oil from the engine. At some point in the aircraft's history the oil pressure transducer had been relocated from the standard position to the engine frame which increased relative movement of the pipe in flight.

History of the flight

The pilot took off from Lamb Holm Airfield to conduct some upper air handling in the local area. About 15 minutes into the flight he detected a hot smell and on checking the engine instruments he observed that the oil pressure was reading zero. As he was over hilly terrain and with the engine still running he headed towards Kirkwall and descended, considering a precautionary landing in a field. About two minutes later there was intense vibration from the engine and he immediately shut the engine down and commenced an emergency descent from approximately 1,800 ft.

With smoke entering the cockpit he informed ATC of the problem and that he was executing an emergency landing into a field west of Wideford Hill. The pilot selected a suitable field into wind, but the bright low sun meant that he did not observe power lines crossing the threshold until 400 ft agl. Assessing that he was too close to the wires, the pilot turned through 60° to land in a closer grass field. The aircraft landed heavily in the soft ground. The pilot was unhurt, but the landing had damaged both the main and nose landing gear, and the engine had seized.

Investigation

Inspection of the engine found that a brass pipe connecting the oil pressure transducer to the engine had failed causing loss of oil from the engine. Normally the oil pressure transducer is mounted directly on to the front right hand side of the crankcase. At some point in the aircraft's history the oil pressure transducer had been relocated from the standard position to the engine frame (Figure 1).

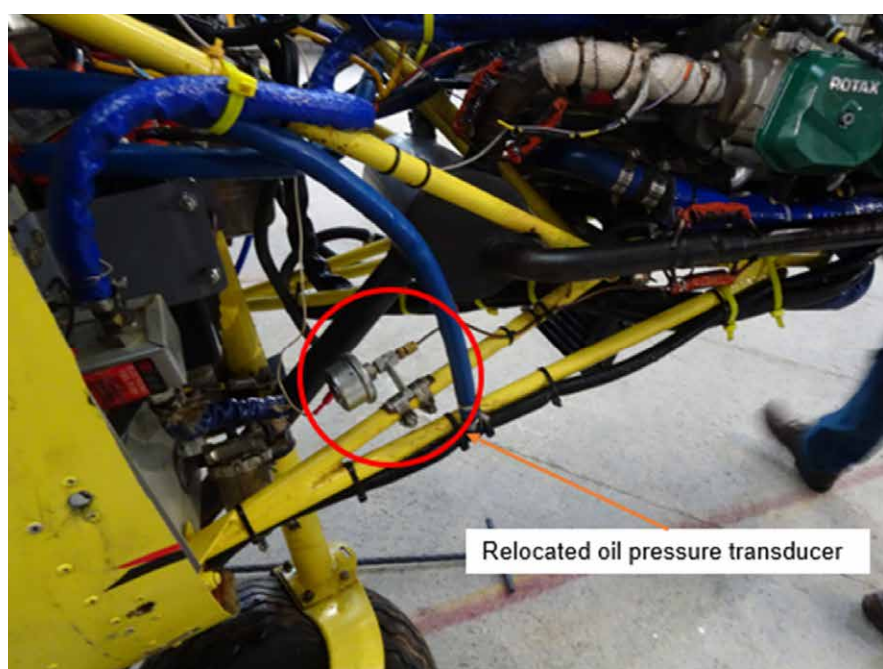


Figure 1

Image showing relocated position of the oil pressure transducer

It is not uncommon to see oil pressure transducers on Rotax 91x Series engines remotely mounted as there is a perception that it reduces fluctuating oil pressure readings. The standard Rotax installation is for the oil pressure transducer to be mounted directly on the crankcase. If relocated it is more normal to see a flexible hose between the engine oil pressure outlet fitting and the transducer. The brass pipe used to connect the transducer on G-CIJZ had failed at the engine fitting (Figure 2), most likely due to fatigue exacerbated by the relative movement between the engine and the frame the transducer had been mounted on.

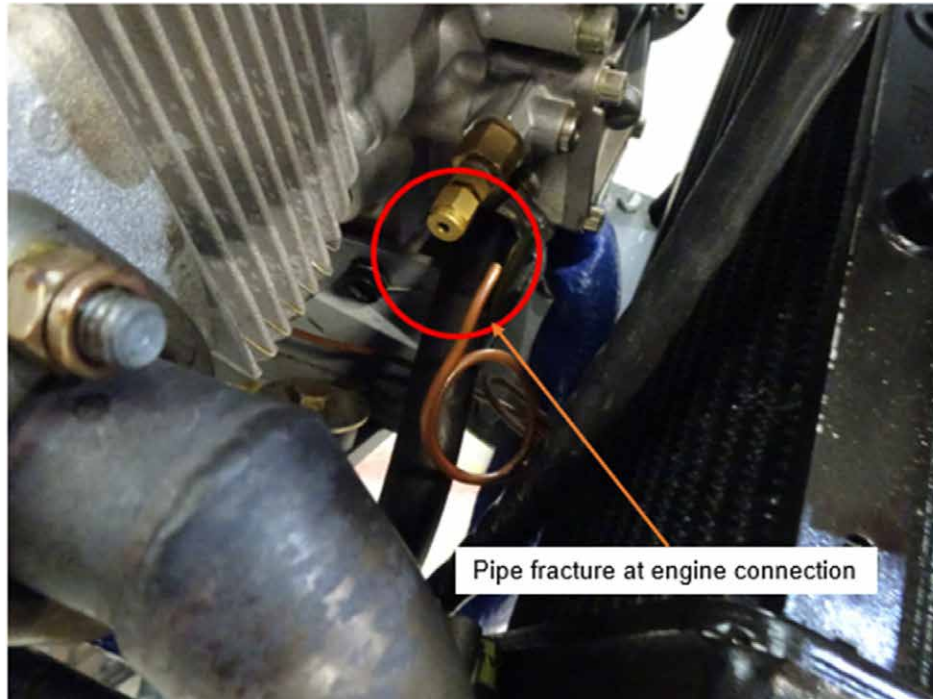


Figure 2

Image showing location of pipe fracture

Oil pressure transducer considerations

When considering the remote location of the oil pressure transducer, the relative movement between the engine and transducer needs to be factored into the modification. The LAA have recently highlighted¹ this issue to owners and inspectors.

Footnote

¹ Light Aviation March 2022 - 'Engineering Matters' published by the LAA.