ACCIDENT

Aircraft Type and Registration:	Europa XS, G-CHAH	
No & Type of Engines:	1 Jabiru 3300A piston engine	
Year of Manufacture:	2005 (Serial no: PFA 247-12949)	
Date & Time (UTC):	18 March 2022 at 1530 hrs	
Location:	Welshpool Airport, Powys	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to propeller, engine cowl and wing tip	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	74 years	
Commander's Flying Experience:	617 hours (of which 523 were on type) Last 90 days - 3 hours Last 28 days - 2 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and enquiries made by the AAIB	

Synopsis

Immediately after takeoff, the engine lost power but it continued to run roughly. The pilot pushed the nose down, closed the throttle in case the engine recovered, and landed on the remainder of the runway. The propeller, engine cowl and right wingtip were damaged during the landing. The loss of power was due to a displaced O-ring seal which caused a leakage in the induction system.

History of the flight

Immediately after takeoff, at approximately 60 ft agl and 60 kt, and just as the pilot was retracting the landing gear and flaps, the engine lost power. The engine continued to run roughly. The pilot pushed the nose down and closed the throttle, in case the engine recovered, and landed on the remainder of the runway. On touchdown the partially retracted main wheel was pushed into its well and the aircraft came to a stop on the right side of the runway. The propeller, nose cowl and right wingtip were damaged during the landing. The pilot made the aircraft safe and vacated the cockpit uninjured.

Engine examination and causal factors

An engineer examined the engine after the accident and found that an O-ring seal in the induction system appeared to have been displaced. The induction system consists of a plenum chamber with six induction pipes branching out to the inlet ports on each cylinder. The pipes are held and sealed into the outlet orifices of the plenum chamber with an O-ring

seal and a bead of gasket sealant. In this case one of the four O-ring seals had become displaced and was no longer able to provide an airtight seal. This allowed air to be drawn into the induction system which adversely affected the fuel air ratio. It is possible that the displacement of the O-ring seal had been caused by a slight movement or shrinkage over time of one of the neoprene flexible joints on the induction pipes.

The organisation that maintained the engine has encountered similar problems on other Jabiru engines and considers that the method of assembly detailed in the manual, although correct, can be misinterpreted. Accordingly, the maintenance organisation is producing some illustrated guidance to owners.

AAIB comment

In many cases a partial power loss in General Aviation aircraft results in a forced landing and this often, but not always, leads to damage to the aircraft.

Often when pilots are faced with a loss of power, the temptation is to carry on in the hope the engine recovers. On numerous occasions there is a decision to turn back after takeoff or to 'nurse' an aircraft with low or decreasing power back to the airfield. With an unpredictable engine at low power, this often leads to a loss of control in flight which results in a more serious or even fatal outcome.

The AAIB has recently reported on partial power loss on takeoff events[1] which have highlighted concerns that some GA pilots may not be specifically trained to manage partial power loss immediately after takeoff. The AAIB has therefore issued Safety Recommendations to the UK Civil Aviation Authority to address training for ab initio pilots, as well as instructors and examiners, to undergo training in the management of partial power loss situations in single-engine fixed-wing aeroplanes. The recommendations also address promotion of partial power loss techniques to GA pilots.

The pilot in this case took appropriate action to land the aircraft and not to turn back. In closing the throttle, he also removed the risk of the engine suddenly recovering and causing the aircraft to either unexpectedly climb or re-accelerate after touch down.

Footnote

[1] https://assets.publishing.service.gov.uk/media/629f53c1d3bf7f036a31c70a/Grumman_AA-5_G-BBSA_07-22.pdf and https://assets.publishing.service.gov.uk/media/629f5bbf8fa8f5039617322c/Rogers_Sky_Prince_G-CJZU_07-22.pdf [both accessed October 2022].