No: 8/92 **Ref: EW/G92/06/04** **Category: 1c**

Aircraft Type and Registration:	Evans VP-2 Volksplane, G-BEVP	
No & Type of Engines:	1 Volkswagen 2074 piston engine	
Year of Manufacture:	1983	
Date & Time (UTC):	13 June 1992 at 1250 hrs	
Location:	Truleigh Hill Farm, West Sussex	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to the landing gear and minor damage to the wings	
Commander's Licence:	Basic Commercial Pilot's Licence with Instructor rating	
Commander's Age:	28 years	
Commander's Flying Experience:	517 hours (20 minutes on type) Last 90 days - 6 hours Last 28 days - 3 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent examination of the aircraft by the AAIB	

The Evans VP2 is a 'side-by-side' two seat aircraft which was powered, in this case, by the Lister conversion of a 2033 cc Volkswagen car engine. The aircraft was making its first flight since being extensively overhauled and rebuilt, it having been granted a Certificate of Fitness for Flight (for the purposes of test flights) on 29 April following a detailed inspection. The pilot had waited until the day of the accident for a suitable wind/weather combination, but reported that extensive engine running and taxiing had been performed during this intervening period. After a normal engine start and groundchecks, the aircraft took-off, accelerating and climbing away normally until, at a height of some 30 feet agl, the engine began to lose power. The pilot lowered the nose to maintain a safe flying speed and turned the aircraft to the right to avoid some trees. He then found that a reduction in throttle setting resulted in a slight increase in power. However, approximately half-way around a low circuit the engine lost all power and a forced landing was made in a field of standing crop, at low speed. The pilot, who was uninjured, was able to make her escape unaided.

An external examination of the aircraft and its engine failed to reveal any obvious reason for the loss of power. As the aircraft had sustained no impact damage to the engine or fuel system, it was decided to run the engine using a small quantity of fresh fuel, the original fuel having been drained-out following the accident. Prior to starting, it was established that the engine turned smoothly and had four 'even' cylinder compressions. Once started, the engine ran evenly without misfiring, and it was established that both magnetos and their switches were serviceable. However, it was apparent that once the engine was shut down in a 'hot' condition, the resistance to turning the propeller by hand increased noticeably. Futher examination revealed that there was no 'end-float' present between the crankshaft and engine crankcase, with the engine hot or cold. With this type of engine, there is a requirement for an end-float of between .005" and .008"

In the Volkswagen car engine, crankshaft axial thrust is accommodated by thrust washers positioned inside the crankcase at the rear of the engine. In the Lister conversion, these washers are removed and the propeller thrust is reacted by a bearing contained in an external housing, which is bolted to the front of the engine. The housing is mounted on three spacer blocks, the thickness of which effectively sets the amount of crankshaft end-float. On this engine, end-float could only be achieved by slackening-off the three housing mounting bolts, following which, with the engine hot, the propeller turning resistance reduced.

On the day of the accident there was a light and variable wind, with an ambient temperature of around 22°C.