Aircraft Type and Registration:	Europa, G-PTYE	
No & Type of Engines:	1 Rotax 912-UL piston engine	
Year of Manufacture:	1996	
Date & Time (UTC):	16 March 2003 at 1330 hrs	
Location:	Caltonmoor, Nr Ashbourne, Derbyshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Substantial	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	52 years	
Commander's Flying Experience:	97 hours (of which 70 were on type) Last 90 days - 2 hours Last 28 days - 0 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

The aircraft was kept in a hangar at Caltonmoor Farm Strip. On the day of the accident the pilot, who was also the owner of the aircraft, pulled it out of the hangar prior to preparing it for a local flight with a passenger. When both persons were on board, the engine was started and the pre-flight checks were carried out and found to be satisfactory. The strip at Caltonmoor is at 990 feet amsl, measures approximately 500 metres in length and has an undulating grass surface. The weather conditions were fine with a light and variable wind.

The aircraft taxied to the start of Runway 24 and the pilot applied full power. He noticed that the start of the take-off roll was sluggish but ascribed this to the presence of his passenger. The initial part of the runway is on a downslope and then the ground starts to rise again. As he reached the top of the rise the pilot expected that the aircraft would become airborne, perhaps skip once and then accelerate and climb. However, although the aircraft did skip into the air where he expected, it did not remain airborne or gain flying speed. Realising it was now too late to stop the pilot continued the attempted takeoff but failed to clear a low stone wall at the end of the strip.

The underside of the aircraft impacted the wall, causing the upper stones to become dislodged, and it came to rest on the other side having sustained substantial damage. The pilot and his passenger were both wearing four point harnesses and were able to escape from the aircraft uninjured.

The pilot was confident that the engine had been producing the required power but observed that there was an unusual amount of drag affecting the aircraft. He thought there were several factors which could have contributed to the apparent lack of performance. Firstly he did not carry a passenger very frequently and the extra weight would have had a significant effect. Secondly he noticed afterwards that the grass was longer than usual, following a spell of recent fine weather. Thirdly he thought it possible that the brake on the monowheel had dragged. He pointed out that with this type of aircraft configuration there would be no turning tendency with a dragging brake, and it could therefore go unnoticed.

The Europa aircraft are supplied in kit form and are all built individually. There will thus be considerable variation in performance between one aircraft and another. The manufacturer includes the following information in the Owner's Manual: *'The aircraft operator/pilot should carefully measure and record the performance of their aircraft to assist in the safe operation of their particular aircraft'*. There is also a section entitled '*Performance'* in which some of the measured performance data from a prototype aircraft is published. Pilots are advised that the figures presented will vary with build quality, propeller pitch, payload, runway surface, ambient temperature and pilot technique.

The General Aviation Safety Sense Leaflets 12C '*Strip Sense'*, and 7B '*Aeroplane Performance*', published on the Civil Aviation Authority website, provide guidance to pilots regarding the performance implications of aircraft operations from grass strips. The following information is included: *'As a rule of thumb, the grass length should not be more than 30% of the diameter of the wheel'*. Furthermore pilots are advised of a number of factors that will affect both the take-off roll and the take-off distance (to height 50 feet) required by an aircraft. These factors include; a 10% increase in aircraft weight, resulting in a 20% increase in distance; a 1,000 feet increase in elevation, resulting in a 10% increase in distance; dry grass, resulting in a 20% increase in distance with an even greater effect on roll; tyre pressure; and a 2% upslope resulting, in a 10% increase in distance.

The advice published also recommends that pilots work out a decision point along the runway from which a successful stop could be made. The pilot commented afterwards that he considered that a useful technique would be to calculate a given number of seconds in which he should attain a particular speed. This he felt would help to give him an earlier indication of reduced performance.