

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Pioneer 300 Hawk, G-JDRD	
<b>No &amp; Type of Engines:</b>	1 Rotax 912 ULS piston engine	
<b>Year of Manufacture:</b>	2010	
<b>Date &amp; Time (UTC):</b>	31 July 2010 at 1335 hrs	
<b>Location:</b>	Dunkeswell Airfield, Devon	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Propeller, aerial beneath fuselage	
<b>Commander's Licence:</b>	National Private Pilot's Licence	
<b>Commander's Age:</b>	57 years	
<b>Commander's Flying Experience:</b>	5,081 hours (of which 8 were on type) Last 90 days - 17 hours Last 28 days - 7 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

### Synopsis

The nose landing gear could not be raised after takeoff and could not be locked down. A successful wheels-up landing was performed and a broken universal joint in the nose gear actuating mechanism was found to be the cause.

### History of the flight

After takeoff, the pilot retracted the tricycle landing gear but received an 'unsafe' warning for the nose landing gear, whilst the two main gears indicated normally. The same indications occurred when the gear was recycled and it appeared that the nose gear would not fully retract or lock down. The pilot tried to wind the gear down manually but with the same result – the nose gear continued to give an unsafe indication.

A pilot in another aircraft visually confirmed that the nose gear was not locked down so the pilot of G-JDRD elected to perform a landing on the grass parallel to Runway 23 at Dunkeswell; he chose to do this with the main gears retracted as he feared that the nose of the aircraft might 'dig-in' and invert. The landing was successful and resulted in minimal damage.

### Examination of the aircraft

The aircraft was lifted and all three landing gears were extended and manually placed into the down and locked condition. The nose gear was found to be swinging freely as it did not appear to be connected to its extension/retraction mechanism. The electrical landing gear actuator is connected to a gearbox which outputs

to three shafts, one to each landing gear; for the nose gear two universal joints are fitted at each end of the actuating shaft. The joint at the gearbox end of the shaft was found to have failed in overload, leaving no drive to the nose gear either electrically or manually.

The Light Aircraft Association (LAA) have advised that similar failures have resulted from the electric motor continuing to drive the actuating shaft against jams or extreme stiffness of the mechanism. A 7 amp

circuit breaker (CB) is specified in the motor circuit and G-JDRD was found to have a 10 amp CB fitted. It is currently unknown whether fitting the lower-rated CB would have resulted in it tripping and preventing mechanical damage; although it is thought that fitment of the 10 amp CB is fairly common. The LAA has embarked on trials with the manufacturer to assess the effect of fitting a 10 amp CB instead of the originally specified 7 amp. Results of the trials will be promulgated by the LAA.