

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Midget Mustang, G-IIMT
<b>No &amp; Type of Engines:</b>	1 Continental Motors Corp O-200-A piston engine
<b>Year of Manufacture:</b>	2005
<b>Date &amp; Time (UTC):</b>	24 August 2011 at 1500 hrs
<b>Location:</b>	Gloucester Airport, Gloucestershire
<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>	Damage to landing gear structure and wing
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence
<b>Commander's Age:</b>	39 years
<b>Commander's Flying Experience:</b>	9,815 hours (of which 52 were on type) Last 90 days - 173 hours Last 28 days - 61 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB

## Synopsis

The engine suffered a loss of power after takeoff and the ensuing forced landing on an intersecting runway resulted in damage to the landing gear structure and wing. The fuel filler cap of the pressurised fuel tank was found loose which would have resulted in a loss of header pressure and this probably contributed to a fuel vapour lock.

## History of the flight

The pilot had refuelled the aircraft at Edge Hill farm strip in Oxfordshire and had completed an uneventful 20 minute flight to Gloucester Airport. The air temperature at Gloucester was about 19°C. About 40 minutes later, after normal engine power checks, the

pilot lined up for a takeoff from Runway 22 to return to Edge Hill. The acceleration during the takeoff was normal, but at about 100 to 200 feet above the runway the engine suffered a rapid loss of power. The engine continued to run but only at about idle power. The pilot considered landing straight ahead but thought he might overrun the end so he banked left to land on the intersecting Runway 18 which extended into a taxiway at its end. The aircraft touched down heavily on Runway 18 with the left mainwheel and tailwheel first. The pilot was able to stop the aircraft on the taxiway just beyond the end of the runway, and was able to exit the aircraft without assistance.

## Aircraft description

The Midget Mustang is a homebuilt aircraft operated under a Permit to Fly and has a maximum takeoff weight of 454 kg (Figure 1). It has a single fuel tank, located in front of the instrument panel with a gravity feed system to the engine. No engine-driven fuel pump is fitted but there is an electric fuel pump which is normally used for takeoff and landing. According to the Light Aircraft Association (LAA) Inspector who examined G-IIMT, the gravity feed fuel system provides marginal fuel pressure so the kit manufacturer had developed a modification that results in the fuel tank being pressurised by ram air from a pitot tube fitted under the belly. This modification was fitted to G-IIMT. The ram air passes through a plastic hose fitted to the top of the fuel tank filler cap and the filler cap is secured by a hinged clamp and knurled screw (Figure 2).



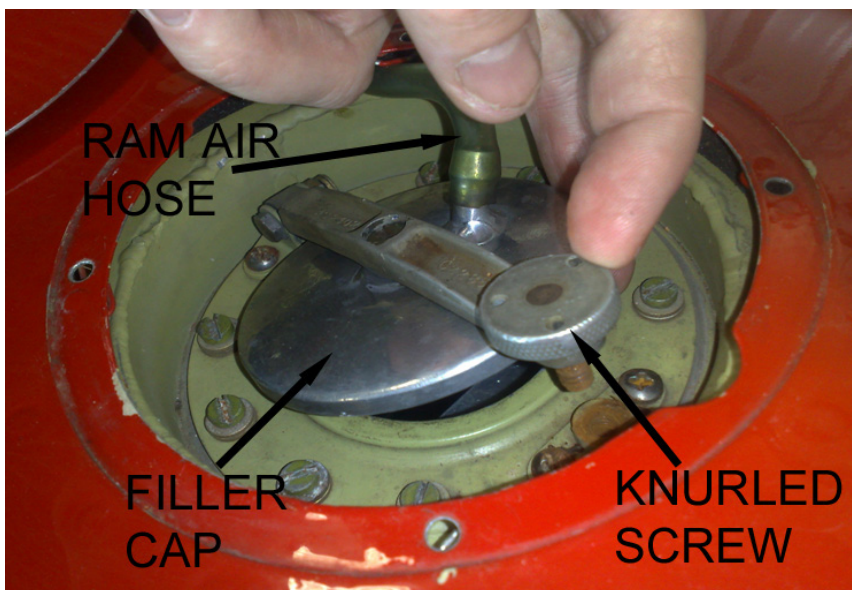
**Figure 1**

Midget Mustang G-IIMT prior to the accident  
(photograph courtesy of Roger Syratt)

## Aircraft examination

When the pilot first examined the aircraft after the accident he discovered that the knurled screw was loose and the filler cap was no longer sealing the tank. This would have resulted in the loss of ram air pressure

and reduced the fuel header pressure. The pilot reported that although he normally turned on the electric fuel pump for takeoff he could not recall if he had done so on this occasion. Further examination of the aircraft and fuel system by the LAA inspector did not reveal any further anomalies. The LAA inspector reported that without the ram air pressure the fuel pressure was probably insufficient to allow the fuel to flow through a potential vapour lock or build up of vapour around the fuel pipe loop near the electric fuel pump. He also stated that because the aircraft



**Figure 2**

Fuel Filler Cap arrangement on G-IIMT

had been on the ground for about 40 minutes this could have provided sufficient time for vapour to build up inside some of the un-insulated fuel lines in the engine compartment.

### **Analysis**

Apart from the loose fuel filler cap, no other faults with the aircraft were found. It is therefore probable

that a fuel vapour lock resulted in the loss of power during takeoff due to insufficient header pressure in the tank to clear it. It is also possible that the electric fuel pump had not been turned on and this contributed to the reduced fuel pressure.