

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Minicab (JB01 Standard), G-ATPV
<b>No &amp; Type of Engines:</b>	1 Continental Motors Corp C90-8F piston engine
<b>Year of Manufacture:</b>	1959 (Serial no: JB-01)
<b>Date &amp; Time (UTC):</b>	18 April 2015 at 1250 hrs
<b>Location:</b>	Fenland Airfield, Lincolnshire
<b>Type of Flight:</b>	Private
<b>Persons on Board:</b>	Crew - 1                      Passengers - None
<b>Injuries:</b>	Crew - 1 (Serious)      Passengers - N/A
<b>Nature of Damage:</b>	Propellor destroyed
<b>Commander's Licence:</b>	Light Aircraft Pilot's Licence
<b>Commander's Age:</b>	65 years
<b>Commander's Flying Experience:</b>	394 hours (of which 175 were on type) Last 90 days - 7 hours Last 28 days - 7 hours
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and report by the airfield operator

## Synopsis

The throttle was in the fully open position when the pilot attempted to start the engine by hand-swinging the propeller. The engine started at high power, the aircraft tipped forward and the pilot was struck by the propeller suffering a serious injury.

## The accident

The aircraft was not fitted with a starter motor and the pilot was attempting to start the engine by hand-swinging the propeller from the front - the cockpit was unoccupied. He believed he had followed his normal procedure, which included applying the parking brake, chocking the aircraft and setting the throttle to the marked start position (about 1" open). However, when the engine fired, the pilot was immediately aware that the rpm was too high. He attempted to move round the aircraft, to the left side of the cockpit, to shut the engine down but, as he did so, the aircraft tipped forward and he was struck repeatedly on the forearm by the propeller. The aircraft continued to tip over and the propeller was shattered as it struck the ground. This also stopped the engine.

The accident was seen by airfield staff who provided extensive first aid, including improvising a tourniquet with a belt. Ambulance assistance was called promptly and arrived twenty-five minutes after the accident.



He considered it most likely that, immediately before the accident, he had omitted to retard the throttle from the fully open position before attempting to swing the propeller.

In the CAA's Safety Sense Leaflet 1e, *Good Airmanship*, Section 19, it states:

*'b) Never attempt to hand swing a propeller (or allow anyone else to swing your propeller) unless you know the proper, safe procedure for your aircraft and situation, and there is a suitably briefed person at the controls, the brakes are ON and/or the wheels are chocked. Check that the area behind the aircraft is clear.'*

Advice on propeller swinging has also been published by the LAA<sup>1</sup>, in Pilot magazine<sup>2</sup> and by CASA.<sup>3</sup>

### **Pilot's risk assessment**

The pilot later commented that he had previously considered the risk of this sort of error and had decided that he would not tie back the control stick. He reasoned that, in the event of a high RPM start, if the stick was back and the brakes did not hold, the aircraft would be more likely to run away and possibly become airborne. He considered that, if the aircraft was braked and chocked without the control stick being held back, it would be more likely to tip forward. Although that would hazard him, it would reduce the risk to others. He had also decided not to use a checklist, as he felt it would be a distraction from focussing on the aircraft.

### **Human factors**

Reason<sup>4</sup> (1990) would define the pilot's mistake as a lapse; a step of his starting procedure was unintentionally omitted, resulting in the throttle not being retarded. Then, the pilot did not see the incorrectly positioned throttle, although he believed he had looked at it. Where a process is conducted routinely or frequently, there is risk of seeing what is expected rather than what is actually there.

### **Conclusions**

The pilot considered it most likely that, immediately before the accident, he had omitted to retard the throttle from the fully open position before attempting to swing the propeller. In human factors terms, this was an unintentional lapse.

CAA Safety Sense Leaflet 1e advises that there is a suitably briefed person at the controls when attempting to hand swing a propeller.

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#### **Footnotes**

<sup>1</sup> <http://www.lightaircraftassociation.co.uk/2014/Mag/Apr/Safety.pdf>

<sup>2</sup> [http://www.pilotweb.aero/techniques-training/how\\_to\\_prop\\_swing\\_1\\_4043093](http://www.pilotweb.aero/techniques-training/how_to_prop_swing_1_4043093)

<sup>3</sup> [http://www.casa.gov.au/wcmswr/\\_assets/main/fsa/1998/jul/28.pdf](http://www.casa.gov.au/wcmswr/_assets/main/fsa/1998/jul/28.pdf)

<sup>4</sup> Human Error, James Reason, 1990