

Katana DV20, G-BWIO

AAIB Bulletin No: 6/97 Ref: EW/G97/02/03 Category: 1.3

Aircraft Type and Registration:	Katana DV20, G-BWIO
No & Type of Engines:	1 Rotax 912-A3 piston engine
Year of Manufacture:	1995
Date & Time (UTC):	8 February 1997 at 1400 hrs
Location:	Field near Sleaf Aerodrome, Shropshire
Type of Flight:	Private (Training)
Persons on Board:	Crew - 2 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Damage to propeller, engine cowling, right main wheel, right wing, flap and aileron
Commander's Licence:	Basic Commercial Pilot's Licence, with FI Rating
Commander's Age:	51 years
Commander's Flying Experience:	3,050 hours (of which 55 were on type) Last 90 days - 80 hours Last 28 days - 20 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by AAIB

In the Katana DV20, a basic trainer, entry to and exit from the cockpit is by moving up and to the rear a single piece transparent canopy. This moves on a simple rod linkage and there is a fixed handle on each side, resembling the grip on a bicycle handlebar. Just aft of each handle there is a latch lever, painted red, used for locking the canopy closed: in the locked position, the latch levers lie forward, horizontal and aligned with the canopy frame. To unlock the canopy, the latch levers are rotated upwards and to the rear: the initial movement of each lever unlatches the canopy on that side of the cockpit and a further, distinct, motion is required to unlatch the opposite side.

The aircraft was being used for initial training, returning to Woodford after a session of flying in the circuit at Sleaf airfield. Both the student and the instructor state that the pre-flight checks had been performed satisfactorily and that the take off from Sleaf was normal, with some turbulence. The student was flying the aircraft during the initial climb when he became aware of the extra noise of "rushing air" and at some 300 feet AGL noticed that the left-hand side of the canopy had lifted. The instructor took control of the aircraft whilst the student attempted to close and re-latch the canopy

but this was unsuccessful. The instructor then moved the right-hand lever to unlatch his side and thus 'recentre' the canopy but the slipstream moved the canopy aft and it could not be secured again. At this point the aircraft was descending and the instructor found it difficult to control in pitch, even with full power and 'nose up' elevator. However, the descent was, fortuitously, into a field and, even with limited pitch authority and a high rate of descent, the instructor was able to make a forced landing. Although the aircraft was damaged, both occupants were restrained by their full harnesses and neither was injured. The instructor later commented that, although it was difficult to establish just how far the canopy had lifted with one latch undone, it had certainly been far enough to cause alarm and that if only slight lifting had occurred, he felt that he would have turned downwind and landed back at Sleep.

The instructor and student state that both levers had been secured in the latched position before take off. They consider that slight turbulence during the climb out may have caused the student's arm, or the map he was carrying, to raise the lever on the left-hand side or, more likely, that the lever may have been lifted accidentally on the ground while the student was manoeuvring in his seat to free a trapped RT headset lead.

Examination by AAIB of another Katana DV20, at Cranfield, confirmed that for most pilots the cockpit fit is certainly 'snug' and that the force required to move either latch lever through its initial motion is low and could be applied accidentally. This motion is sufficient to unlatch the canopy on that side. It was also noted that a much higher force was then required for the further motion to unlock the opposite latch, through a 'Bowden' cable, and this would be unlikely to occur accidentally. A similar version of the Katana DV20 design, the DA20A1, is produced by the same manufacturer in Canada with a number of modifications: these include a different design of canopy latching, where the latching and unlatching motions are mechanically designed to require a substantial and distinctive force.

The aircraft manufacturer has commented to AAIB that the latch is of the type found in some 300 Dimona motor-gliders, as well as some 160 Katanas, that there has been no comparable mishap and that the effect on performance of one of the two latches becoming undone is only slight, whereas the opening of the second latch would cause the canopy to move aft and create severe drag. However, the manufacturer has found that this design of the latch does give some variation in the loads required for unlocking and is considering a minor redesign to ensure proper and consistent unlocking loads, with a Service Bulletin to install it in existing aircraft.