

AAIB Bulletin S3/2021

SPECIAL

ACCIDENT

Aircraft Type and Registration:	Escapade, G-CGNV	
No & Type of Engines:	1 Rotax 912-UL piston engine	
Year of Manufacture:	2011 (Serial no: LAA 345-14901)	
Date & Time (UTC):	14 November 2021 at 1204 hrs	
Location:	Brighton Airfield, East Riding of Yorkshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Fatal)	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Private Pilot's Licence (Aeroplanes)	
Commander's Age:	66 years	
Commander's Flying Experience:	945 hours (of which 4 were on type) Last 90 days - 9 hours Last 28 days - 3 hours	
Information Source:	AAIB Field Investigation	

Synopsis

The aircraft was seen to takeoff and climb steeply while appearing to sideslip and drift off the runway centreline. It climbed to approximately 180 ft agl at which point the left wing dropped, the aircraft departed from controlled flight and it descended rapidly to the ground. The pilot was fatally injured. The evidence indicates that the seat moved rearwards leading to the pilot losing control of the aircraft. The cause of the seat movement is under investigation. Three Safety Recommendations are made.

This Special Bulletin contains facts which have been determined up to the time of issue. It is published to inform the aviation industry and the public of the general circumstances of accidents and serious incidents and should be regarded as tentative and subject to alteration or correction if additional evidence becomes available.

History of the flight

The pilot had flown the aircraft to Brighton Airfield from Rufforth (East) Airfield during the morning of Sunday 14 November 2021 to attend a remembrance service on the airfield. After the service he boarded G-CGNV for the return flight and started his takeoff from the Runway 10 threshold. Witnesses recalled that at some stage during the takeoff the pilot made a radio call on the Brighton Radio frequency indicating that he had a problem with the seat and was returning to the airfield to land. Eyewitnesses, including several pilots, reported that immediately after lifting off the aircraft began to climb at an uncharacteristically steep angle and in an unusual attitude. The aircraft climbed left wing low with right yaw which generated significant sideslip and led to its flightpath rapidly diverging to the right of the runway. CCTV imagery corroborated eyewitness accounts. The aircraft reached approximately 180 ft agl at which point the left wing dropped and the aircraft departed from controlled flight, descended rapidly and struck the runway abeam the control tower. The aircraft sustained major disruption during the impact, and a fire ensued. Airfield staff were quickly on scene and the fire was extinguished within one minute. The pilot was fatally injured. An image of the track of G-CGNV using PilotAware ATOM GRID Network data is contained in Figure 1.



Figure 1

Track of G-CGNV using PilotAware ATOM GRID Network data
(Satellite imagery courtesy of Google Earth)

Aircraft description

The Escapade is a homebuilt, single-engined, high wing, monoplane, taildragger aircraft of tubular steel, tubular aluminium and plywood construction with fabric covering. It is a two-seat side-by-side aircraft with dual controls, cable operated flaps and conventional flying controls. An image of G-CGNV is shown in Figure 2.



Figure 2

Image of G-CGNV (image used with permission)

The seats are also of tubular steel construction with tailored foam fabric-covered cushions. Both seats are adjustable for reach. They slide backwards and forwards on flat nylon runner strips on which the outer frame tubes of the seat pan rest. In G-CGNV, additional foam pads had recently been fitted by the pilot to raise and move him forward on the seat.

The seat is held in the selected position by a small spring-loaded pin centrally positioned at the front of the seat pan. The pin locates in equally spaced holes in a tube called an '*adjustment rail*' attached to the cockpit floor cross frame. Figure 3 shows the seat adjustment pin.

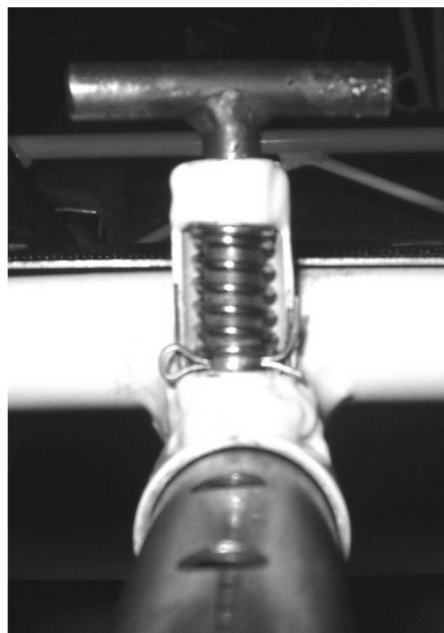


Figure 3

Image of seat pin from the aircraft assembly manual
(courtesy of the manufacturer)

The seat has 150 mm of travel and is fitted with a 25 mm wide webbing loop and cam buckle which is designed to be tightened after seat adjustment. These are known as '*seat adjuster backup straps*' (Figure 4). The installation manual states that these are '*a safety backup in case of seat pin failure.*' The straps should be tightened before flight, after the seat position has been finally adjusted.

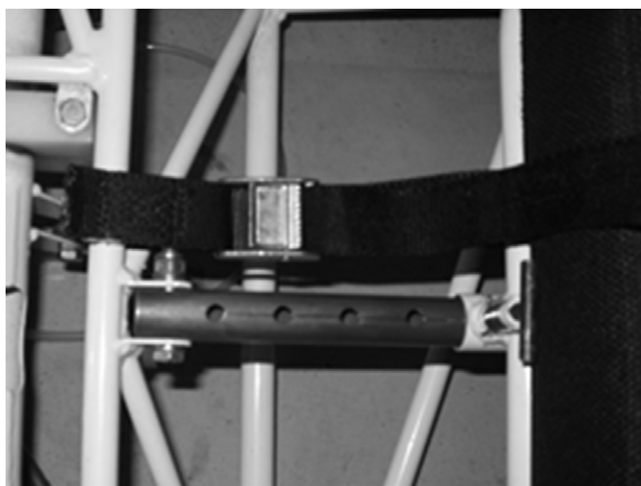


Figure 4

Image of the seat adjuster backup strap from the aircraft assembly manual
(courtesy of the manufacturer)

On G-CGNV, four-point safety harnesses were fitted for each of the seat occupants. The shoulder straps were attached to a cross tube at the rear of the cockpit, and the lap straps were attached to the seat frame at the back of the seat pan. Therefore, if the occupant was correctly strapped in and the seat then moved rearwards, the two shoulder straps would slacken, however the lap strap would remain tight.

To enter and exit the cockpit, pilots and passengers generally move the seat fully rearwards to enable their knees to clear the instrument panel and control column.

Initial findings

Witnesses recalled that at some stage during the takeoff the pilot made a radio call indicating that he was having problems with his seat.

The stature of the pilot required him to have the seat fully forward. Evidence showed that the rudder control cables had recently been adjusted to the shortest limit in order to bring the rudder pedals rearwards to be nearer the pilot.

Witness evidence indicated that other users of the aircraft had previously experienced difficulty locating the pins for both left and right seats in an appropriate hole in the adjustment rail to lock the seats. Figure 5 shows a comparison between the correct and incorrect location of the seat adjustment pin. While sitting in the seat the occupant is not afforded the same view as in Figure 5.

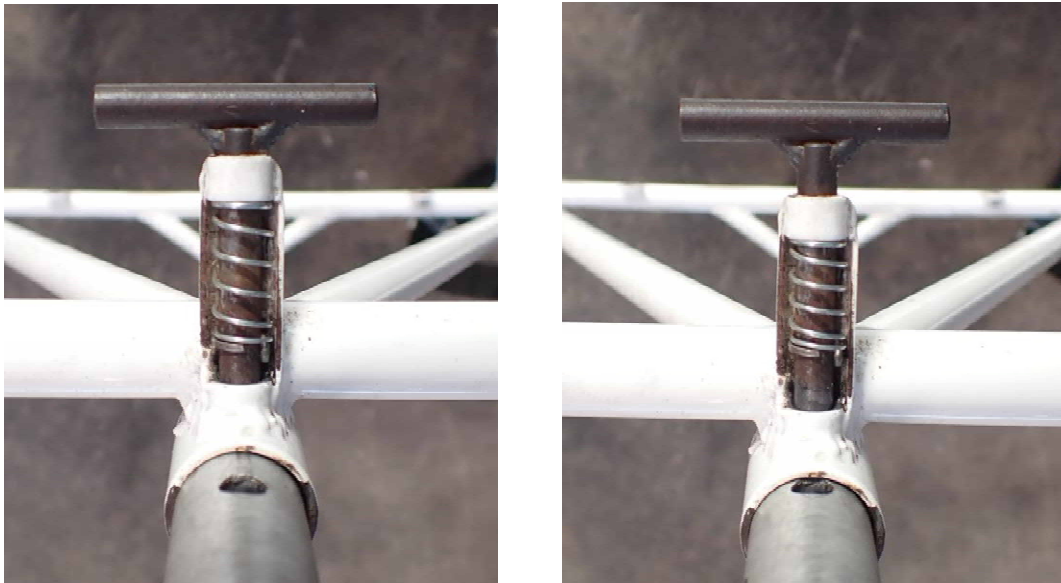


Figure 5

Seat adjustment pin correctly located in one of the holes in the adjustment rail (left) and incorrectly located sitting on top of the adjustment rail (right).

Note: seat cushion removed for clarity

Post-accident examination of the pilot's seat assembly showed that the seat pin was not correctly located in a hole in the adjustment rail. The damage and distortion to the adjustment rail was consistent with the seat being towards the rearmost extent of its travel when the aircraft struck the ground. Marks on the damaged adjustment rail showed that the seat adjustment pin and holes were slightly misaligned, with their centrelines offset (Figure 6), making it difficult for the pin to locate correctly.



Figure 6

Marks created on the pilot's seat adjustment rail by the pin

Witness evidence also indicated that the pilot had found the seat adjuster backup straps “fiddly” to use. The pilot’s strap was found to be set at a length that would have allowed the seat to have travelled rearwards to around the full length of its travel, and therefore would not have secured the seat in the fully forward position as required by this pilot.

Conclusion

The evidence indicates that the seat adjustment pin was not correctly located in one of the holes in the adjustment rail and therefore the seat was not locked in the fully forward position required by the pilot. Additionally, the seat adjuster backup strap, intended to prevent rearwards seat movement in case of pin failure, appears not to have been tightened.

At an early stage in the takeoff, the pilot reported he was having problems with his seat.

The evidence indicates that the seat moved rearwards leading to the pilot losing control of the aircraft. The damage and distortion to the adjustment rail was consistent with the seat being towards the rearmost extent of its travel when the aircraft struck the ground.

Safety Recommendations

The inadvertent seat movement appears to have caused a loss of control with catastrophic consequences. The evidence shows that the pin was not correctly located in one of the holes in the adjustment rail and therefore the seat was not locked in place. Initial findings indicate that it is difficult to confirm correct pin location while occupying a seat, and for forward positions of the seat it might not be possible to vacate the seat to check the pin location. Additionally, the seat adjuster backup strap, designed to prevent rearwards seat movement in case of pin failure, appears not to have been tightened.

On the UK register there are 36 Escapade aircraft and 7 Sherwood Scout aircraft of similar design. These operate on Permits to Fly issued by the BMAA and LAA. Given the possibility for a seat to not be properly locked in place and the secondary locking to not be secure the following two Safety Recommendations are made:

Safety Recommendation 2021-049

It is recommended that the Light Aircraft Association remind owners of this aircraft type of the necessity, after every seat position adjustment, to:

- ensure that the seat pin is correctly locking the seat in position, and
- set the seat adjuster backup strap after the desired seat position has been selected.

Safety Recommendation 2021-050

It is recommended that the British Microlight Aircraft Association remind owners of this aircraft type of the necessity, after every seat position adjustment, to:

- ensure that the seat pin is correctly locking the seat in position, and
- set the seat adjuster backup strap after the desired seat position has been selected.

Some of the safety issues identified in this Special Bulletin apply to other aircraft types on the UK register. Therefore the following additional Safety Recommendation is made:

Safety Recommendation 2021-051

It is recommended that the Civil Aviation Authority in conjunction with the Light Aircraft Association and British Microlight Aircraft Association, remind pilots of the importance of ensuring that seats are correctly locked and any secondary locking mechanisms are correctly used, particularly after any seat position adjustment.

Further work

The investigation continues to examine all pertinent operational, technical, and human factors which might have contributed to this accident. A final report will be issued in due course.

Published: 14 December 2021.

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The sole objective of the investigation of an accident or incident under these Regulations is the prevention of future accidents and incidents. It is not the purpose of such an investigation to apportion blame or liability.

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