

ACCIDENT

Aircraft Type and Registration:	Grob G102 Astir CS, G-CJSK	
No & Type of Engines:	None	
Year of Manufacture:	1977 (Serial no: 1521)	
Date & Time (UTC):	23 June 2021 at 1337 hrs	
Location:	Gibett Hill, Brentor, near Tavistock, Devon	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Minor)	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Other	
Commander's Age:	65 years	
Commander's Flying Experience:	229 hours (of which 69 were on type) Last 90 days - 13 hours Last 28 days - 5 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The right aileron L'Hotellier control connection in the fuselage became disconnected in flight, causing the pilot to abandon the glider by parachute. The control connection was equipped with a secondary Wedekind sleeve locking device, and the pilot had conducted a positive control check to his satisfaction prior to the accident flight. The investigation demonstrated that it is possible to partially assemble this type of control connection such that the connection is not secure, despite appearing to be so during a positive control check. The BGA has provided guidance to affected aircraft owners on how to inspect this type of control connection to ensure that it is secure, following glider assembly.

History of the flight

The glider was assembled by the pilot with two assistants during the morning and the pilot connected the airbrake and aileron control connections in the fuselage. The aileron control surfaces appeared to move normally as the pilot moved the control column, and a positive control check¹ was carried out to his satisfaction.

Footnote

¹ A positive control check is an activity involving two individuals in which one holds a control surface stationary and the other attempts to move the flight control in both directions. The check is intended to verify that each control surface moves correctly when the flight controls are deflected, and for a glider includes the ailerons, flaps (if fitted), rudder, elevator and airbrakes.

The pilot launched by winch from Brentor^a Airfield at 1250 hrs and climbed to an altitude of 4,100 ft for local soaring. After flying for approximately 50 minutes the pilot heard a metallic noise from behind him and he noticed that the ailerons felt less responsive than normal. He observed that some left aileron input was required to maintain straight and level flight, and that the right aileron was not responding to control inputs. The glider was traversing an area of sinking air and as the pilot increased speed to 55 kt the wings began to flutter from the airbrakes out to the wingtip. The pilot reduced airspeed and the flutter stopped.

The pilot flew back towards the airfield whilst assessing the degree of control he had over the glider. He tried some 'S' turns and found it difficult to fly smooth turns, and as the airspeed increased above 55 kt the wings started fluttering again, shaking the whole airframe. He considered that he had insufficient control over the glider's flightpath to safely land and therefore parachuted from the glider at an altitude he estimated to be between 1,500 to 2,000 ft, having ensured that he was over an uninhabited open area.

As the parachute canopy opened the harness was dragged past the pilot's ears causing minor lacerations. The pilot described the parachute landing as heavy, causing minor bruising but no serious injury.

Accident site

The glider came to rest in an area of open ground approximately 1 nm NNE from Brentor^a Airfield in an inverted attitude (Figure 1).



Figure 1
Accident site

All components of the glider were present at the accident site apart from the canopy, which had been jettisoned in flight and was recovered a short distance from the aircraft wreckage.

Footnote

^a **Bulletin correction:** this was inadvertently stated as Bodmin when originally published. The online version of the bulletin was corrected on 15 December 2021.

Aircraft examination

Examination of the wreckage revealed that the right aileron control connection in the fuselage was disconnected. The right aileron pushrod was projecting from the fuselage, having penetrated the fuselage skin during the ground impact (Figure 2). The left aileron and airbrake control connections were found to be securely connected.



Figure 2

Disconnected right aileron control pushrod, having penetrated the fuselage during the ground impact

Control connection

The aileron and airbrake control connections in the fuselage were of the L'Hotellier type, in which a ball on the wing pushrod end engages with a socket in the L'Hotellier fitting at the end of the fuselage pushrod (Figure 3). A spring-loaded lock plate is pressed downwards during assembly of the connection, which allows a seat to move away from the socket such that the ball may enter the socket. The ball is locked into the socket when the lock plate moves to its upward position, under spring loading, allowing the seat to contact the ball.

A secondary means of locking the L'Hotellier fitting in the connected position was required following the issue of LBA² Airworthiness Directives 1993-001/3³ and 1994-001/2⁴. One method of compliance was to secure the lock plate with an R-clip through a locking pin hole, drilled through the lock plate, preventing vertical movement when the R-clip was installed.

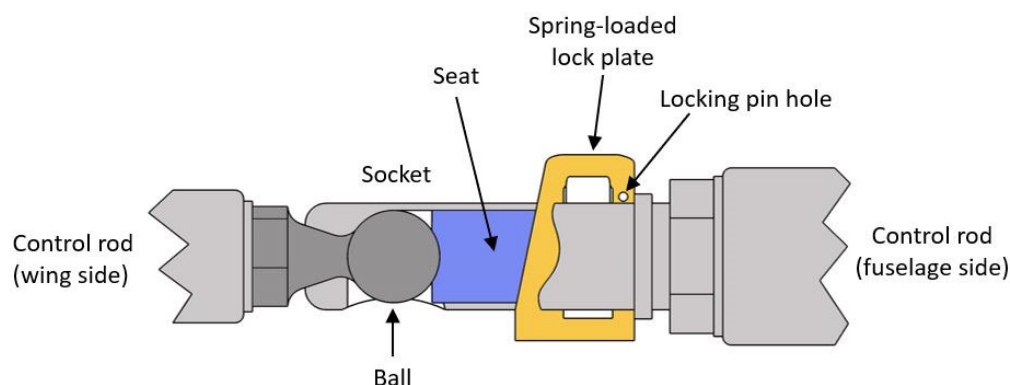
An alternative method of compliance was the installation of a Wedekind sleeve, which introduced a spring-loaded collar between the end of the pushrod and L'Hotellier fitting (Figure 4). The sleeve pushes away from the L'Hotellier fitting to permit assembly of the control connection, and extends by spring action when released to prevent the L'Hotellier lock plate from moving downwards, providing the secondary locking function. G-CJSK had Wedekind sleeves fitted to the airbrake and aileron control connections within the fuselage.

Footnote

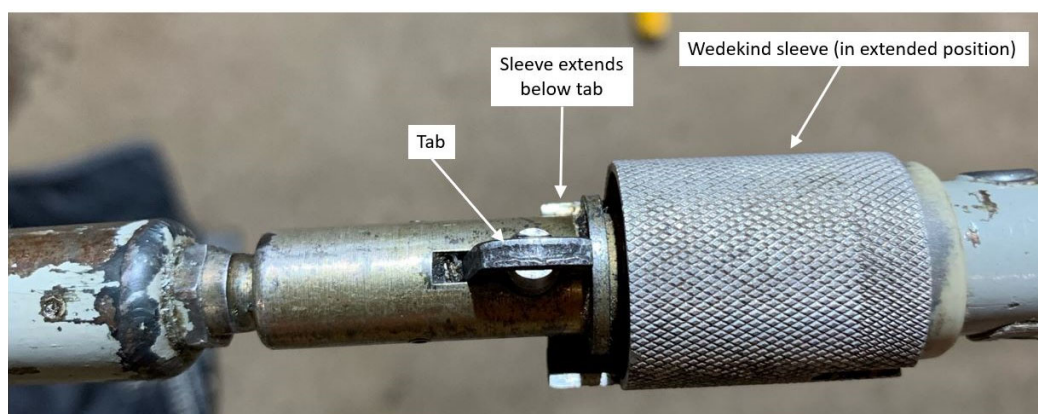
² Luftfahrt-Bundesamt, the national civil aviation authority of Germany.

³ Airworthiness Directive 1993-001/3, L'Hotellier ball and socket connections, 9 April 1998.

⁴ Airworthiness Directive 1994-001/2, L'Hotellier ball and socket connections, 9 April 1998.

**Figure 3**

L'Hotellier control connection components

**Figure 4**L'Hotellier control connection with Wedekind sleeve correctly fitted
(image courtesy of the BGA)

British Gliding Association investigation findings

The BGA conducted a safety investigation which identified that it was possible to assemble a Wedekind sleeve-equipped control connection in an unsafe manner, with the L'Hotellier ball partially engaged in the socket and with the Wedekind sleeve in contact with the L'Hotellier lock plate, preventing the lock plate from returning to its locked position (Figure 5).

Testing conducted by the BGA showed that with the Wedekind sleeve partially engaged it was possible for a glider to pass a positive control check, due to the partial engagement of the ball in the L'Hotellier socket, but when a small vertical load was applied to the fuselage pushrod the control connection became disconnected.

Analysis

The right aileron L'Hotellier control connection became disconnected after approximately 50 minutes of flight leading to a reduction in the pilot's control over the glider's flightpath and for the disconnected aileron to cause wing flutter when the airspeed increased above 55 kt.

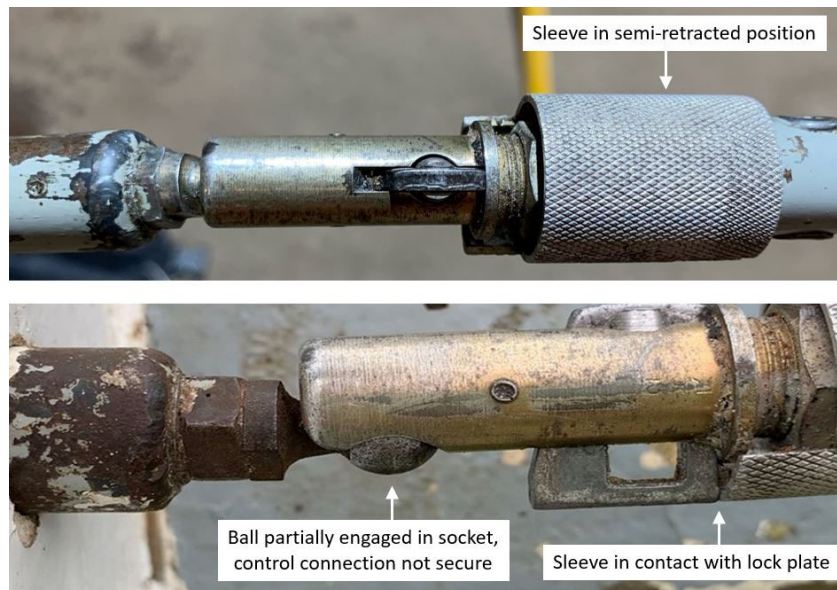


Figure 5

L'Hotellier control connection with the Wedekind sleeve partially engaged, control connection not secure (images courtesy of the BGA)

Since the pilot had assembled the glider on the day of the accident and had completed a positive control check prior to takeoff, it is likely that the right aileron control connection was not securely locked and became disconnected in flight, probably due to turbulence. Testing conducted by the BGA demonstrated how a L'Hotellier control connection with a Wedekind safety sleeve may be assembled in an insecure manner such that a positive control check may not detect the unsafe condition. The location of the aileron and airbrake control connections in the fuselage provided limited access to visually check the security of the control connections once they had been assembled.

Safety action

The BGA has informed all owners of UK-registered sailplanes equipped with L'Hotellier control connections of the findings of its safety investigation. The safety information included guidance on how to physically check that Wedekind sleeves, where installed, are correctly locked by the application of a gentle pulling force on the socket, away from the ball. The BGA also published a video⁵ containing similar safety information.

Further safety information relating to the security of sailplane control connections is contained in EASA Safety Information Bulletin 2019-07⁶.

Footnote

⁵ <https://www.youtube.com/watch?v=ydUy2Jx097o>, *Understanding how Wedekind connections work* [accessed 2 July 2021].

⁶ EASA Safety Information Bulletin 2019-07, *Sailplane Rigging – Procedures, Inspections and Training*, 30 April 2019.