Rotorsport UK Cavalon, **G-CKYT**	**Farmland between Avoch and Munlochy, Black Isle**	**12 November 2020**	**Accident**

Investigation Synopsis

A solo student pilot was on a local general handling flight when the rotor head of the gyroplane he was flying, separated from the fuselage in flight. The separation was caused by a structural overload failure from exposure to dynamic flight loads, judged to be due to a specific sequence of aircraft manoeuvres.

The gyroplane was found to have been correctly released to service. There were no maintenance issues identified relevant to the accident. A number of operational factors were considered and it was likely that the pilot inadvertently allowed the aircraft to enter a low g flight regime close to, or potentially exceeding, that prohibited by the Cavalon Pilot's Operating Handbook.

The accident highlighted limitations in the design, testing, manufacture and operating limits for the Cavalon and Cavalon Pro gyroplane types. Based on an assessment of the requirements within BCAR Section T, these limitations could be relevant to other gyroplane types certified to this standard. The investigation also highlighted issues with gyroplane training material regarding the awareness of rotor load factor by pilots. Four Safety Recommendations have been made to address these issues.

Safety Recommendation 2024-017

Justification

To ensure actions to mitigate the risk of roll stop contact on all models of gyroplanes fitted with the Rotorkopf III certified under BCAR Section T are both independently assessed as adequate and mandated where appropriate.

Therefore, the following safety recommendation was made:

> **Safety Recommendation 2024-017**
>
> It is recommended that the Civil Aviation Authority introduces mitigations to reduce, as far as reasonably practicable, the risk of a catastrophic failure resulting from contact between the gimbal block and the roll stop bar on all gyroplanes fitted with the Rotorkopf III rotor head and those of similar design.

Date Safety Recommendation made: 31 October 2024

LATEST RESPONSE

Response received: 30 January 2025

The CAA will undertake a regulatory review of the risk of a catastrophic failure resulting from contact between the gimbal block and the roll stop bar on all gyroplanes fitted with the Rotorkopf III rotor head and those of similar design. Where practicable, the CAA will take appropriate measures, under the regulatory compliance system to mitigate any risks identified as part of this review.

We shall provide the AAIB with an update on our review in October 2025.

Safety Recommendation Status	**Open**
AAIB Assessment	**Adequate**
Action Status	**Planned Action Ongoing Update Due** 31 October 2025

Feedback rationale

The AAIB thanks the CAA for their response and awaits an update in October 2025. (EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

N/A

Safety Recommendation 2024-018

Justification

To ensure actions to mitigate the risk of roll stop contact on future gyroplane types are both independently assessed as adequate and mandated where appropriate.

Therefore, the following safety recommendation was made:

> **Safety Recommendation 2024-018**
>
> It is recommended that the Civil Aviation Authority reassess the requirements and acceptable means of compliance in BCAR Section T for issuing approvals to gyroplanes, in light of the failure mode identified from the dynamic loading of the gyroplane rotor head in flight, to ensure manufacturers demonstrate to an acceptable level, through appropriate test and/or analysis, mitigation of the risk of catastrophic structural failure from dynamic loads in flight.

Date Safety Recommendation made: 31 October 2024

LATEST RESPONSE

Response received: 30 January 2025

The CAA will assess the requirements and acceptable means of compliance in BCAR Section T for issuing approvals to gyroplanes. This assessment will be designed to ensure manufacturers are able to demonstrate to an acceptable level, through appropriate test and/or analysis, mitigation of the risk of catastrophic structural failure from dynamic loads in flight.

We shall provide AAIB with an update on our assessment in October 2025.

Safety Recommendation Status **Open**

AAIB Assessment **Adequate**

Action Status **Planned Action Ongoing Update Due** 31 October 2025

Feedback rationale

The AAIB thanks the CAA for their response and awaits an update in October 2025. (EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

N/A

Safety Recommendation 2024-019

Justification

The investigation highlighted the criticality of pilot awareness of the load factor being applied to the rotor during all flight manoeuvres. There is currently no relevant guidance for gyroplane instructors and examiners in Standards Document 44. The recommendation is intended to ensure standardisation of training delivery and examination of the subject of low g manoeuvres in gyroplanes.

Therefore, the following safety recommendation was made:

> **Safety Recommendation 2024-019**
>
> It is recommended that the Civil Aviation Authority publishes guidance on the subject of rotor load factor during flight manoeuvres for the theoretical training and testing of pilots undertaking the gyroplane PPL syllabus and the gyroplane instructor and examiner qualifications.

Date Safety Recommendation made: 31 October 2024

LATEST RESPONSE

Response received: 30 January 2025

The CAA will publish guidance on the subject of rotor load factor during flight manoeuvres for the theoretical training and testing of pilots undertaking the gyroplane PPL syllabus and the gyroplane instructor and examiner qualifications.

We shall provide the AAIB with an update on our work in October 2025.

Safety Recommendation Status **Open**

AAIB Assessment **Adequate**

Action Status **Planned Action Ongoing Update Due** 31 October 2025

Feedback rationale

The AAIB thanks the CAA for their response and awaits an update in October 2025. (EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

N/A

Safety Recommendation 2024-020

Justification

The accident demonstrated that catastrophic structural failure could occur from flight loads which are encountered inadvertently by the pilot, because such scenarios were not adequately defined and analysed during the certification process, due to the simplified requirements of BCAR Section T. The investigation considered that this represents a safety concern for aircraft intended for commercial operations.

Therefore, the following safety recommendation was made:

> **Safety Recommendation 2024-020**
>
> It is recommended that the Civil Aviation Authority reassess the certification and acceptable means of compliance requirements for issuing Certificates of Airworthiness to gyroplanes intended to be used for commercial operations, to ensure manufacturers demonstrate, through appropriate test and analysis, mitigation of the risk of catastrophic structural failure from dynamic loads to a level comparable with equivalent Certificate of Airworthiness aircraft certified to design regulations such as Certification Specifications 23 and 27.

Date Safety Recommendation made: 31 October 2024

LATEST RESPONSE

Response received: 30 January 2025

The CAA will assess the certification requirements and associated acceptable means of compliance for issuing Certificates of Airworthiness to gyroplanes intended to be used for commercial operations. This assessment will be designed to ensure manufacturers are able to demonstrate, through appropriate test and analysis, mitigation of the risk of catastrophic structural failure from dynamic loads to a level comparable with equivalent Certificate of Airworthiness aircraft certified to design regulations comparable with equivalent Certificate of Airworthiness aircraft.

We shall provide the AAIB with an update on our assessment in October 2025.

Safety Recommendation Status **Open**

AAIB Assessment **Adequate**

Action Status **Planned Action Ongoing Update Due** 31 October 2025

Feedback rationale

The AAIB thanks the CAA for their response and looks forward to the update on the assessment on October 2025. (EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

N/A