
Department for Transport

AAIB Bulletin S4/2006

SPECIAL

ACCIDENT

Aircraft Type and Registration:	Pegasus Quantum 15-912, G-BYNO
No & Type of Engines:	1 Rotax 912 piston engine
Year of Manufacture:	1999
Date & Time (UTC):	5 April 2006 at 1225 hrs
Location:	Clench Common Airfield, near Marlborough, Wiltshire
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 (Serious) Passengers - 1 (Serious)
Nature of Damage:	Aircraft destroyed and barn roof damaged
Commander's Licence:	Private Pilot's Licence with Microlight Flying Instructor rating
Commander's Age:	49 years
Commander's Flying Experience:	14,000 hours approximately Last 28 days - 8 hours
Information Source:	AAIB Field Investigation, with the participation of the British Microlight Aircraft Association

This bulletin contains facts which have been determined up to the time of issue. This information is published to inform the aviation industry and the public of the general circumstances of accidents and must necessarily be regarded as tentative and subject to alteration or correction if additional evidence becomes available.

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Synopsis

After an uneventful flight, while on the approach to land the aircraft pitched up and rolled to the right. It subsequently crashed into the roof of a barn close to the landing threshold of the airstrip. Swages had failed in four rigging cable assemblies. These four cable assemblies were locally made items, and were not therefore approved by the manufacturer.

History of the flight

The flight was a trial flying lesson bought for the passenger as a gift. It progressed uneventfully until the aircraft returned to the airstrip. Runway 34 was in use and the surface wind was from approximately 350° at 10 to 15 kt. The aircraft joined the circuit and all appeared normal until it was at approximately 80 ft agl on its approach to land. At this point the aircraft encountered some turbulence. This is a known phenomenon with the wind from this direction due to the presence of a wood situated to the north of the airstrip. The pilot was seen to make appropriate control inputs to correct the disturbance.

Shortly afterwards an unusual noise was heard by the passenger and also by several eyewitnesses. One eyewitness saw a cable trailing to the rear of the aircraft. The aircraft then pitched up and rolled to the right, before descending towards a barn that was close to the landing threshold of the airstrip. The aircraft struck and penetrated the roof of the barn. The pilot and the passenger sustained serious injuries.

Aircraft information

The Pegasus Quantum 15 is a two-seat flex-wing microlight which consists of a wing and a trike assembly. The trike incorporates the engine, landing gear and cockpit, and has a front strut and monopole. The latter

provides an attachment point for the wing. Attached to the wing is the control frame; a triangular frame consisting of a left frame, a right frame and a base bar. Four rigging cables brace the control frame relative to the wing. Two cables run from the bottom of the left control frame, one forward and one rearwards, and similarly, two cables run from the bottom of the right control frame, one forward and one rearwards (see Figure 1). These cable assemblies consist of a length of '7 x 7' wire rope with a loop at each end. The cables form a loop around a teardrop shaped eyelet, often called a 'thimble', through which bolts are fitted. The loop is held in place by two swages which are crimped onto the wire rope.

BMAA Guide to Airworthiness Procedures

The British Microlight Aircraft Association (BMAA) Guide to Airworthiness Procedures includes a section entitled 'Maintenance' which contains the following:

'General maintenance tasks, such as replacing hoses, engine components and other such consumable items need not be submitted to the BMAA for approval. In general, this holds true where 'form, fit and function' is not altered and components are replaced with fully interchangeable parts approved by the manufacturer'.

Operator's Manual

The Operator's Manual contains a section on the maintenance of rigging cables as follows:

'WARNING. Kinked, corroded or damaged cables should be changed at once with new factory supplied items. Flying with damaged cables could cause structural failure, resulting in injury or death'.

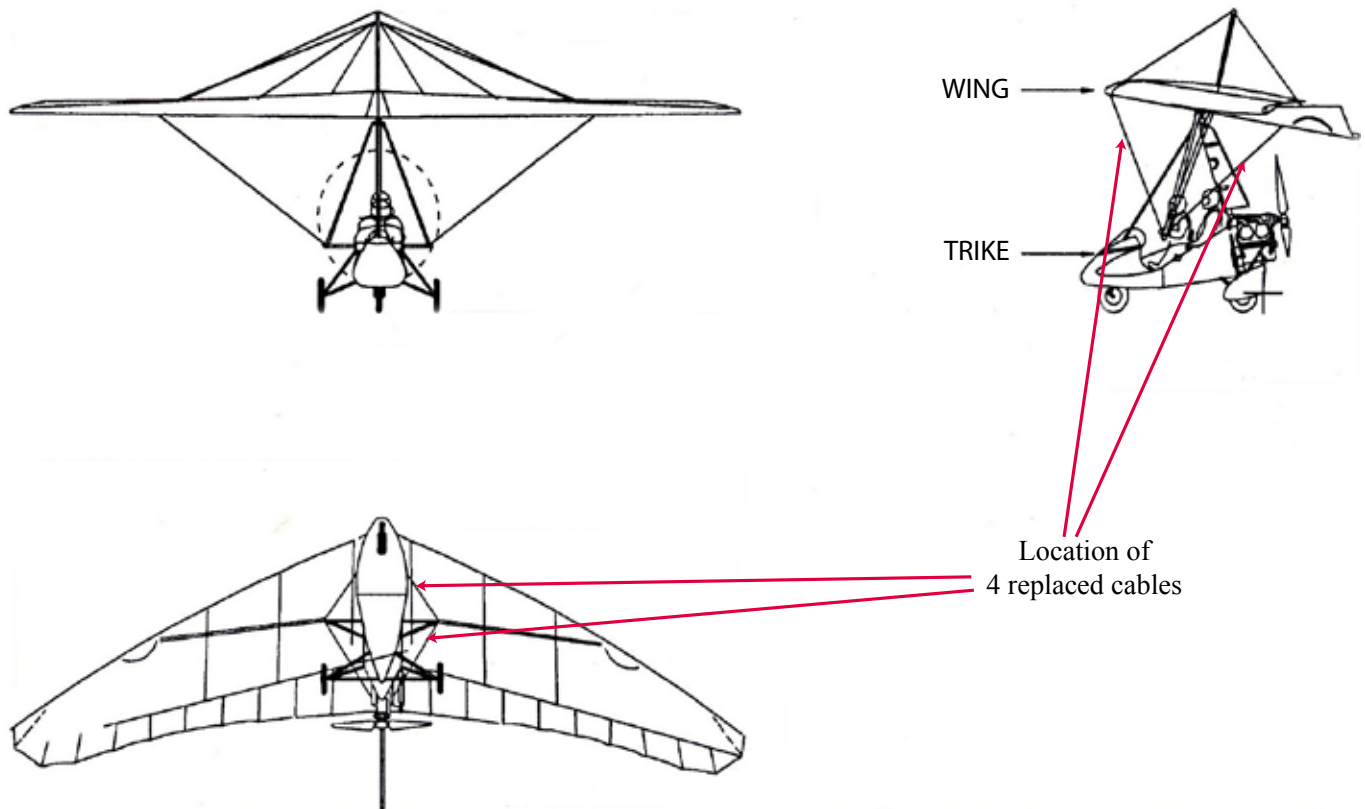


Figure 1

Aircraft layout and location of replaced cables

Significant findings at the accident site

The wreckage was mostly contained within the barn. During the initial examination, failure of the swages at one end of each of the four cable assemblies was evident.

A search of the ground under the aircraft's likely final approach path revealed several pieces of propeller and two blue plastic sleeves used to protect the swages on the rear end of both the rear cables. This debris was consistent with the in-flight failure of the two rear rigging cables of G-BYNO. Since the forward cables are typically subject to higher loads than the rear cables,

they are also believed to have failed in flight, probably before the rear cables.

Previous maintenance activity

On 22 March 2006 the four rigging cables had been replaced. The location of these cables is shown in Figure 1. The replacement cables were not supplied or approved by the manufacturer. The aircraft had flown for a total of 1 hour and 50 minutes on three flights (not including the accident flight) since the cables were replaced.

Findings of the investigation to date

Swages had failed in all four rigging cable assemblies. The four cable assemblies, which transmit the control forces from the base bar, did not conform to either the BMAA's Guide to Airworthiness Procedures or the Operator's Manual, in that they were not made or approved by the manufacturer.

Both the AAIB and the BMAA are concerned that microlight owners and operators should be aware of

the requirement to use factory approved parts in critical applications such as this, and of the possible consequences of using incorrectly manufactured replacements.

Further investigation and reporting

The AAIB and BMAA will continue to work together to conduct an analysis of the failed parts. Materials testing and proof loading trials will be undertaken. A final report will be published by the AAIB in due course.