Civil Aviation Authority

EMERGENCY MANDATORY PERMIT DIRECTIVE

Number: 2017-004-E

Issue date: 15 May 2017

In accordance with Article 41(1) of The Air Navigation Order 2016, as amended, the following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.	
Type Approval Holder's Name: **P&M Aviation Ltd**	Type/Model Designation(s): **Various, see below**
Title:	**Rigging Cables with Roll Swaged End Terminals – Inspection / Replacement**
Manufacturer:	P&M Aviation Ltd
Applicability:	All Microlights of the following types where P & M Aviation Ltd are the Type Approval Holder: TADS No. Aircraft Type **BM4** Gemini Flash **BM10** Pegasus Flash **BM14** Gemini Flash 2 **BM16** Scorcher **BM17** Pegasus Flash 2 **BM23** Gemini Flash 2 Alpha **BM43** Mainair Mercury **BM47** Mainair Blade **BM51** Mainair Blade 912 **BM54** Mainair Rapier **BM60** Mainair Blade 912S **BM70** Quik GT450 **BM77** QuikR **BM80** Quik GTR **BM81** PulsR

Reason:	A P&M Quik GT450 in a flying school had a partial failure of a lower side rigging cable (Part No. YQD-045) when recovering from a spiral manoeuvre, within the limits of the flight envelope. These cables are arranged in pairs, to give a backup load path. The second cable carried the load and the aircraft landed safely. This is the only recorded lower side cable failure since 1984. The partial failure was at the edge of the roll swaged terminal end. The alternative cable terminations using Nicopress sleeves and thimbles allow more progressive flexing of the cable. The incident Quik GT450 lower side rigging cables had been in use for 1050 hours and 9 years. The aircraft had been subject to an accident and rebuilt once in its life. It was also operated quite near the coast where it is probable that sea air chlorides could have affected the material. There were corrosion pits in the S316 stainless steel material which accelerate fatigue failures. CLSCC (Chloride Stress Corrosion Cracking) is known to affect stainless steel. The cable fitting was at the bottom end of the cable, where solutions can wick down it and collect. The strand failures were caused by bending and tensile fatigue because of cracks propagating from scratches and corrosion pits on the surface. All the remaining cables had broken strands at the edge of the roll swaged terminals. Some of these strands had been failed for some time, as shown by discolouration of the failure surfaces. The cable is 7 cores of 7 strands construction. Failure of a lower rigging cable would potentially reduce the integrity of the wing and hazard the aircraft.
Effective Date:	15 May 2017

Compliance/Action:	Compliance is required as follows, unless previously accomplished: 1. Before further flight, for lower side, front and rear rigging cables with roll swaged terminal ends with more than 750 flying hours or 7 years of service, whichever comes first, visually inspect at the edge of the roll-swaged terminal(s) using a magnifying glass with a power of at least 3x. Inspect closely for damage i.e. broken strands, corrosion, mechanical damage or slippage. If any damage is found, replace the affected cable before further flight. If no damage is found, replace the cable within 25 flying hours. See paragraphs 1 and 2 of P & M Aviation Ltd Service Bulletin 147 including the warning in paragraph 2. 2. Within 25 flying hours, for lower side, front and rear rigging cables with roll swaged terminal ends with less than 750 flying hours and less than 7 years of service, visually inspect at the edge of the roll-swaged terminal(s) using a magnifying glass with a power of at least 3x. Inspect closely for damage i.e. broken strands, corrosion, mechanical damage or slippage. If any damage is found, replace the affected cable before further flight. If no damage is found, replace the cable at 750 flying hours or 7 years of service, whichever comes first. See paragraphs 1 and 2 of P & M Aviation Ltd Service Bulletin 147 including the warning in paragraph 2. 3. Removal and replacement of any airframe structural cable requires a duplicate inspection - see paragraph 3 of P & M Aviation Ltd Service Bulletin 147. 4. Record the inspection from paragraph 1 or paragraph 2 and any necessary rectification action in the aircraft technical log in accordance with paragraph 3 of P & M Aviation Ltd Service Bulletin 147. 5. Repeat the inspection in paragraph 2 at each Permit to Fly revalidation and replace damaged cables as necessary. Replace the cables at 750 flying hours or 7 years of service, whichever comes first.
ENSURE COMPLIANCE WITH THIS MPD IS RECORDED IN THE AIRCRAFT LOGBOOK	
Reference Publications:	P & M Aviation Ltd Service Bulletin Number 147 Issue 1 dated 10 May 2017
Remarks:	1. This MPD was not posted for consultation because of the urgency of the requirement. *2.* Enquiries regarding this Mandatory Permit Directive should be referred to: GA Unit, Civil Aviation Authority, Safety and Airspace Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. Tel: +44 (0)1293 573988 E-mail: ga@caa.co.uk