



Civil Aviation Authority

# EMERGENCY MANDATORY PERMIT DIRECTIVE



Number: 2017-002-E

Issue date: 20 February 2017

<b>In accordance with Article 41(1) of 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.</b>	
<b>Type Approval Holder's Name:</b> Westland Helicopters Ltd	<b>Type/Model Designation(s):</b> Westland Scout AH1, Wasp HAS1 and Westland Wasp MK1B
<b>Title:</b>	<b>Rotors Flight Control – Main Rotor Gearbox Controls - Inspection and Lubrication of Trunnion Bearings between Overhauls</b>
<b>Manufacturer:</b>	Westland Helicopters Ltd
<b>Applicability:</b>	Westland Scout AH1, Westland Wasp HAS1 and Westland Wasp MK1B all series
<b>Reason:</b>	<p>A Westland Wasp suffered a serious incident in which loss of collective pitch control occurred in flight. The subsequent investigation has revealed a chain of failure events.</p> <p>Initial investigations revealed a complete failure of the collective pitch control rod tube after contact with the guide plate inside the main rotor gearbox housing.</p> <p>Further investigation of the accident helicopter revealed failure of the trunnion bearings and bearing housings (Hardy-Spicer universal joint) at the top end of the control spider spindle. It is believed this has allowed the collective control rod tube to move so as to contact the guide plate prior to causing the collective pitch rod tube failure noted above.</p> <p>Failure of the trunnion bearings and their housings has been attributed to continued operation over a period of time following a lack of lubrication. The trunnion bearings are normally lubricated by a supply of oil from a reservoir which was found to be dry on the affected gearbox. The reservoir is currently only required to be charged during overhaul of the main rotor gearbox after 600 hours of Time in Service.</p> <p>This MPD has been raised to check the condition of the trunnion bearings and to add a calendar driven periodic lubrication task to recharge the associated oil reservoir between 600 hour overhauls. These actions are intended to check the bearing condition and to regularly maintain the bearing lubrication so as to prevent the failures that could lead to the loss of control and the unsafe condition as identified above.</p>
<b>Effective Date:</b>	20 February 2017

<b>Compliance/Action:</b>	<p>Compliance is required as follows, unless previously accomplished:</p> <ol style="list-style-type: none"> <li>1. Within 5 flying hours from the effective date of this MPD, for any applicable aircraft fitted with a main rotor gearbox with calendar time greater than 4 years since last overhaul, remove the rotor head. Perform a visual inspection of the trunnion bearings and bearing caps of the Hardy Spicer joint at the top of the control spindle within the main rotor gearbox housing, using light and mirror / boroscope. Suitable access can be gained by rolling back the spider arm gaiters from the gearbox housing. Any damage or abnormalities detected to the bearings, caps, and circlip retainers will render the components unserviceable and require overhaul and component replacement before further flight.</li> <li>2. Report any anomalies found during the inspections in paragraph 1 to the CAA.</li> <li>3. For any applicable aircraft fitted with a main rotor gearbox with calendar time less than 4 years since last overhaul, conduct the inspection detailed in paragraph 1 when calendar time since last overhaul reaches 4 years.</li> <li>4. Following the inspection in paragraphs 1 or 3; completely re-fill the oil reservoir that is on top of the trunnion with oil OEP-215 which replaces OEP-740 (obsolete).</li> <li>5. Repeat the actions in paragraphs 3 and 4 every 4 calendar years.</li> <li>6. Prior to fitment of overhauled main rotor gearboxes that have been stored for more than 1 calendar year, completely re-fill the oil reservoir that is on top of the trunnion with oil OEP-215 which replaces OEP-740 (obsolete).</li> <li>7. In the event of an unexplained vibration event on the helicopter that cannot be attributed to other causes, perform the trunnion inspection and associated actions of paragraph 1 of this MPD regardless of the flying hours or calendar time accrued on the main rotor gearbox.</li> </ol>
<b>ENSURE COMPLIANCE WITH THIS MPD IS RECORDED IN THE AIRCRAFT LOGBOOK</b>	
<b>Reference Publications:</b>	AP101C-0700-6B Figure 7 "Control Hub Assembly" (1) (WS0487-02)
<b>Remarks:</b>	<ol style="list-style-type: none"> <li>1. This MPD was not posted for consultation because of the urgency of the requirement.</li> <li>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</li> </ol>