



**United Kingdom
Civil Aviation Authority**

MPD No: 2010-004

Issue Date: 6 May 2010

MANDATORY PERMIT DIRECTIVE

In accordance with Article 22(1) of the Air Navigation Order 2009 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.

MPD: 2010-004 ROLLS-ROYCE

Subject: Rocker Arm Inspection

Applicability: Rolls-Royce Merlin Series Engines incorporating Modification 9/223/M2623. These engines are fitted on but not limited to Supermarine Spitfire, Hawker Hurricane and North American P51 Mustang series aircraft.

Reason: The CAA has received reports of the separation of a small number of carbide pads fitted under the authority of the above modification. Once released, the pads drop onto the block and may migrate, potentially causing engine damage and possible engine failure.

The reason for the loss of bond is still under investigation. This Directive is therefore raised as an interim measure to instruct a regular inspection of the rocker arms for detachment or indication of loss of bonding between the pad and rocker arm, and removal of failing pads from service.

Compliance: Within five flying hours, one month or at the next Permit renewal, whichever is the sooner from the effective date of this MPD:

- a) Inspect each modified rocker arm fitted for detachment of the carbide pad. Remove from service any rocker arm, which exhibits a released pad along with the associated pad. Replace with a serviceable arm. If any pad cannot be located on the cylinder block carry out further in-depth inspection to locate the pad, if necessary by removing the engine. Rectify any damage caused by the released pad prior to engine release back to service.
- b) For the remaining modified rocker arms, inspect the region of the brazed joint between the carbide pad and the rocker arm as shown in figure 1 using a x10 glass or if preferred a stylus of maximum radius 0.005". Inspect for evidence of movement of the pad on the arm, which is revealed by a line indication or step on the arm.

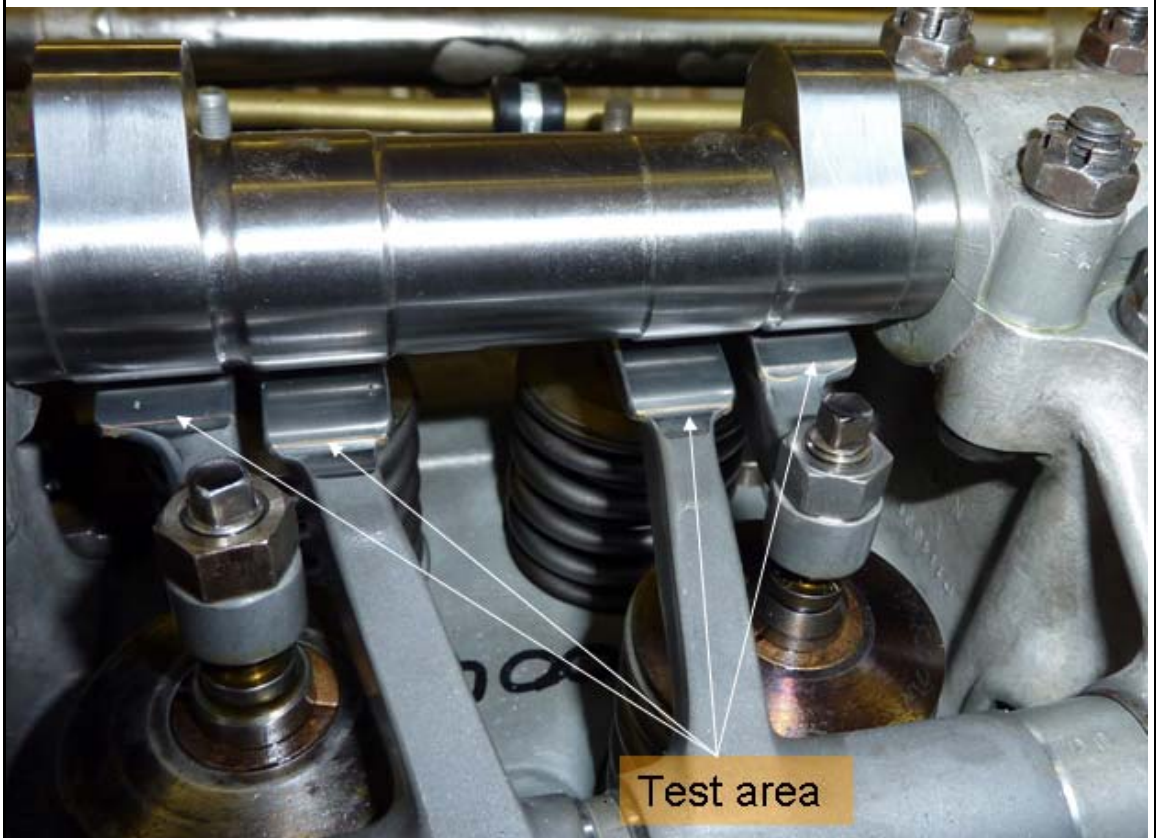
In cases where movement is observed, carry out a comparison with a feeler gauge to measure the size of step. Any arm, which exhibits a step estimated at 0.005" or less may continue in service in accordance with paragraph (d). Any arm, which exhibits a step in excess of 0.005" but less than 0.015" is to be re-inspected at intervals in accordance with paragraph (c). Any arm, which exhibits a step of 0.015" or more, is to be removed from service.

**Compliance
(continued):**

- c) Re-inspect those rocker arms, which exhibit a step in excess of 0.005" but less than 0.015" at intervals not to exceed 15 flight hours or annually, whichever limit is reached first. At each re-inspection, reject any arm, which exhibits a step of 0.015" or more.
- d) Re-inspect rocker arms declared fully serviceable at 25-flight hour intervals or annually, whichever limit is reached first, in accordance with the previously defined maintenance regime for these arms.

Any instances of arms rejected from service and details of operating time should be reported to the CAA Aircraft Certification Department.

Figure 1.



Ensure compliance with this MPD is recorded in the aircraft logbook.

Effective Date: 12 May 2010

1. This MPD was published on 8 April 2010 as PMPD 10-02 for consultation until 30 April 2010.
2. Enquiries regarding this MPD should be referred to Aircraft Certification Department, Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR, United Kingdom.
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