



# AIRWORTHINESS BULLETIN

AWB 85-022 Issue 1 – 18 October 2017

## Radial Engine Cylinder Head Inspection Practices

### 1. Effectivity

Pratt & Whitney R-1340, Wasp Engines, All Models.

### 2. Purpose

To advise owners, registered operators, maintenance organisations and Licenced Aircraft Maintenance Engineers of the potential for cylinder head cracking on the affected aircraft engines. A cracked cylinder head can result in engine power loss, a forced landing, and damage to the aircraft.

### 3. Background

CASA Airworthiness Directive AD/PW-P/19 requires periodic inspection of selected cooling fins on PW R-1340 engine cylinder heads. The AD also requires fluorescent penetrant inspection of those fins on each cylinder at each overhaul.

The inspections required by the AD are performed by reference to Pratt & Whitney Service Bulletin No: 1787, which focuses on the central fins over the cylinder head dome, (fin no's: 7, 8 & 9), between the front and rear spark plug ports.

Recent service experience has indicated that circumferential fin root cracking can also develop. This crack type can propagate in fatigue around the cylinder head and radially outwards until a major portion of the head fails in tension, (see Australian Transport Safety Bureau Aviation Investigation Report Number: AO-2017-009).

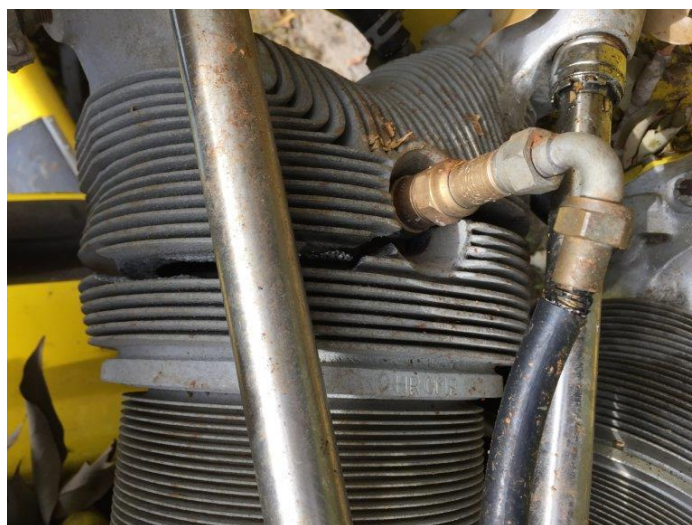


Figure 1.



## 4. Recommendations

To prevent a cracked cylinder head which could result in engine power loss, a forced landing, and damage to the aircraft, CASA recommends the following actions;

- 1) During each visual inspection required by AD/PW-P/19, also visually inspect between the cooling fins of the cylinder heads;
  - in the area of the exhaust port and valve housing, and
  - circumferentially around the lower portion of the cylinder, starting at the rear spark plug port.

The use of 10X or greater magnification for the inspection is encouraged. Where the configuration or location of a part conceals an area to be inspected, it is appropriate to use visual aids such as a flashlight/mirror combination or borescope.

If a crack is visible, or if black combustion leakage is found at the root area between two fins, the cylinder assembly should be replaced with a serviceable part, prior to further flight.

- 2) At each cylinder overhaul;

Fluorescent Penetrant Inspect (FPI) the entire cylinder for evidence of cracking. Replace cracked cylinders with serviceable parts.

## 5. Reporting

Report all instances of cylinder head cracking to CASA via the DRS system available on the CASA website. Information concerning the area of detection, and extent of cracking should be provided.

## 6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

[AirworthinessBulletin@casa.gov.au](mailto:AirworthinessBulletin@casa.gov.au)

or in writing, to:

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Civil Aviation Safety Authority  
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