



Ministerio de Fomento
AGENCIA ESTATAL DE SEGURIDAD AÉREA
(State Aviation Safety Agency)

**AIRWORTHINESS
DIRECTIVE**

NUMBER:
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AFFECTED PRODUCTS: Amateur built aircraft (Order 31 May 1982, BOE 5 June) constructed from kits PEGASUS QUIK all versions, and any other aeroplane (home built or Type Certificate) fitted with CKT stainless steel twin exhausts, which have serial numbers 8230 to 8430.

MANUFACTURER: various

ISSUE DATE: 30 November 2009.

REFERENCE: Civil Aviation Authority United Kingdom Mandatory Permit Directive MPD N°: 2009-006 and SERVICE BULLETIN NUMBER 127 including MODIFICATION M228

EFFECTIVITY DATE: On the issue date.

DESCRIPTION: It has been received a report from CAA about unsafe condition identified where fatigue failure of a silencer end cap could result in the baffle tube being ejected from the silencer. If this occurred during flight the tube could enter the propeller disc causing propeller failure, this could be hazardous.

COMPLIANCE:

- 1) Before further flight, carry out the tasks indicated in the SERVICE BULLETIN 127 including MODIFICATION M228 attached (ANNEX).
- 2) If no cracks are found, the aircraft may be returned to service. The modification described in the annex must be done before the next aircraft's airworthiness certificate renewal.
The modification tasks must be done under supervision of Flight Safety Regional Office.
- 3) If cracks are found, remove and internally inspect the silencers in accordance with the procedure indicated in the following Annex.
- 4) If a replacement or repaired silencer is to be re-installed it must either:
 - Have the modification described in Annex implemented, or
 - Be of a later modification standard identified by the silencer end caps, which are smooth with no baffle tube connection, exhaust serial number 10940809 onwards.

The tasks described in item 4) must be done under supervision of Flight Safety Regional Office.



ADDITIONAL INFORMATION: For further information, contact:

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SERVICE BULLETIN NUMBER 127
including
MODIFICATION M228

ISSUE 1

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|-----------------------|---|
| TITLE | CKT exhaust |
| CLASSIFICATION | The CAA have classified this bulletin as Mandatory. |
| COMPLIANCE | All aircraft, Inspection before further flight. |
| APPLICABILITY | All Quik, GT450 & QuikR fitted with CKT stainless steel twin exhausts. The CKT exhaust serial number is stamped on one end cover plate. |

INTRODUCTION

The CKT exhaust silencer has separate front and rear perforated baffle tubes which are welded to the front and rear end cap flanges and plugged with a cap. A fatigue failure of a pair of exhausts serial no. 7811107 has occurred at 125 hours, around the flange edge on the rear end cap, at the weld edge (see fig 1). The baffle tube came free and was ejected from the silencer and hit the propeller. Fortunately this happened at low power on approach, propeller damage was localised and the baffle tube missed the sail; under high power the consequences could be very serious.

The exhausts were fitted to the prototype QuikR (Rotax 912s engine) where failure may be more prevalent due to use of high power settings. Failure has been caused by gas pressure pulses pushing the rear internal baffle plate inwards, causing disengagement of the inner baffle plate from the baffle tube, allowing free vibration of the baffle tube end, leading to failure of the end cap joint.

ACTION

Inspection

Before further flight, using good light and a magnifying glass, closely inspect the area around all 4 silencer end caps for cracks, particularly on the weld edges (see fig 1). If cracks are noted, contact P&M Aviation, if possible by email attaching pictures of the damage, hours run, aircraft and exhaust serial numbers. The aircraft must not be flown with cracks in this area.

Implementation

If no cracks are found, no further action is necessary except for increased vigilance and frequency of inspection. Modification M228 can be carried out if desired on all 4 baffle ends, see below.

If cracks are noted, proceed as follows:

Removal

- a) Remove the backup cables from the exhaust joints.
- b) Undo the single M6 nut on the rubber mounting to the engine mount angle.
- c) Remove the exhaust springs and remove the exhaust.

Internal Inspection

See fig. 2. Through the exhaust header pipe holes, using a torch and mirror, inspect the welded connection between the internal baffle plate and the end of the perforated baffle tube. Try pushing the bottom of the internal baffle plate inwards. If the baffle plate has moved inwards towards the centre of the exhaust and the baffle tube

has disengaged from the baffle plate, *the exhaust must be replaced*. Disengagement is more likely on the rear internal baffle, as the front internal baffle is supported by the outlet pipe.

If the inner ends of the baffle tubes and internal baffles are secure, modification M228 can be carried out (see fig. 3). It provides a backup retainer if the baffle should become loose. Thoroughly clean the area. Do not use any dissimilar wire brush metals and do not mark with graphite or carbon pencils. Weld repair any cracks found using a stainless steel 316L welding rod and TIG process. Fit a 12mm wide x 18swg (1.22mm) or 1.5mm S316 strip with 7mm bent edges as shown, weld to the silencer ONLY at the corners, over the existing corner weld. The repair/modification must be carried out by an aviation approved welder qualified for thin (0.9mm) stainless steel. FAA publication AC43-13-1B is a useful guide to procedures.

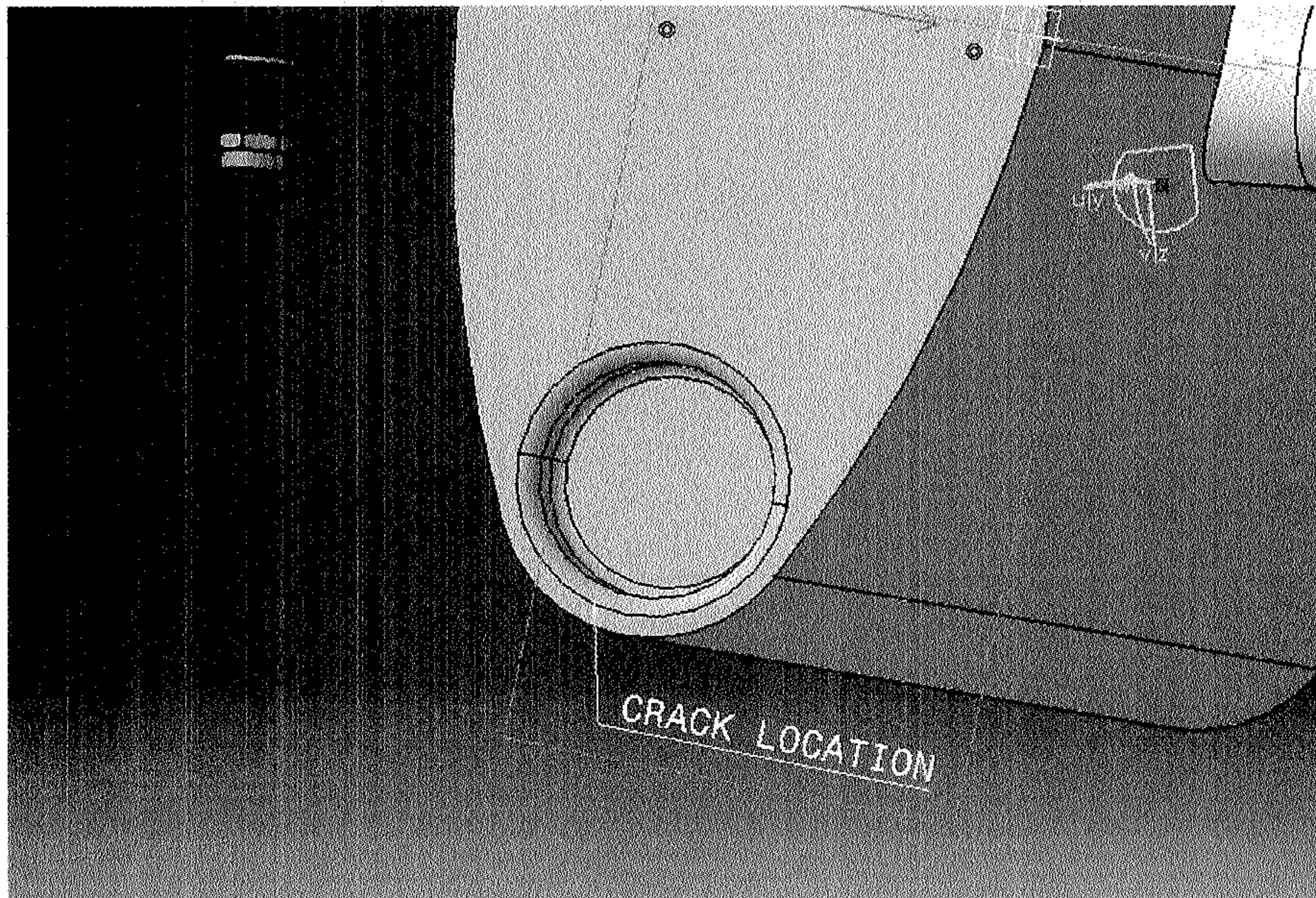


Fig 1. Crack location all round weld outer edge

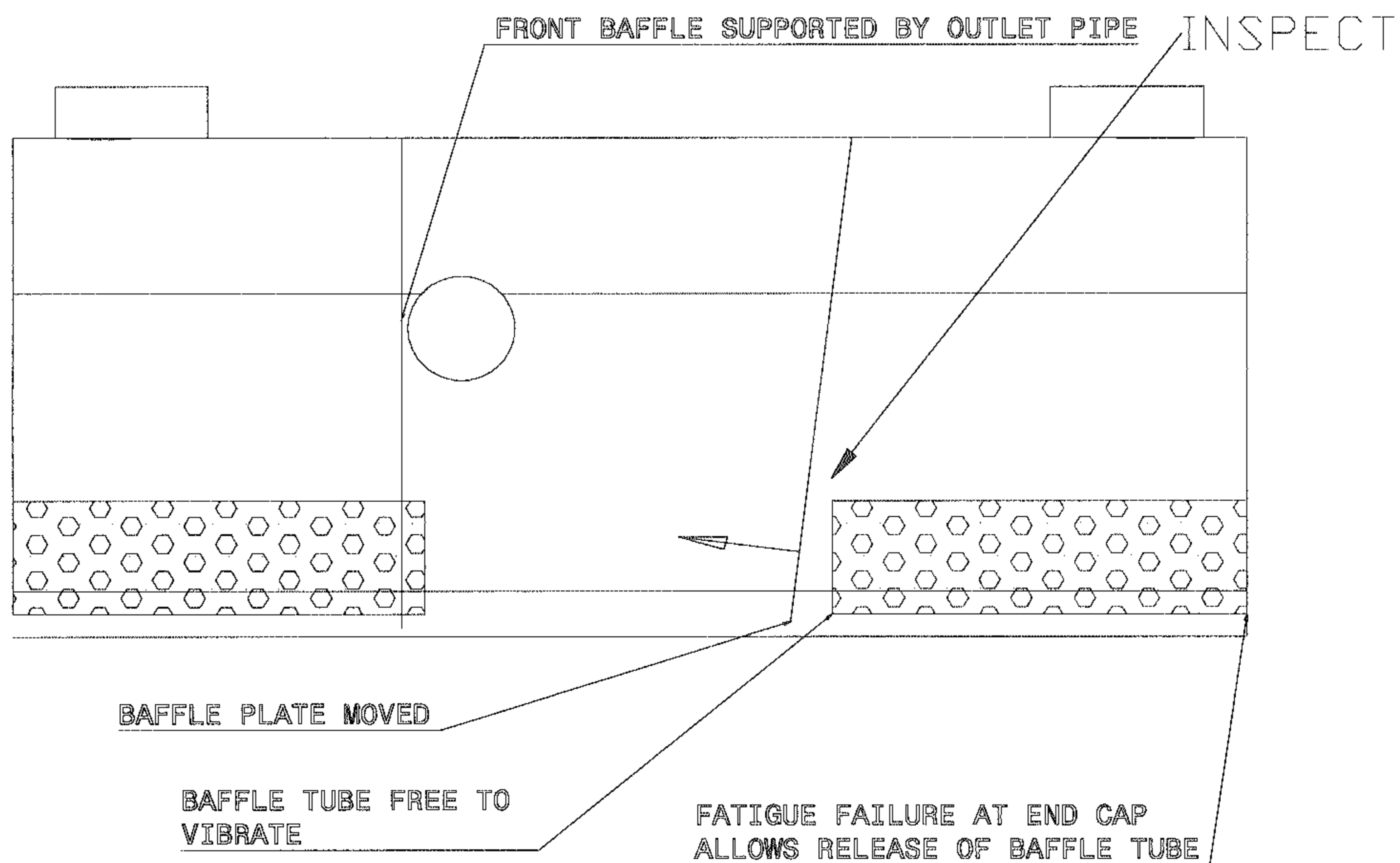


Fig 2. Movement of inner baffle plate.

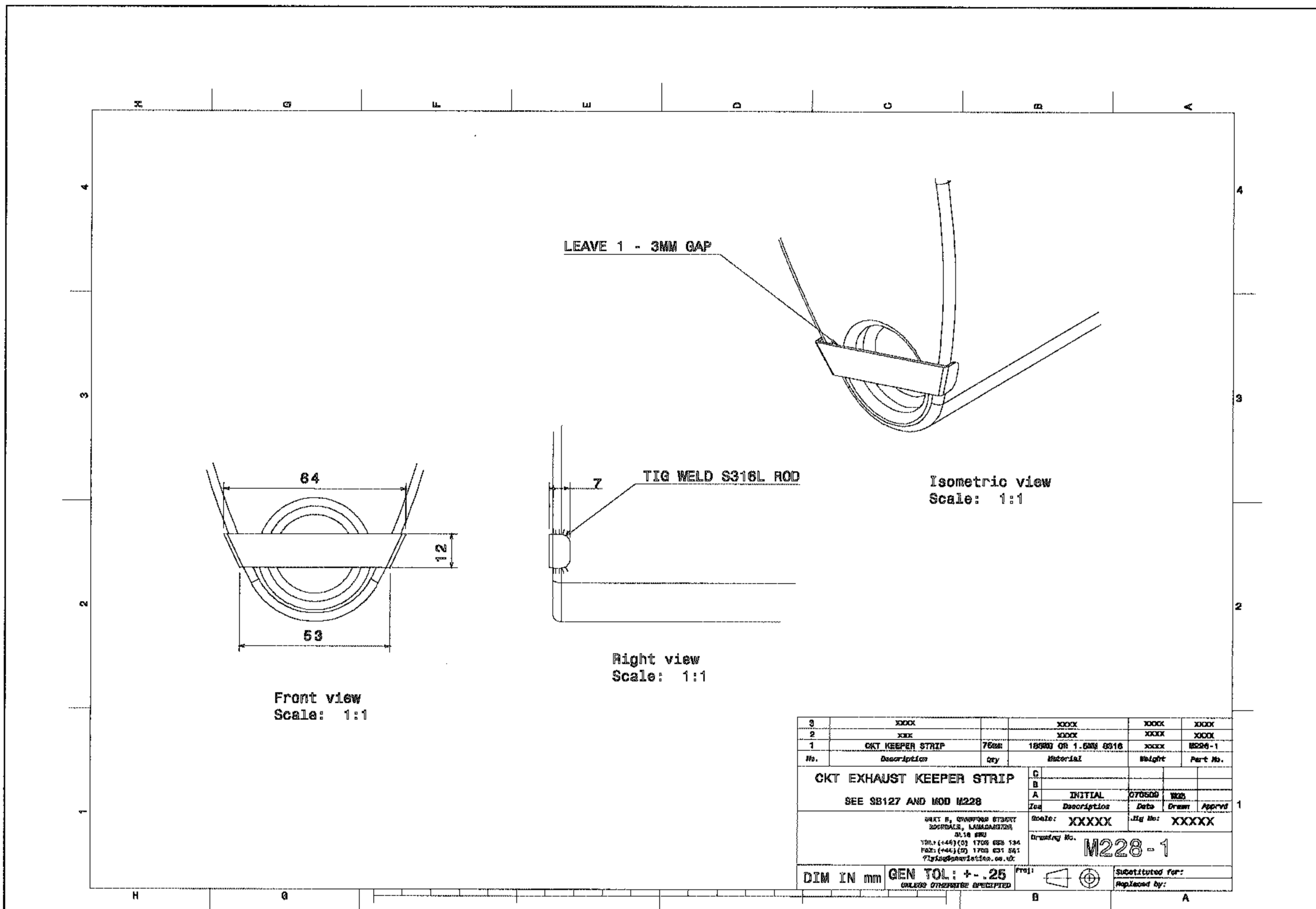


Fig 3 Exhaust Keeper modification M228

Refitting

Inspect the stainless steel back-up cables and springs for broken strands and wear. Inspect the rubber anti-vibration mount for cracks/disbonding. Replace with genuine P&M parts as necessary.

- d) Apply Copaslip or similar high temperature anti-seize compound to the ball joints
- e) Refit the springs, using a cord to fit them. Rocking the can relative to the pipes may help.
- f) Refit the anti-vibration mount using 20mm washer under a new nyloc nut. Avoid twisting the rubber mount.
- g) Refit the backup cables through the springs as shown in fig 4.

Tools required for removal/refit include:

- M10 spanner for AV mount.
- Pliers and a cord for spring removal/fitting
- Copaslip or similar anti-seize compound

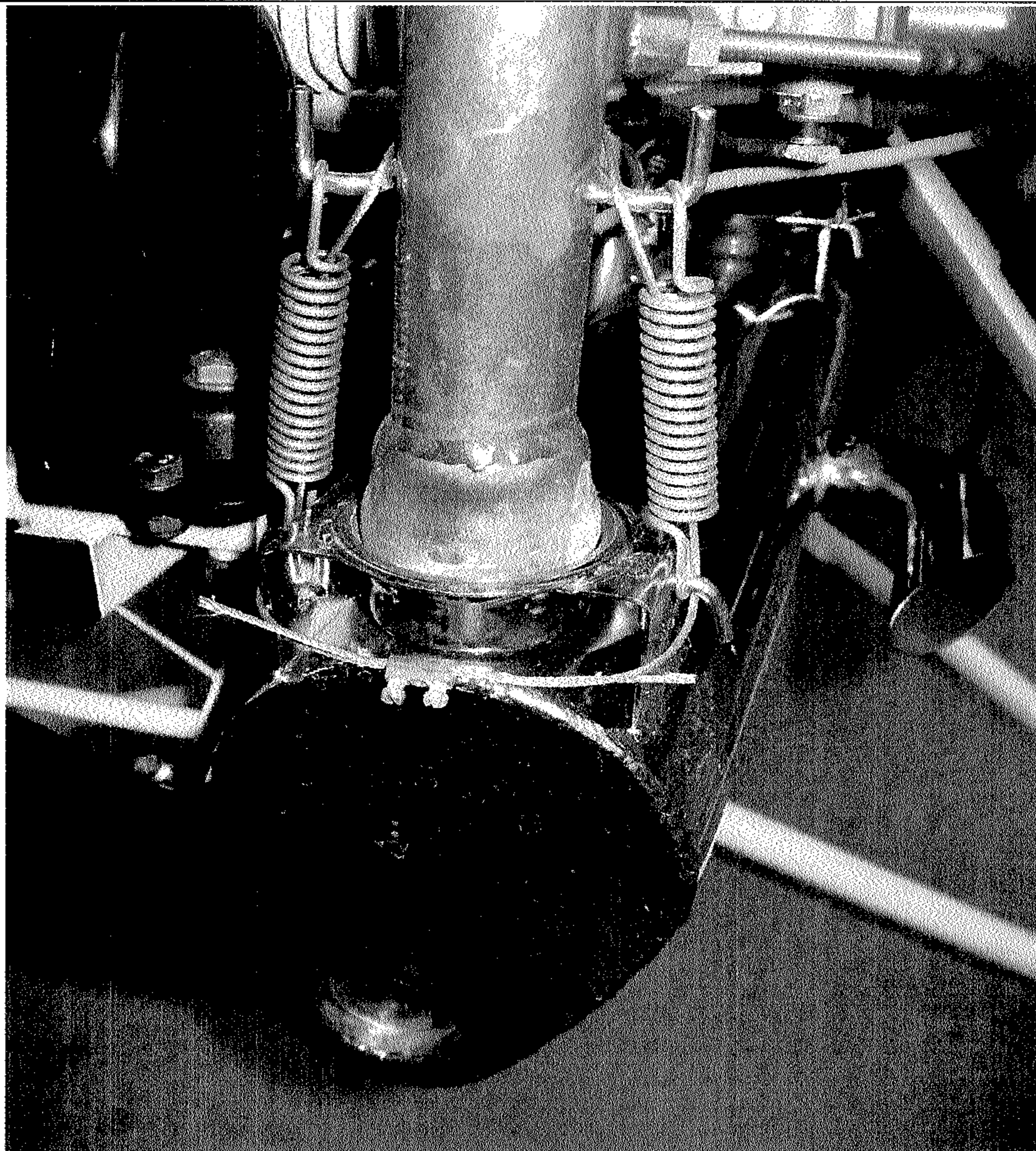


Fig 4 Exhaust springs and backup cable

CONTINUED AIRWORTHINESS

Close visual inspection of all 4 baffle weld feaures must be carried out as part of the daily check "A".

At each 50 hours, check the whole system closely for cracks, check springs for wear,check joints for security, check for loose baffles, lubricate the exhaust ball joints using Copaslip or similar high temperature anti-seize compound.

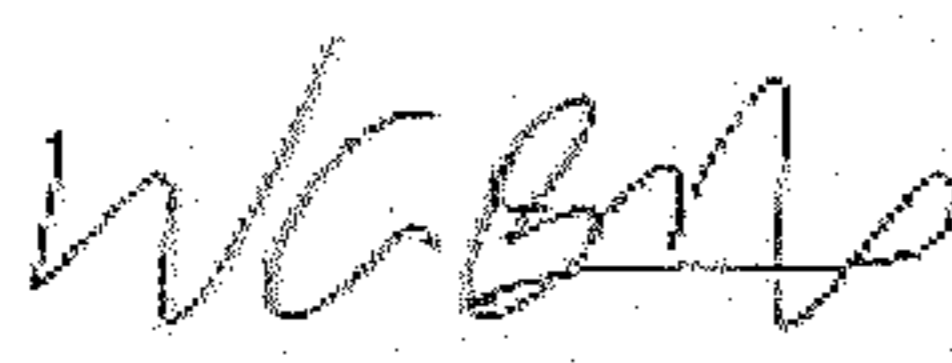
DOCUMENTATION


This service bulletin must be attached to the operator's manual.

The aircraft technical log must be signed off by the owner when the inspection is carried out and if the exhaust is replaced. If modification/repair M228 is carried out it must be inspected against this Service Bulletin by a BMAA or Factory Inspector, who must also sign it off in the aircraft technical log.

ISSUED BY W.G.Brooks

DATE 30/06/09

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