

Required calibration procedure

VI4/07/20/CAL/EM

AUGUST 1991

VEHICLE INSPECTORATE

EXHAUST GAS ANALYSER CALIBRATION REQUIREMENTS

1. INTRODUCTION

The requirements detailed in this document relate to all calibrations of exhaust gas analysers for MOT use which are carried out on or after 1 November 1991. Certificates issued prior to November 1991 will remain valid for, the appropriate period-see paragraph 2 below. The provisions of Note ii of paragraph 2 also apply to certificates issued before November 1991.

2. FREQUENCY

A. Equipment approved to OIML Class I with an approved automatic gassing facility:

6 monthly checks by a NAMAS approved operator, and at least one intermediate gas calibration check by the equipment user (ie the unit is gassed at not more than 3 monthly intervals).

B. All other equipment:

3 monthly checks by NAMAS approved operator.

Notes:

- i) Only NAMAS approved operators can perform statutory calibration checks.
- ii) Calibration certificates are normally valid for 3 (or 6) months from the date of issue. However, if the certificate is issued no more than 14 days before the expiry of an existing certificate, then the expiry date may be entered as 3 (or 6) months from the date of expiry of the old certificate.

3. CALIBRATION LIMITS

Equipment must be calibrated to within 3% rel. of the actual gas bottles values on both CO and HC channels.

Correct calibration of CO₂ or O₂ channels is not a Vehicle Inspectorate requirement.

4. COMPOSITION OF CALIBRATION GAS

Calibration gas is to be of the following nominal composition:

6% Carbon Monoxide
2400ppm Propane
15% Carbon Dioxide
balance Nitrogen

The composition of the gas mixture shall be quoted with an uncertainty of less than +/- 3% of concentration of each component and be traceable to National Standards according to NAMAS requirements.

5. ANALYSIS OF RESULTS

The Inspectorate will monitor the results of calibrations to verify the adequacy of the calibration periods. Details of the form of the data to be given to the Inspectorate will be agreed with individual accredited laboratories.

6. CALIBRATION PROCEDURE

The items detailed below must be included in the periodic calibration checks of gas analysers used for MOT testing. The order in which they are performed may vary according to the equipment type.

- 1 Measure and record ambient temperature and pressure.
- 2 When the analyser has completed its warm-up phase, present the calibration gas to the instrument via the calibration port. Check the calibration of the instrument and record the results.
- 3 Check that
 - a) the exhaust probe can be inserted into an exhaust pipe,
 - b) the holes at the end of the probe are clear,
 - c) the sample hose is of the correct material,
 - d) the sample hose is not chafed to the extent that failure is imminent,
 - e) the sample hose is not collapsed or kinked,
 - f) filters are clean,
 - g) filter bowls are correctly seated and undamaged and 'o' rings are in place,
 - h) internal pipes are secure and not damaged or deteriorated to the extent that collapse or leakage is imminent,
 - i) the pump draws gas through the complete sample system at the rate specified by the manufacturer,
 - j) the input voltage to the gas bench is within the tolerance stated by the manufacturer,
 - k) visual displays are readable and function correctly,
 - l) the casing is complete and there is electrical continuity between the earth on the input socket and all parts of the case,
- 4 Perform a 'self-test' check (where applicable).
- 5 Perform a gas calibration and adjust the instrument to bring it within calibration requirements. Note: It is important that the gas bottle values are corrected for ambient pressure.
- 6 Repeat the self-test check (where applicable).

- 7 Complete and affix calibration seals.
- 8 Complete and issue a calibration certificate of a type approved for the purpose by NAMAS and the Vehicle Inspectorate.