

Legislative provisions concerning the MOT test

1. MOT tests in Great Britain (but not in Northern Ireland) are carried out under the Road Traffic Act 1988. The detailed requirements are specified in regulations and instructions issued by the Secretary of State for Transport. This appendix describes the provisions that concern the introduction of a check on exhaust emissions requiring the use of an EGA.

2. Section 45 of the Road Traffic Act 1988 makes provision for vehicle tests 'for the purpose of ascertaining whether the prescribed statutory requirements relating to the construction and condition of motor vehicles or their accessories or equipment are complied with'. Sections 45 and 46 empower the Secretary of State to make regulations prescribing, among other things:

- (a) the authorisation of examiners, the imposition of conditions to be complied with by authorised examiners and the withdrawal of authorisations,
- (b) the manner in which, conditions under which and apparatus with which examinations are carried out, the maintenance of that apparatus in an efficient state, and the inspection of premises at which and apparatus with which examinations are being, or are to be, carried out.'

3. The regulations governing these matters are the Motor Vehicle (Tests) Regulations 1981 (SI 1981 No 1694). They have been extensively amended over the years and from 1 November 1991 have required a test of exhaust emissions to be carried out on vehicles of Class IV: motor cars and heavy motor cars other than certain passenger-carrying vehicles, public service vehicles and goods vehicles which fall into other Classes. The regulations introducing the emissions test were the Motor Vehicles (Tests) (Amendment) (No 3) Regulations 1991 (SI 1991 No 1525) which were made on 4 July 1991. Regulation 10 of SI 1991 No 1525 amended Schedule 2 of the 1981 Regulations so that it required the MOT test to include a check that the vehicle complied with Regulation 61 of the Road Vehicles (Construction and Use) Regulations 1986 (SI 1986 No 1078) which laid down the maximum carbon monoxide and hydrocarbon content for the exhaust emissions of petrol-engined cars.

4. Paragraph (10A) of Regulation 61 of SI 1986 No 1078 provides as follows:

(10A) Without prejudice to paragraphs (1) and (7) no person shall use, or cause or permit to be used on a road, a vehicle first used on or after the 1 August 1975 and propelled by a four-stroke spark ignition engine, unless the vehicle is in such a condition that, when the engine is idling-

- (a) the carbon monoxide content of the exhaust emissions from the engine does not exceed-
 - (i) in the case of a vehicle first used on or after 1 August 1983, 4.5%; or
 - (ii) in any other case, 6%;
- (b) the hydrocarbon content of those emissions does not exceed 0.12% of the total exhaust emissions from the engine by volume.

This sets the limits which exhaust gases must meet if the vehicle is to pass the MOT test. Paragraph (10A) was inserted in the Regulations by Regulation 5(5) of the Road Vehicles (Construction and Use) (Amendment) (No 1) Regulations 1991 (SI 1991 No 1526) which were made on 5 July 1991 and came into force on 1 November 1991.

5. The method of carrying out the vehicle tests, including the check on exhaust emissions, is laid down by the VI (acting on behalf of the Secretary of State for Transport) whose powers derive from Regulations 8 and 9 of SI

1981 No 1694. Appendix D of the MOT Inspection Manual, which deals with Test Equipment, is reproduced below. Among other things, it specifies the requirement for the regular calibration of EGAs.

Test Equipment

Appendix D

1. Introduction

The MOT Testing Conditions of Appointment stipulate the minimum test bay equipment and other requirements. The MOT List of Acceptable Equipment lists the various makes and models of test equipment that have a measuring capability eg headlamp aim testers, brake testers etc. The suitability of other test equipment is individually assessed at each testing station.

2. Equipment Maintenance and Calibration

All MOT testing equipment must be properly maintained and kept in good order. Measuring equipment must also be calibrated at the appropriate time intervals (see paragraph 3) and in all cases calibration records must be kept, except for tyre tread depth gauges.

3. Frequency and Location of Calibration

a. Exhaust Gas Analysers

- i. Daily (checks by the user)

Carry out a leak check on the hose and probe. Most machines have an automatic facility for doing this. If not, a physical check of the hose and probe must be carried out to confirm that there are no leaks.

- ii. Three monthly;

An exhaust gas analyser must be calibrated with a certified calibration gas and when the ambient temperature is above 5°C.

Note: Gas analysers cannot be properly calibrated if the mains AC voltage is less than 204V or more than 264V.

b. Roller and Plate Brake Testers and Headlamp Aim Testers

Must be calibrated insitu every 6 months. It is acceptable for calibration certificates to be issued at any time during every sixth month.

c. Decelerometers

Must be calibrated at intervals not exceeding 2 years. This can only be done by a decelerometer manufacturer or a National Measurement Accreditation Service (NAMAS) accredited test house.

d. Tyre Tread Depth Gauges

A periodic accuracy check is required. This can be done by placing the base foot onto a flat surface (eg window glass) and checking that the zero datums align.

4. Calibration Personnel

Equipment may be calibrated on site only by the following personnel:

a. Exhaust Gas Analysers

A technician accredited by NAMAS. The only exception is for testing stations that have OIML Class I equipment with an approved automatic gas calibration facility. These testing stations can carry out every second gas calibration themselves.

b. Roller and Plate Brake Testers and Headlamp Aim Testers

Either

i. the original manufacturer

or

ii. a firm which has taken over responsibility for equipment support from the manufacturer,

or

iii. a calibration specialist

or

iv. an experienced person from the testing station. The Vehicle Inspectorate will witness a calibration prior to confirmation of this arrangement and may subsequently require periodic demonstration of continuing competence.

5. Documentation

In cases where a Testing Station employs either the manufacturer or a calibration specialist, there must be a written contract and the Test Station must obtain a certificate for each calibration.

6. Calibration Certificates

a. General

All certificates must contain

i. a certificate serial number

ii. the address of the testing station and its VTS number

iii. details of the equipment, ie make, model and serial number

iv. title and address of calibration company or agency

v. signature of calibrator and date of calibration

b. Exhaust Gas Analysers

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 3 (or 6) months from the date of expiry of the old certificate.

c. Roller and Plate Brake Testers

Certificates must include a record of the test load, gauge readings and percentage error. The following limits apply in both forward and reverse operation as applicable.

- i. Equipment for Class III and IV: within $\pm 3\%$ at gauge readings 100 kg (220 lb), 200 kg (440 lb), 400 kg (900 lb) and 500 kg (1100 lb).
- ii. Equipment for Class VII: within $\pm 3\%$ at gauge readings 200 kg (440 lb), 400 kg (900 lb), 800 kg (1760 lb), and 1200 kg (2640 lb).

Calibration certificates for brake testers are to contain the following (or similar) statement

'This is to certify that the above brake test equipment has been calibrated and is within the limits specified by the Vehicle Inspectorate'.

d. Headlamp Aim Testers

Calibration certificates for headlamp aim testers are to contain the following (or similar) statement

'This is to certify that the above headlamp aim testing equipment has been checked and is in correct alignment with the vehicle standing area'.

e. Calibration by Vehicle Test Stations

Testing Stations calibrating their own equipment must keep a register listing the types of equipment and the information stated in paragraph 6a(ii) and (iii) above. Each calibration entry must contain the signature of the person who performed the calibration, the date, and for brake testers, the readings obtained (see paragraph 6c above).

f. Retention of Records

Calibration records/certificates must be retained for at least 2 years.

7. Independent Calibrators

Testing stations employing calibration specialists are advised to satisfy themselves of the technical competence and viability of the company concerned.

8. Equipment Condition

Test stations must immediately notify their Vehicle Inspectorate Local District Officer if any of their MOT test equipment is unsuitable for its purpose, eg out of calibration, inoperative, defective, etc.

6. It will be seen that EGAs must be calibrated every three months by 'a technician accredited by NAMAS'. The only exception is that MOT stations that have equipment meeting the OIML Class I standard with an approved automatic gas calibration facility can carry out every second gas calibration themselves. Hence for these machines calibration by a NAMAS-approved engineer is only required every six months. Paragraph 5 of the Appendix requires that there must be a written contract with the calibrator and that the MOT station must obtain a certificate for each calibration.

EC provisions

7. The EC harmonised the frequency of vehicle tests and the items to be tested in Council Directive 77/143/EEC of 29 December 1976 (OJ No L 47/47, 18 February 1977). The Directive has been amended over the years and on 22 June 1992 the Council adopted an amending Directive specifying the exhaust emission tests which member States were to incorporate in their national rules for vehicle tests.

8. This Directive, No 92/55/EEC (OJ No L 225/68, 10 August 1992), specified tests for petrol-engined vehicles and diesel-engined vehicles. In the case of petrol-engined vehicles, the tests were to be introduced by 1 January 1994 for vehicles without catalytic converters and by 1 January 1997 for those with catalytic converters.

9. For vehicles with catalytic converters the tests are more stringent than those for conventional vehicles. The requirements as now set out in section 8.2.1(b) of Annex II to Directive 77/143 are:

Where the exhaust emissions are controlled by an advanced emission control system such as a three-way catalytic converter which is lambda-probe controlled.

1. Visual inspection of the exhaust system in order to check that there are no leakages and that all parts are complete.
2. Visual inspection of the emission control system in order to check that the required equipment has been fitted.
3. Determination of the efficiency of the vehicle's emission control system by measuring the lambda value and the CO content of the exhaust gases in accordance with Section 4 or with the procedures proposed by the manufacturers and approved at the time of type-approval. For each of the tests the engine is conditioned in accordance with the vehicle manufacturer's recommendations.

4. Exhaust pipe emission-limit values

- Measurement at engine idling speed:

The maximum permissible CO content in the exhaust gases is that stated by the vehicle manufacturer. Where this information is not available, the maximum CO content must not exceed 0.5 vol%.

- Measurement at high idle speed, engine speed to be at least 2000 rpm:

CO content: maximum 0.3 vol%

Lambda: 1 +/- 0.03 or in accordance with the manufacturer's specifications.