

#### **4. Equipment Calibration**

##### **Introduction**

The MOT List of Acceptable Equipment lists the various makes and models of test equipment that have a measuring capability e.g. headlamp aim testers, brake testers etc. The suitability of other test equipment is individually assessed at each VTS.

##### **4.1. Equipment Maintenance, Calibration and Retention of Records**

All testing equipment must be kept in good order, and measuring apparatus must be calibrated regularly in accordance with VOSA's requirements (see paragraph 4.3.). In all cases calibration records must be kept for a minimum of two years.

A record of test equipment, which requires calibration, must be entered onto the system and updated if the equipment is replaced. The details of the equipment, type, make and model should be selected from the system held lists of acceptable equipment. The serial number of the equipment should also be entered. In the case where the serial number of the equipment cannot be found the VTS should make up a number, which identifies the equipment, and mark the equipment accordingly. Where a VTS uses an item of test equipment that is awaiting approval and the details of the equipment are not on the system, the AE should contact the VOSA local office for advice.

The AE is required to ensure that calibrations are carried out when required. The SM is required to accurately enter the calibration date and expiry date of the equipment via the VTS Device. These dates must be verifiable by a calibration certificate. The VTS Device will alert the SM when calibration is due. For Roller, Plate Brake Testers, ATL Weighing Facility and Headlamp Aim Testers the calibration expiry date will be taken as the month end date where certificates only show the month and year of expiry, see paragraph 4.3.b.

Failure to recalibrate by the due date will prevent testing of any vehicle that requires the use of that item of test equipment. In exceptional circumstances, beyond the AE's control, where the calibration cannot be carried out by the due date the SM should notify the VOSA local office. The VOSA local office may extend the calibration period in order to allow testing to continue.

Testing must also stop if any mandatory item malfunctions in a way that could prevent a test being properly conducted. (See Section B4). The AE must immediately notify VOSA's local office of any such stoppage via the VTS Device or by telephone, but written confirmation may be requested. Testing must not be resumed until the equipment has been properly repaired and the AE has informed VOSA's local office. If equipment fails during a test but before its use has been completed, the test must be Aborted and any fee paid returned.

##### **4.2. Maintenance Periods**

All equipment must be maintained in good working order at all times. In the case of ATL maintenance periods steering and suspension play detectors, this is a minimum period of 6 months for pneumatic equipment and 12 months for hydraulic equipment. Maintenance must be conducted by the manufacturer or manufacturer's agent and a maintenance report issued detailing any remedial work conducted. A signed and dated declaration that the equipment is in good working order must also be issued after the maintenance has been completed.

**4.3. 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, six or twelve monthly - depends on make/type. Which must be carried out according to the approved procedure by a recognised calibration technician only.

An exhaust gas analyser must be calibrated with a certified calibration gas and when the ambient temperature is above 5 degrees C (see item 4.4.a).

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

**b. Roller, Plate Brake Testers, ATL Weighing Facility and Headlamp Aim Testers**

Must be calibrated in situ every 6 months. It is acceptable for calibration certificates to be issued at any time during every sixth month. (Where the calibration certificate only states the month and year of expiry, the last day of that month should be used as the calibration expiry date for entry on the VTS Device).

**c. Decelerometers and Salter brake testers**

Must be calibrated at intervals not exceeding 2 years. Decelerometer may only be calibrated by

- (i) the manufacturer or
- (ii) a calibrator accredited by the National Measurement Accreditation Service.(UKAS)

Salter meters can be done by the manufacturers local depot if available, a firm which has taken over responsibility for equipment support from the manufacturer, a calibration specialist or local trading standards office.

**d. Tyre Tread Depth Gauges**

A periodic accuracy check is required at least every six months. This can be done by placing the base foot onto a flat surface (eg window glass) and checking that the zero datums align. AEs are to keep record showing the date of the accuracy check.

**e. Diesel Smoke Meters**

- (i) Weekly checks by the user
- (ii) Annual calibration by a technician accredited by UKAS

**4.4 Calibration Personnel**

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

**a. Exhaust Gas Analysers**

A technician accredited by UKAS. There are two exceptions

- (i) equipment (non-catalyst or catalyst) with an approved automatic monthly self-gassing facility requires a 12 monthly UKAS calibration with monthly calibrations which may be performed by VTS staff.
- (ii) non-catalyst OIML Class 1 equipment with an approved self-gassing facility requires a 6 monthly UKAS calibration with an intermediate calibration which may be performed by VTS staff.

**b. Roller and Plate Brake Testers and Headlamp Aim Testers**

Either

- (i) the original manufacturer
- or
- (ii) firm which has taken over responsibility for equipment support from the manufacturer.
- or
- (iii) a calibration specialist
- or
- (iv) an experienced person from the VTS. VOSA will witness a calibration prior to confirmation of this arrangement and may subsequently require periodic demonstration of continuing competence using the correct equipment.

**c. ATL Weighing Facility**

- (i) the original manufacturer
- or
- (ii) a firm which has taken over responsibility for equipment support from the manufacturer
- or
- (iii) a calibration specialist.

**4.5. Documentation**

In cases where a VTS 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.

**4.6. Calibration Certificates**

**a. General**

All certificates must contain

- (i) a certificate serial number
- (ii) the address of the VTS and its VTS number
- (iii) details of the equipment i.e. make, model and serial number
- (iv) title and address of calibration company or agency
- (v) signature of calibrator and date of calibration
- (vi) smoke meter and gas analyser calibration certificates shall meet the UKAS and VOSA standard agreed.

**b. Exhaust Gas Analysers**

Calibration certificates are normally valid for 3 (or 6 or 12) 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 or 12) months from the date of expiry of the old certificate.

**c. Roller and Plate Brake Testers (RBT and PBT)**

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.

The minimum values for Roller Brake Testers are as follows:

<b>Class I &amp; II</b>							
<b>Approved prior to 01 July 1996</b>							
Tested at	30kgf (66lb)	100kgf (220lb)	200kgf (440lb)				
<b>01 July 1996 onwards</b>							
Tested at	0	50kgf (110lb)	100kgf (220lb)	200kgf (440lb)	300kgf (660lb)		
<b>Class III &amp; IV</b>							
<b>Approved prior to 01 July 1996</b>							
Tested at	100kgf (220lb)	200kgf (440lb)	400kgf (880lb)	500kgf (1100lb)			
<b>01 July 1996 onwards</b>							
Tested at	0	100kgf (220lb)	200kgf (440lb)	400kgf (880lb)	600-800kgf (1320-1760lb)		
<b>Class V All Equipment</b>							
<b>Low Range</b>							
Tested at	0	100kgf (220lb)	200kgf (440lb)	400kgf (880lb)	600-800kgf (1320-1760lb)		
<b>High Range</b>							
Tested at	0	1200-1500kgf (2640-3300lb)	2000-2500kgf (4400-5500lb)	3500-4000 kgf (7700lb-8800lb)			
<b>Class VII All Equipment</b>							
Tested at	0	200kgf (440lb)	400kgf (880lb)	600-800kgf (1320-1760lb)			
Including	1200-1500kgf (2640-3300lb)						

**Note:** Some older roller brake testers were approved to different calibration values to those listed above. To accept any different values evidence must have been supplied in the manufacturer's original operating instructions.

The minimum values for Plate Brake Testers are as follows:

Class I & II all Equipment					
Tested at	0	30kgf (66lb)	100kgf (220lb)	200kgf (440lb)	

Class III & IV All Equipment					
Tested at	0	30kgf(66lb)	100kgf (220lb)	200kgf (440lb)	600kgf (1320lb)

Class VII All Equipment					
Tested at	0	100kgf (220lb)	200kgf (440lb)	600kgf (1320lb)	1000kgf (2200lb)

Calibration certificates must include a record of the test load, gauge readings and percentage error. Calibration results may be recorded in kgf or the equivalent in imperial lbs.

### Accuracy

Brake force readings shall be accurate to within:

+/- 3kgf (6.6lb) of the true value from zero up to and including 100kgf

+/- 3% of the true value for all readings above 100 kgf

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 VOSA.”

#### d. ATL Weighing Facility

Certificates must include a record of the test load, gauge readings and percentage error.

Accuracy to within +/- 3% between 200kg and 300kg imposed weight traceable to an acceptable quality standard.

Calibration certificates for brake testers and ATL weighing facility 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 VOSA”

#### e. 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.”

**f. Diesel Smoke Meter**

(i) Smoke meters are to be calibrated every 12 months. Calibration certificates are normally valid for 12 months from the date of issue. However, if the certificate is issued no more than one month before the expiry of an existing certificate then the expiry date may be 12 months from the expiry of the old certificate.

(ii) Initial Period of Calibration

A new diesel smoke meter should be supplied with an **Initial Calibration Certificate** in one of two forms:-

**1. a certificate of conformity**

Issued by a BSi/ISO registered company, the meter will have been calibrated as a part of the in-house quality control procedure. It will carry the BSi and/or ISO logos, and will be dated. Within **six** months of the **issue** of a Certificate of Conformity a new meter must be calibrated by a UKAS accredited engineer.

**Note:** You may find that some new smoke meters have very little time left to run with this type of certificate when delivered.

**2. a UKAS calibration certificate**

Issued immediately prior to or following delivery by a UKAS Accredited Engineer.

Like all other UKAS issued calibration certificates on diesel smoke meters a new meter must be calibrated by a UKAS Accredited Engineer within **twelve** months of the issue of this certificate.

If you have any questions regarding the certification of a smoke meter, contact the manufacturer or his agent.

**g. Calibration by Vehicle Test Stations**

VTSS calibrating their own equipment must keep a register listing the types of equipment and the information stated in paragraph 4.6. a (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 4.6.c above).

**4.7 Other Items of Test Equipment**

There is a facility for recording other items of test equipment i.e. vehicle lifts, and jacking beams which has been provided for future use.

**4.8 Independent Calibrators**

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

**5. Security of Test Certificates - General Recommendations**

**a. VT20 Test Certificates**

VT20s do not require storage in a secure location. However they should be kept clean and dry in order that the VTS Device can print on them.

**b. VT20 ET Emergency Test Certificates**

ET certificates do not require storage in a specified secure location. They should be stored in the same way as a reasonable quantity of cash. They should therefore be stored away from public areas, and never left unattended. VTSS must not hold more ET certificates than they would expect to use within a reasonable period of time, and in any case, no more than 1 full pad, and 1 part used pad of certificates at any time.

**6. Taking delivery of ET Certificates**

There will be no special arrangements for delivery of VT20 ET certificates. However, the certificates will be delivered in sealed packaging and should not be opened until required for use in an ET situation. If the package containing VT20 ET certificates is delivered either damaged or opened delivery must be refused and the SBS Service Desk notified. New certificate pads should be checked by an authorised person as soon as they are opened for use. Upon inspection if you find that you have an incomplete pad you must note the discrepancy and notify the VOSA local office as soon as practicable.

**7. General**

The AE shall take all reasonable precautions to ensure that all Smart Card users safeguard the cards and Passwords.