SPECIFICATION

PLATE BRAKE TESTERS
FOR TESTING
CLASS I & II VEHICLES

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1. INTRODUCTION

This Specification details the MINIMUM performance and constructional requirements for Plate Brake Testers (PBTs) intended to be used for the statutory annual MOT brake performance testing of Class I & II vehicles in accordance with the Motor Vehicle (Tests) Regulations 1981, as amended.

The Specification does not rule out additional features supplied with the equipment provided that the features are acceptable on health and safety grounds and do not prevent or make it more difficult to carry out the MOT Test as prescribed.

2. TECHNICAL REQUIREMENTS

The PBT shall comprise a single measuring plate with a separate display console, a control computer and a means of measuring motorcycle weight with an electrical link to the control computer.

The PBT shall be safe to use, robustly constructed to acceptable engineering standards and able to perform a satisfactory brake test on all Class I and II vehicles, including motorcycle combinations with either a left or right mounted sidecar.

2.1 Physical Criteria

The PBT shall have the capability of accepting motorcycles with a:

a. Gross weight of up to 500 kg.

b. Individual wheel load of up to 250 kg.

2.2 Plate Characteristics

NB: Surface mounted PBTs are not acceptable for testing Class I and II vehicles. At installation, the measuring plate shall be either recessed into the floor or set into a false floor of not less than 1.5 m wide to allow the high friction working surface to be flush with the floor.

The high friction working surface of the measuring plate shall have a:

a. Length of not less than 2200 mm.

b. Width of not less than 500 mm.

c. Surface that is durable and not likely to cause undue tyre damage.

d. Surface to tyre co-efficient of friction of not less than 0.6μ in wet conditions.

Note: Motorcycles with a brake system which operates on both wheels when either the front or the rear brake is used will need to make two passes over the single plate to assess the effect of each brake system on each wheel; a total of four passes. Thus, for solo motorcycles the software shall be able to take account of both a two-pass and four-pass test procedure and a means of selecting which procedure is to be used shall be available prior to the start of test.

2.3 Weight Measurement

There shall be a means of measuring motorcycle weight provided. The means, which can be either incorporated within the PBT or separate shall be capable of measuring up to;

500 kg	if incorporated within the PBT and designed to measure the whole weight of the motorcycle, or
250 kg per wheel	if separate to the PBT.

If the means is separate, there shall be:

a. An electrical link to the control computer.

b. Suitable ramps with a gradient no steeper than 25% provided, and

c. The under-surface of both the weigh scale and the ramps shall be non-slip.

2.4 User Controls

The user controls shall be:

a. Suitably identified in English or with acceptable symbols.

b. Capable of being operated from the motorcycle riding position by a remote control handset.

Note 1:A hard-wired remote control is not acceptable
Note 2:There shall be provision of safe storage for the remote control handset when not in use.

c. Resistant to spurious signals from other sources.

A system shall be in place to ensure that each remote control unit is dedicated to operate only one PBT when two or more are used in close proximity.

3. PRESENTATION OF RESULTS

The PBT shall display on a VDU screen the value of brake efficiency, calculated from the total brake force and expressed as a percentage of the motorcycle weight.

Note: The motorcycle weight and algorithm used shall be in accordance with that defined in the latest version of the MOT Inspection Manual for Class I & II vehicles.

The brake force results shall be displayed clearly on a VDU screen in two forms:

i) Graphical: such that changes in brake force can be readily examined,

and on the same screen, but separate from the graphical display:

ii) Digital: to show the maximum brake force value achieved by each wheel displayed in increments no greater than 2 kgf.

The brake force displays shall:

a. Be marked in kilogram force units (kgf).
b. Show clearly the separate brake forces for each wheel in both graphical and digital

form.

c. Have a maximum brake force display value of not less than 250 kgf.

d. Be sufficiently sensitive to show the variations in brake force caused by excessive drum ovality or disc runout (graphical).

e. Show the calculated value of brake efficiency for the whole motorcycle.

The brake test results described above shall be retained on the VDU screen until manually reset. A printer or plotter is not an acceptable means of achieving this requirement.

The equipment must be capable of carrying out a separate test for brake bind and the display must be sufficiently sensitive to identify variations in brake effort due to brake bind being present during the brake performance test.

4. CALIBRATION

A means of calibrating both the brake force and weight measurement shall be available and for each system the display shall be capable of showing negative numbers close to zero.

4.1 Brake Force

The calibration equipment shall:

a. Be suitable for checking brake force accuracy at the following values;

0, 30, 100 and 200 kgf

b. Have a method and operational accuracy that is traceable to a national physical standard.

c. Be certified by a UK NAMAS accredited laboratory, or an equivalent European laboratory, that the whole calibration system is traceable to a national physical standard.

4.1.1 Accuracy

Brake force readings shall be accurate to within;

+/- 3 kgf of the true value from zero up to and including 100 kgf, and

+/- 3 per cent of the true value for all readings above 100 kgf.

4.2 Weight

The calibration equipment shall be capable of checking the accuracy of weight measurement at the following values;

a. If weight measurement is by individual wheel:

0, 50, 100 and 200 kg

b. If weight measurement is of the whole motorcycle:

0, 100, 200 and 500 kg

There are two methods which are acceptable;

i) applied weights, or
ii) purpose made calibration equipment.

If weights are used they shall be certified as traceable to a national physical standard.

If purpose made calibration equipment is used the whole equipment shall be certified as traceable to a national physical standard.

4.2.1 Accuracy

The weight measurement shall be accurate to within:

+/- 3 per cent

5. INSTRUCTION MANUAL

A comprehensive Instruction Manual shall be supplied with each PBT.

The Instruction Manual shall:

a. Be written in English.

b. Explain how to operate the PBT, the function of each control, the range of readings available, and how to interpret the results.

c. Detail how to use the PBT to carry out a brake performance test and make reference to the need to follow the brake test procedure detailed in the latest version of the relevant MOT Inspection Manual when carrying out a statutory MOT test.

d. Detail the procedure for calibrating the PBT.

Note: Inclusion of the calibration procedure in the Instruction Manual is applicable only if calibration equipment is to be offered to the purchaser of the PBT. If not, a separate Calibration Manual shall be made available for assessment at the approval stage.

6. IDENTIFICATION

The PBT shall be marked with a durable identification on the exterior of the control console, or equivalent, showing the make, model and serial number.