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Vehicle Standards – Specification for Vehicle Roadworthiness – Part 5: Roadworthiness – Requirements for Testing Equipment

Version *[Insert Version Number]*

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Foreword

SADCSTAN (Southern African Development Community Cooperation in Standardization) is mandated by the SADC Council of Ministers to coordinate Standardisation activities and services in the region with the purpose of achieving harmonisation of standards in support of the objectives of the SADC protocol on trade.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SADCSTAN shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the SADCSTAN list of patent declarations received.

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This document was prepared by *[insert name of committee or subcommittee]*.

This *[Insert edition number]* edition cancels and replaces the edition *[Insert edition number]*, which has been technically revised. It also incorporates the Amendments *[Insert edition number(s)]*.

The main changes compared to the previous edition are as follows:

— *[List changes here]*

Foreword (Cont.)

This specification consists of the following parts under the general title “Specification for vehicle Roadworthiness”

Part 1: Roadworthiness of vehicles already in service

Part 2: Roadworthiness of vehicles prior to entry into service and thereafter

Part 3: Roadworthiness – Supporting information

Part 4: Roadworthiness – Requirements for vehicle examiners

Part 5: Roadworthiness – Requirements for testing equipment

Part 6: Roadworthiness – Requirements for combinations of vehicles

0 Introduction

0.1 Reference to Part 1.

The Foreword and Introduction of Part 1 of this specification are also relevant to this Part 5 which specifies requirements for vehicle testing equipment.

0.2 Principles in the 6 Parts:

The principles incorporated in the 3 parts of this specification are as follows

Part 1: Covers roadworthiness of vehicles already in service, some being very old, others possibly brand new, and deals mainly with wear and tear and deterioration of the basic parts of vehicles which need to be continually maintained to a reasonable level of safety. Because of the many sources and specifications of new and used vehicles it is necessary to ensure that no requirements are included which could result in failure of some vehicle designs which have been operating safely and successfully for many years.

Part 2: Provision is made in this Part 2 for the subsequent mandatory introduction of design safety standard requirements intended to ensure higher standards of safety for vehicles entering into service in the future and thereafter whenever roadworthiness testing is required.

Part 3: Is intended as an advisory publication to throw light on the considerations involved in Parts 1, 2, 4 and 5 and to provide information which may be of assistance to some vehicle examiners.

Part 4: Covers requirements for vehicle examiners.

Part 5: Covers requirements for equipment for testing equipment.

Part 6: Covers walk-around inspections of vehicle combinations.

Vehicle Standards – Specification for Vehicle Roadworthiness – Part 5: Roadworthiness – Requirements for Testing Equipment

1 Introduction

1.1 Acknowledgements and Referrals

In the preparation of this draft specification, the assistance derived from the following sources is acknowledged with thanks: -

- 1) DVSA - The MOT Testing Guide (6th Edition) - Revised February 2018

2 Scope

2.1 Scope of Part 5

This Part 5 of the specification contains information on the selection and installation of testing equipment required to assess the roadworthiness of vehicles.

2.2 For the purposes of this Part of the specification the following categorisations of vehicles are used:-

2.2.1 Light vehicle categories for the purposes of this part are considered to be: -

- a) Vehicles 3500kg GVM or less
- b) Passenger cars
- c) Passenger vehicles with 9 or less seats including the driver
- d) Motor cycles and 3 wheelers

2.2.2 Heavy vehicle categories for the purposes of this part are considered to be:-

- a) Vehicles 3500kg GVM or more
- b) Passenger vehicles with 10 or more seats including the driver.
- c) Other vehicles including on/off-road, diggers, back-hoes and other such classes.

The contents of this Part 5 are not mandatory.

NOTE Additions to this part of the specification are intended to be provided at a later date.

3 Equipment required

3.1 List of Equipment required for light and heavy vehicles. (Pages 62 on)

- a) Brake roller tester suitable for the class of vehicle to be tested.
- b) Decelerometer.
- c) Headlamp beam tester aiming device – rail mounted
- d) Standing mirrors for lighting function checks
- e) Tailpipe emission testing equipment if supporting legislation for emission levels exists
- f) Wheel play detection equipment
- g) Trolley jack suitable for the class of vehicle to be tested

- h) 12V Inspectionlamp equipment
- i) Tape measure, crowbar, tyre tread depth gauge, wheel chocks
- j) Weighing equipment – may be combined with brake roller tester or located elsewhere.
- k) Systems to authenticate vehicle presence and examiner presence for duration of test.

3.2 Maintenance, record-keeping and calibration of equipment –

- a) Measuring equipment such as brake roller testers, decelerometer, headlamp tester, and any emission testing equipment and weighing equipment must be calibrated regularly to ensure that vehicles are not failed or passed incorrectly.
- b) The intervals between calibrations depend on recommendations given in the suppliers manuals, the frequency of use of the equipment and the ongoing assessments by the vehicle examiners of readings obtained.
- c) A register of the equipment must be maintained showing date purchased or installed; contact details of supplier and installer and of calibration service providers; make, model and serial number of each piece of testing equipment; date and description of last maintenance or repair operations carried out; date of last calibration together with the readings taken and the errors noted; whether adjustment to eliminate errors were performed and details of what was done.

3.3 Precautions regarding purchasing of equipment

- a) Ensure the potential supplier has an adequate “footprint” of service delivery and product back-up in the country or has concrete irrevocable plans to provide such.
- b) Obtain the views of users of equipment on offer, even if from users in neighbouring countries.
- c) Ensure that the equipment is capable and suitable for the classes of vehicles which the testing station is intended to test now, and for probable future requirements.
- d) In the case of a brake roller tester ensure that the required output torque is from a motor of comparable power to its competitors and not simply geared to produce the required torque at the rollers but at much lower roller speeds.

3.4 Selection of the type and capability of the equipment.

- a) Establish which classes of vehicle are to be tested in a particular facility and ensure the tender documents are clear on this and on possible future extension to the classes of vehicles to be covered. In particular the difference between equipment designed to test Light Vehicles such as cars and LDV's is not suitable for Heavy Motor Vehicles, but the converse may be true.

3.5 Requirements for site, testing bay and equipment layout – Heavy Vehicles (P 73 on)(and 80 on)

3.5.1 Site

- a) Must be such that vehicles can be driven through the premises and over the testing equipment and out of the premises to gain easy access to a public road, without having to reverse out.
- b) Must be well ventilated to prevent the buildup of exhaust fumes preferably with exhaust extraction ducts for connection to tailpipes.
- c) Must be easily accessible to vehicles with parking facilities for vehicle arrivals which do not rely on public roads or public spaces.

3.5.2 Main dimensions for vehicle access

- a) Must have entrances and exits for vehicles must be at least 4.7m high and 4.2m wide
- b) The width of the test bay must be at least 4.5m so as to allow ample space around a vehicle
- c) Headroom inside the building where the vehicle must travel to be at least 5.0m

3.5.3 Provision and dimensions and equipment for vehicle inspection

- a) Must have a pit of minimum width 800mm and maximum width 1300mm which has a minimum depth of 1400mm and a maximum depth of 1800mm along a length of at least 13m.
- b) Be built to withstand the maximum weight of vehicles to be tested, including their maximum loads
- c) Must be provided with safe access for examiners with provision for ease of exit in an emergency some distance from the normal entry access.
- d) Equipment to enable both front wheels to be lifted simultaneously using the jacking points provided by the vehicle manufacturer for beam axles or for independent front suspensions. (Front axle massload can be 8t on a fully laden vehicle)
- e) Must be located, protected and sealed to prevent water draining into it.
- f) Equipment to detect wheel play and steering play may be incorporated.

3.5.4 Headlamp aim testing equipment

- a) Headlamp aim measuring equipment must be properly aligned and with its rails positioned at right angles to the path of the vehicle in relation to where the vehicle under test will be situated.
- b) Must be mounted on rails at the end of a flat floor area at least 11m long and 3m wide being level within 6mm over any 3m length in any direction at any place within the 11m x 3m flat area.
- c) A space of at least 1m must be provided to allow the operator to move behind the headlamp measuring equipment.

3.5.5 Brake Testing Equipment

- a) Ideally a decelerometer should be provided for road testing of overall braking performance and a brake roller tester to establish whether each wheel brake is operating satisfactorily.
- b) The brake roller tester must be installed in a lane at least 22m long and at least 4m wide in a substantially flat area with gradients less than 5%.
- c) Safety of vehicle examiners must be ensured for example by providing an isolator to prevent operation when someone is in the pit.
- d) 4 x wheel chocks must be available.
- e) The brake roller tester may be positioned outside the buildings provided the rollers are protected by a canopy or similar to prevent weather damage and provided the operator is able to view its operation and readings from an undercover position.

3.5.6 System to authenticate vehicle presence and examiner presence for duration of test.

- a) Cameras positioned and actuated to show vehicle entering and leaving the test lane after roadworthiness inspection with automatic date, time and GPS recording on the photographs.
- b) Means of adding examiner's signature to photographs and records of roadworthiness inspection such that the evidence in a) and b) cannot be erased by the testing station.

3.6 Requirements for site, testing bay and equipment layout – Light Vehicles (P 73 – Class 5)

3.6.1 Site

- a) Must be such that vehicles can be driven through the premises and over the testing equipment and out of the premises to gain easy and safe access to a public road. Reversing is permissible.
- b) Must be well ventilated to prevent the buildup of exhaust fumes preferably with exhaust extraction ducts for connection to tailpipes.
- c) Must be easily accessible to vehicles with parking facilities for vehicle arrivals which do not rely on public roads or public spaces.

3.6.2 Main dimensions for vehicle access

- a) Must have entrances and exits for vehicles must be at least 2.4m high and 2.4m wide
- b) The width of the test bay must be at least 3.6m so as to allow ample space around a vehicle
- c) Headroom inside the building where the vehicle must travel to be at least 2.4m

3.6.3 Provision and dimensions and equipment for vehicle inspection using a pit, a lifting platform or a brake plate tester.

- a) Must have a pit as below or a lifting platform as in 2.6.4 and in cases where a brake plate tester has been installed prior to the application of this specification as in 2.6.5 then the brake plate tester may be authorised for use provided it is functioning correctly according to manufacturers prescriptions.
- b) A pit must be of minimum width 760mm and maximum width 920mm and have a minimum depth of 1500mm and a maximum depth of 1800mm along a length of at least 4m. The width dimensions of 920mm may be increased to 1300mm if it is intended to also use the pit for heavy vehicles.
- c) Be built to withstand the maximum weight of vehicles to be tested, including their maximum loads
- d) Must be provided with safe access for examiners with provision for ease of exit in an emergency some distance from the normal entry access.
- e) Equipment to enable both front wheels to be lifted simultaneously using the jacking points provided by the vehicle manufacturer for beam axles or for independent front suspensions. (Front axle massload can be 8t on a fully laden vehicle.)
- f) Must be located, protected and sealed to prevent water draining into it.
- g) Equipment to detect wheel play and steering play may be incorporated.

3.6.4 Provision and dimensions and equipment for a lifting platform.

- a) The platform must be at least 3.9m long and have raised edges or vertical rails with an ability to be raise a 3t vehicle at least 1.5m from the floor.
- b) Equipment to enable both front wheels or both rear wheels to be lifted simultaneously using the jacking points provided by the vehicle manufacturer for beam axles or for independent suspensions. (Front axle massload can be 2t on a fully laden vehicle)

3.6.5 Provision of brake plate tester.

- a) If already installed and functioning correctly prior to the application of this specification according to the manufcaturers instruction and maintenance manual, then it may continue to be used.

3.6.6 Headlamp aim testing equipment

- a) Headlamp aim measuring equipment must be properly aligned and with its rails positioned at right angles to the path of the vehicle in relation to where the vehicle under test will be situated.
- b) Must be mounted on rails at the end of a flat floor area at least 3.6m long and 2.1m wide being level within 6mm over any 3m length in any direction at any place within the 3.6m x 2.1m flat area.
- c) A space of at least 1m must be provided to allow the operator to move behind the headlamp measuring equipment.

3.6.7 Brake Testing Equipment

- a) Ideally a decelerometer should be provided for road testing of overall braking performance and a brake roller tester to establish whether each wheel brake is operating satisfactorily.

- b) The brake roller tester must be installed in a lane at least 9m long and at least 2.4m wide in a substantially flat floor area 3.5m to the front and rear of the rollers although the gradient beyond these dimensions may be up to 10%.
- c) Safety of vehicle examiners must be ensured for example by providing an isolator to prevent operation when someone is in the pit.
- d) 4 x wheel chocks must be available.
- e) The brake roller tester may be positioned outside the buildings provided the rollers are protected by a canopy or similar to prevent weather damage and provided the operator is able to view its operation and readings from an undercover position.

3.6.8 System to authenticate vehicle presence and examiner presence for duration of test.

- a) Cameras positioned and actuated to show vehicle entering and leaving the test lane after roadworthiness inspection with automatic date, time and GPS recording on the photographs.
- b) Means of adding examiner's signature to photographs and records of roadworthiness inspection such that the evidence in a) and b) cannot be erased by the testing station.

Examiners will find the following documents useful.

It may be downloaded from:-

<https://vdocuments.mx/download/the-mot-testing-guide-a-handbook-for-scheme-administration>

Annex A on Page 70 to 72 of the MoT Testing Guide provides sketches of suitable installation layouts.

Light Vehicles under this part of the Roadworthiness Specification generally relate to vehicles under the UK classification of Vehicles of Class 3, 4, 5 and 7.

Heavy Vehicles under this part of the Roadworthiness Specification generally relate to vehicles under the UK classification of vehicles heavier than those of Class 5 and 7 and using UN ECE Terminology fall under Category M2/M3 and N2/N3 and O3/O4.

Introduction to the MOT Testing Guide (6th Edition) – Revised February 2018

This document is intended to help new and existing Authorised Examiners, Testers and other interested parties comply with the requirements for authorisation by the Secretary of State to conduct statutory tests on certain motor vehicles. The statutory requirements are contained in the Motor Vehicles (Tests) Regulations 1981 as amended. The Guide does not cover the requirements for annual testing of Heavy Goods Vehicles (HGVs) or Public Service Vehicles (PSVs). Neither does the Guide cover the requirements for Type Approval nor Individual Vehicle Approval of certain vehicles before they are first registered in Great Britain. This guide is divided into a series of sections covering specific subject areas. Detailed information on the technical standards and procedures of the statutory test is given in the appropriate MOT Inspection Manual. Additional instruction and information is also issued to Vehicle Testing Stations about testing and procedures, in the form of Special Notices (SNs). DVSA reserves the right to modify the content of this Guide to reflect changes in the law or in light of experience.

Availability and Maintenance of the Guide

The definitive document is now held electronically and can be viewed on line at www.gov.uk/topic/mot/manuals. The electronic documents will be periodically updated; and changes

will be advised by Special Notice. Additional information on DVSA and the MOT Service is also available on at www.gov.uk/topic/mot.

Other DVSA Documentation

This guide should be used in conjunction with; • the relevant MOT Inspection Manuals which are a detailed guide to the inspection for statutory MOT testing; • Special Notices (SNs), these are issued periodically by DVSA to inform those involved with MOT testing about changes and to highlight areas of concern; • and other documentation issued by DVSA