

TECHNIQUE

USER MANUAL

MOT Roller brake testers **Technique T8000 range**

BY: 

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TRADE GARAGE EQUIPMENT LTD

Phone: 01509 506 680

Website: www.tradegarageequipment.co.uk

e-mail: enquiries@tradegarageequipment.co.uk

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Trade Garage Equipment Ltd contact details

Phone: 01509 506 680
Website: www.tradegarageequipment.co.uk
E-mail: enquiries@tradegarageequipment.co.uk

CE Regulation Compliance

The product complies with all applicable CE directives (see "Declaration of conformity to CE directives" on page 53).

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Chapter 1 About this manual

In This Chapter

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Audience

This user manual is intended for persons who operate the Technique test lane. Trade Garage Equipment requires that these operators:

- ▶ Have sufficient technical knowledge and experience to do the assigned tasks.
- ▶ Can recognize and prevent hazards.
- ▶ Have read and understand this manual.
- ▶ Have been correctly trained.
- ▶ Follow the procedures in this manual.

Scope

The purpose of this manual is to:

- ▶ Describe the operation of the system.
- ▶ Describe its operating principles and general construction.
- ▶ Explain safety features and safety precautions.
- ▶ Highlight possible hazards.
- ▶ Describe procedures to operate the system.
- ▶ Describe solutions to system problems.

Organisation

This user manual contains the following chapters:

- ▶ Introduction (on page 6): contains a short description of the system.
- ▶ Safety (on page 7): describes safety features on the Technique test lane and safety precautions to obey when you operate or do work on the system. Read this section before installation, operation and maintenance.
- ▶ Specifications (on page 9): contains specification of the Technique test lane.
- ▶ Functional description (on page 11): contains a functional description of the Technique test lane.
- ▶ Vehicle/customer data (on page 21): contains all procedures necessary to operate the vehicle/customer section of the Technique test lane program.
- ▶ Operating instructions (chapters 7, 8 and 9): contains all procedures necessary to operate the Technique test lane safely. Chapter 10 describes how to analyse, print, save and review test results.
- ▶ General settings (on page 49): describes general settings for the test lane.
- ▶ Troubleshooting (on page 51): contains procedures to solve problems encountered operating the Technique test lane and lists error messages. Preventive maintenance (on page 52): contains maintenance procedures that can be done by the operator.

Availability of this manual

Trade Garage Equipment expects a copy of this manual to be available to the user. One copy should always be available near the system.

Chapter 2 Introduction

In This Chapter

Introduction

6

Introduction

This manual describes how to safely use the **Technique T8000** range of brake testers.

Technique T8400, T8400A and T8500A Class 4 Roller brake testers (herein refer to as T8400, T8400A and T8500A) for statutory Vehicle Inspection of commercially available class 3, 4 and M1 vehicles (herein refer to as MOT class 3&4&M1).

Technique T8700 and T8700A Class 7 Roller brake tester (herein refer to as T8700 and T8700A) for statutory Vehicle Inspection of commercially available class 7 and 5L vehicles (herein refer to as MOT class 7&5L).

This manual gives the instructions in carrying out a brake test according to the GB Department of Transport compulsory schemes. The manual provides the MOT braking measurement requirements and describes the complete test procedures for both automatic- and manual testing as set out in the MOT inspection manuals current at the time this user manual was written. Please refer to the latest MOT inspection manual to check for any changes.

The customer should ensure that the installation for testing vehicles under any of the Department of Transport compulsory schemes, is according to the details mentioned in the Department of Transport's requirements.

The brake testers are designed in such a way that these can be used in a MANUAL testing mode as well as an Automatic testing mode (herein refer to as MAN and ATL). The configuration installed, determines the functionality of the product and if it can be used in ATL- and MANUAL mode, or in MANUAL mode only:

Vehicle	Model	T8400 MAN	T8400A ATL	T8500A ATL	T8700 MAN	T8700A ATL
Class 3		MAN	MAN	MAN	MAN	MAN
Class 4, Class M1		MAN	MAN/ATL	MAN/ATL	MAN	MAN/ATL
Class 5L		-	-	-	MAN	MAN/ATL
Class 7 (2 axles)		-	-	-	MAN	MAN/ATL
Class 7 (3 axles)		-	-	-	MAN	MAN/ATL
Class 1&2 c/w adaptor plate		-	MAN	MAN	-	MAN

The ATL weighing system can be integrated underneath the brake tester or in the suspension tester integrated in the T8500 or the separate suspension tester T8010.

Introduction DVSA MTS System

Any new roller brake tester class 4, 5L and 7 installed after 1st October 2019 is required to be connectable to the DVSA MTS System.

The T8400(A), T8500A, T8700(A) can be connected to the DVSA MTS System. For further information how to log onto the MTS system, please contact your supplier.

Chapter 3 Safety

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General safety instructions

- ▶ In order to comply with your responsibilities under the Health and Safety at Work Act 1999, it is essential that only properly trained and authorized personnel install, operate and maintain the brake tester and any optional accessories.
- ▶ Always follow the instructions in this manual to prevent damage to the machine and vehicle, and injuries to personnel.
- ▶ Only properly trained and authorized personnel are allowed to operate and service the test lane.
- ▶ Lock the mains switch when the test lane is not in use.
- ▶ Before you start a test, make sure the safety limit switches at the wheel detection rollers function correctly. Turn the wheel detection roller and make sure the lights of the proximity switches come on.
- ▶ Do not adjust the vehicle brakes or examine tires when the vehicle is in the rollers.
- ▶ During the test, make sure nobody stands close to the mechanical units. If necessary, block accesses or provide a color marking.
- ▶ Do not remove or short-cut the safety features.
- ▶ Provide sufficient ventilation or a suitable exhaust suction device when testing with a vehicle.
- ▶ The operator is only permitted to do maintenance as described in “Chapter 13 Preventive maintenance” on page 52.
- ▶ Do not park a vehicle on any part of the test lane.
- ▶ Do not stand on, or walk over the rollers at any time.
- ▶ Do not leave the brake tester switched on unattended.
- ▶ Do not test a vehicle when there is insufficient light.
- ▶ Keep the operating environment clean and free of oil; don't leave loose objects around the brake testers.
- ▶ When the brake tester is not working correctly, switch off the brake tester and refer to the user manual operations instructions or contact your supplier.
- ▶ Make sure the remote control is stored safely when not in use.
- ▶ The equipment may be operated only within its rated capacity. See “Chapter 4 Specifications” on page 9.
- ▶ The infra red remote control is the primary means of remotely operating the brake tester. When using an optional tablet to remotely operate the brake tester in addition to the remote control, make sure that, during a test, no other person than the operator has access to the remote control. Both means can operate the brake tester simultaneously.
- ▶ When using the remote control to operate the brake tester and an optional tablet is present, make sure that no other person than the operator has access to the tablet during a test. Both means can operate the brake tester simultaneously.
- ▶ Make sure the tablet is stored safely when not in use.

Note

The motor and control gear of the RBT are not flameproof and it is the responsibility of the operator to make sure that the proposed site and the aspects of the installation comply with the Petroleum Regulations and that they satisfy the local Petroleum Officer's requirements.

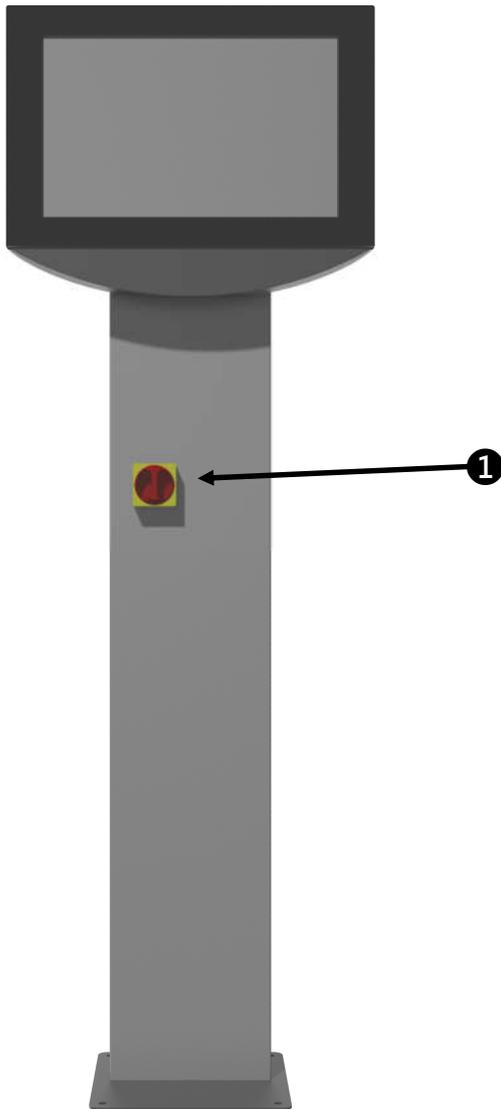


Image shown for illustration purposes only.

The test lane has the following safety features:

- ▶ Mains switch, located on the console ①: switches the mains power to the entire unit.
- ▶ The OK button on the remote control: stops the current test immediately.
- ▶ The Enter key on the keyboard: stops the current test immediately.
- ▶ Roller cover plates to close the roller brake tester when not in use.

Chapter 4 Specifications

The roller brake tester T8400(A) and roller brake tester/suspension tester T8500A are designed for testing commercially available class 3&4&M1 vehicles for road use (including 3-wheel vehicles and 4-wheel driven vehicles).

T8400 Roller brake tester:

- ▶ Measuring range brake force: 0-800 kgf
- ▶ Axle load: maximum 3000 kg
- ▶ Roller speed: 2.9 km/h
- ▶ Roller dimensions: 700 x 206 mm
- ▶ Friction roller surface: 0.9 μ dry, > 0,6 μ wet
- ▶ Roller distance: 420 mm
- ▶ Motors: 2 x 3 kW, 3PH 400V / 50 Hz / 32A
- ▶ Track: 806 - 2206 mm
- ▶ Chassis dimensions: 234 x 66 x 30 cm (LxWxH)

T8400A Roller brake tester with integrated weighing system:

- ▶ Measuring range brake force: 0-800 kgf
- ▶ Weighing range: 0-1500 kg/wheel
- ▶ Axle load: maximum 3000 kg
- ▶ Roller speed: 2.9 km/h
- ▶ Roller dimensions: 700 x 206 mm
- ▶ Friction roller surface: 0.9 μ dry, > 0,6 μ wet
- ▶ Roller distance: 420 mm
- ▶ Motors: 2 x 3 kW, 3PH 400V / 50 Hz / 32A
- ▶ Track: 806 - 2206 mm
- ▶ Chassis dimensions: 234 x 66 x 31 cm (LxWxH)

T8500A Combo: Combination unit of a roller brake tester, suspension tester and integrated weighing system:

- ▶ Measuring range brake force: 0-800 kgf
- ▶ Measuring range suspension tester: 0 - 24 Hz
- ▶ Weighing range: 0-1500 kg/wheel
- ▶ Suspension range: 0-1250 kg/wheel
- ▶ Axle load: maximum 3000 kg
- ▶ Roller speed: 2.9 km/h
- ▶ Roller dimensions: 700 x 206 mm
- ▶ Friction roller surface: 0.9 μ dry, > 0,6 μ wet
- ▶ Roller distance: 420 mm
- ▶ Motors roller brake tester: 2 x 3 kW, 3PH 400V / 50 Hz / 32A
- ▶ Motor suspension tester: 1 x 3 kW or 1 x 2,2 kW
- ▶ Track: 792 - 2192 mm
- ▶ Chassis dimensions: 234 x 92 x 30 cm (LxWxH)

The roller brake tester T8700(A) is designed for testing commercially available class 7&5L vehicles for road use. It is also designed for class 3&4&M1 vehicles (including 3-wheel vehicles and 4-wheel driven vehicles).

T8700 Roller brake tester:

- ▶ Measuring range brake force: 0-1250 kgf
- ▶ Axle load: maximum 4000 kg
- ▶ Roller speed: 2.9 km/h
- ▶ Roller dimensions: 900 x 206 mm
- ▶ Friction roller surface: 0.9 μ dry, > 0,6 μ wet
- ▶ Roller distance: 420 mm
- ▶ Motors: 2 x 4 kW, 3PH 400V / 50 Hz / 32A
- ▶ Track: 880 - 2680 mm
- ▶ Chassis dimensions: 281 x 71 x 32 cm (LxWxH)

T8700A Roller brake tester with integrated weighing system:

- ▶ Measuring range brake force: 0-1250 kgf
- ▶ Weighing range: 0-2000 kg/wheel
- ▶ Axle load: maximum 4000 kg
- ▶ Roller speed: 2.9 km/h
- ▶ Roller dimensions: 900 x 206 mm
- ▶ Friction roller surface: 0.9 μ dry, > 0,6 μ wet
- ▶ Roller distance: 420 mm
- ▶ Motors: 2 x 4 kW, 3PH 400V / 50 Hz / 32A
- ▶ Track: 880 - 2680 mm
- ▶ Chassis dimensions: 281 x 71 x 33 cm (LxWxH)

T8010 Suspension tester and integrated weighing system:

- ▶ Measuring range suspension tester: 0 - 24 Hz
- ▶ Weighing range: 0-1500 kg/wheel
- ▶ Suspension range: 0-1250 kg/wheel
- ▶ Axle load: maximum 3000 kg
- ▶ Motor suspension tester: 1 x 3 kW or 1 x 2,2 kW
- ▶ Track: 806 - 2206 mm
- ▶ Chassis dimensions: 234 x 66 x 30 cm (LxWxH)

T8020 Sideslip meter:

- ▶ Measuring range: 0 - 20 m/km dynamic toe-in and toe-out
- ▶ Drive-over load: maximum 4000 kg

Compatibility brake testers with suspension tester and sideslip meter

Brake tester model	T8010 Suspension compatible	T8020 Sideslip compatible
T8400	Yes	Yes
T8400A	No	Yes
T8500A	No	Yes
T8700	Yes	Yes
T8700A	No	Yes

Trade Garage Equipment reserves the right to amend the specifications without notice.

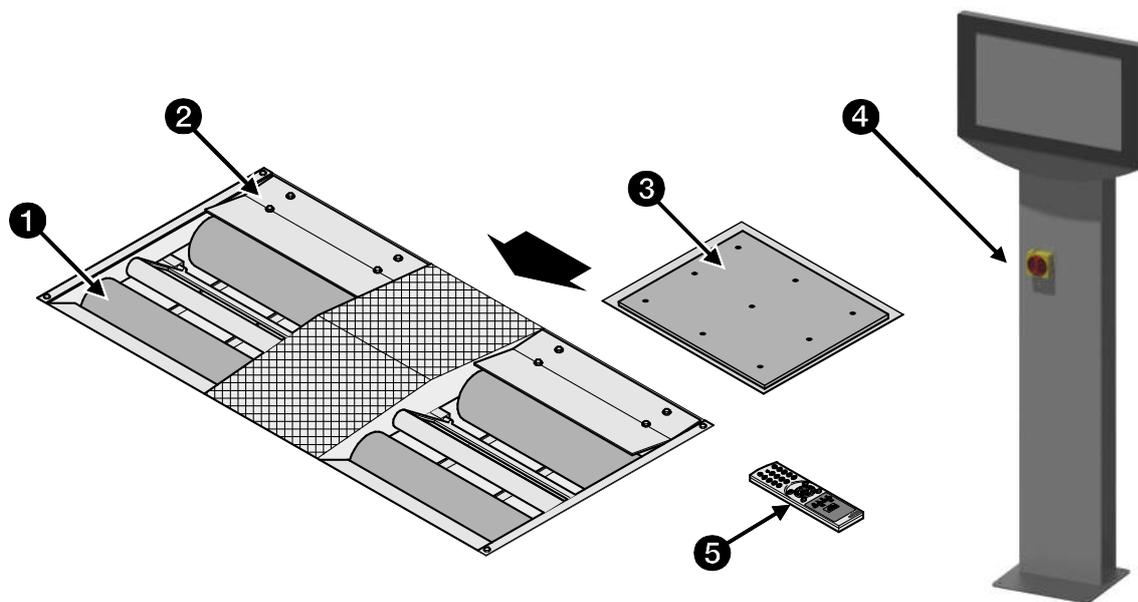
Chapter 5 Functional description

This chapter describes the test lane and explains how it works.

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System overview



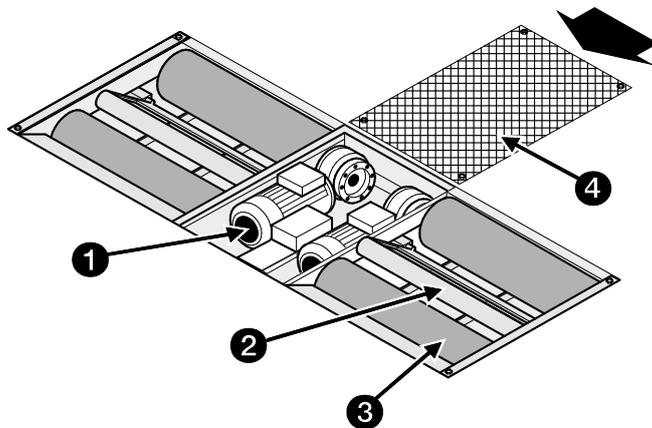
- | | |
|------------------------------------|------------------|
| ❶ Roller brake tester (+ weighing) | ❷ Console |
| ❸ Suspension tester / weighing | ❹ Remote control |
| ❺ Sideslip meter | |

The main parts of the system can be:

- ▶ Roller brake tester class 4 with roller cover plates.
- ▶ Roller brake tester class 7 with roller cover plates.
- ▶ Weighing system brake tester.
- ▶ Suspension tester with weighing system.
- ▶ Sideslip meter.
- ▶ Console.
- ▶ Remote control.
- ▶ Software.

The next paragraph describes the individual parts of the system.

T8400, T8500, T8700 Roller brake testers



- ① motor
- ② wheel detection roller
- ③ roller for brake test
- ④ center cover plate

The roller brake tester analyses the efficiency of the braking system of a vehicle. From the test the efficiency value is calculated.

The brake of each wheel is tested with a pair of rollers (③), driven by an electric motor (①). The brake force induces a reaction force on the electric motor. An electronic transducer with strain gauges measures these reaction forces.

A third, small roller (②) between the wheel supporting rollers detects if a vehicle is present and if slippage (lock) occurs. If slippage occurs the rollers are stopped to prevent damage to the tires.

The electronics of the brake tester (relays rails, power supply, CPU board) are located inside the roller brake tester and connected by means of an Ethernet cable to the console.

For safety purposes, the motors will **not start** if the left and right small rollers are not pushed down within **one second** after each other (except for 3-wheel mode or class 1&2 mode for motorcycles/scooters (optional)). The second function is to detect if tire slippage on the rollers does not exceed the maximum value.

If the tester is not used, it must be closed with the standard supplied roller bed cover plates.

Note

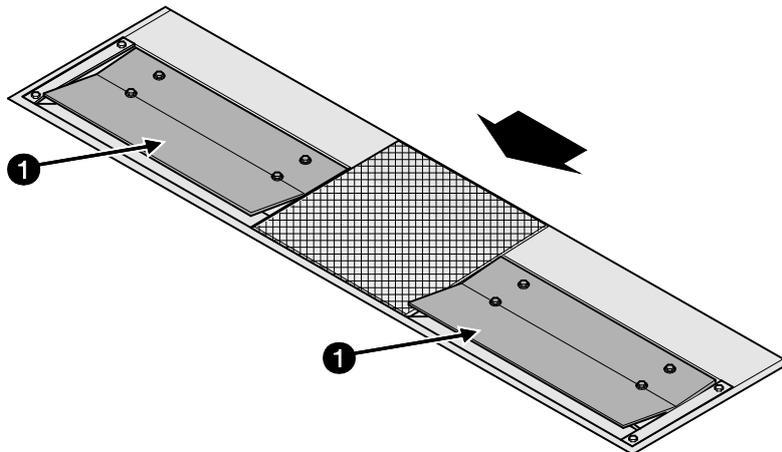
For testing Class 1 & 2 vehicles on the T8400A, the adaptor plate T8400MC is required.

For testing Class 1 & 2 vehicles on the T8500A, the adaptor plate T8500MC is required.

For testing Class 1 & 2 vehicles on the T8700A, the adaptor plate T8700MC is required.

T8500A, T8010 Suspension tester

The suspension tester can be part of the T8500A Combo unit or can be a separate unit T8010 in combination with the T8400 class 4 or T8700 class 7, 5L roller brake tester.



① Measuring plate

The suspension tester determines the weight of the vehicle and analyses its suspension system. It measures the vertical force that the wheel exerts on the road, while the vehicle drives over surface irregularities. The results of the suspension test depend on:

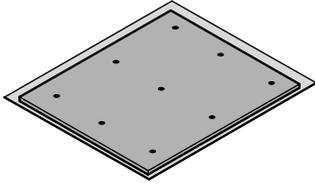
- ▶ Body mass
- ▶ Body flexibility
- ▶ Shock absorber
- ▶ Wheel mass
- ▶ Tire stiffness
- ▶ Stabilizer bar
- ▶ Axle configuration

The suspension tester consists of two measuring plates (①) that vibrate with variable frequency. The tester measures the dynamic vertical force that the wheel exerts on the measuring plate. The suspension tester gives a very clear indication of the reaction of the suspension to vibrations of various frequencies. The suspension tester is also equipped with a weighing system. The suspension tester measures the adhesion: a standard for the road holding safety of a vehicle travelling in a straight line. It shows how well the suspension parts can keep the tire in contact with the road, under worst case conditions of surface irregularities. It is a measure of how well the suspension can transmit the braking forces at an emergency stop. The adhesion value is a percentage between 0 and about 80%. This percentage is the minimum force measured during the test, divided by the static wheel load. The suspension tester also measures the damping factor. This value shows how good the wheel bounce resonance is controlled. For most cars the damping factor is between 20% and 40%.

Note

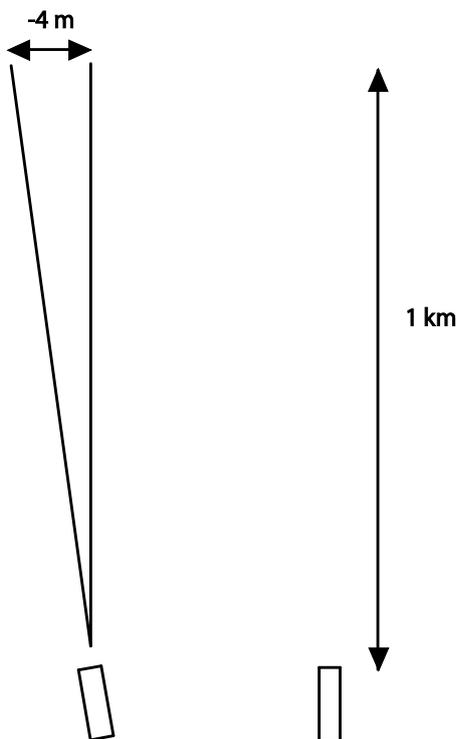
The suspension test is not part of the MOT test. The integrated weighing system is used as the ATL weighing system and used for the efficiency calculation (class 4, M1 only).

T8020 Sideslip meter



The sideslip meter analyses the wheel alignment. The sideslip meter is a steel plate that can roll sideways on bearings. When the operator drives a car wheel over the plate, the tire forces may move the plate sideways. If this is the case, the toe setting of an axle could be out of specification. The wheel is slightly dragged sideways over the floor.

The sideslip is expressed in m/km. If the sideslip is 4 m/km, this means that if one wheel of the axle runs straight for one kilometer, the other one is dragged sideways four meters (see figure). A positive value means a toe-in, a negative value means a toe-out. The figure shows toe-out.



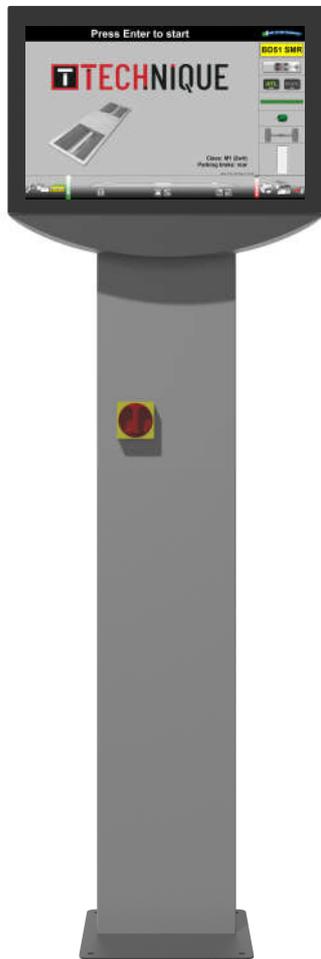
Note

The readings of the sideslip meter slightly depend on the drive-over speed. That has to do with the flexibility of the wheel suspension. The sideslip reading is somewhere between the dynamic toe value and the static toe value. The sideslip test is not part of the MOT test.

Console

The console displays the test results. The console contains the PC that runs the Technique Test lane programs.

The image shows the console of the test lane.



All-in-one PC

- ▶ Touch screen
- ▶ Virtual touch screen keyboard
Herein refer to as keyboard.
- ▶ Software

Infra red remote control hand set

- ▶ Remote control
- ▶ Remote control receiver
- ▶ Storage for remote control

Console pole

- ▶ Power rail
- ▶ Main switch

Image shown for illustration purposes only.

For instructions how to use the virtual keyboard, we refer to the instruction manual of the PC.

A traditional keyboard (herein refer to as keyboard) and mouse are available as an option.

A tablet is available as an option. Special attention is required for the safety instructions when using a tablet (see chapter 3).

Software

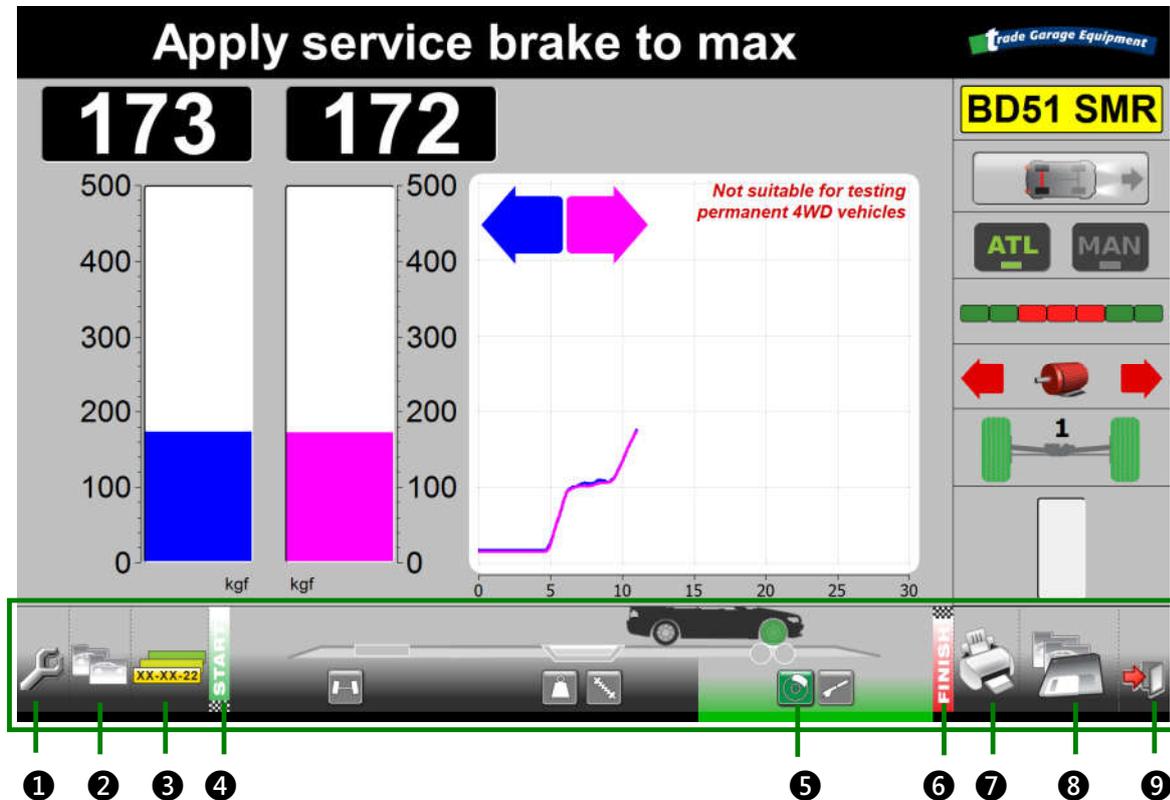
There are separate programs for the following tasks:

- ▶ Test lane program.
This program runs the tests, analyses and shows the test results on the console.
- ▶ Report (see "Review test results from earlier tests (Report)" on page 48)
This program shows the test results from earlier tests.
- ▶ Service
This program allows you to set up and calibrate the test lane. This program is described in the calibration- and service manual.

General layout of the test lane screens

User controls. You can control the test lane program with:

- ▶ Touch screen and keyboard.
- ▶ Remote control.
- ▶ Tablet (option).

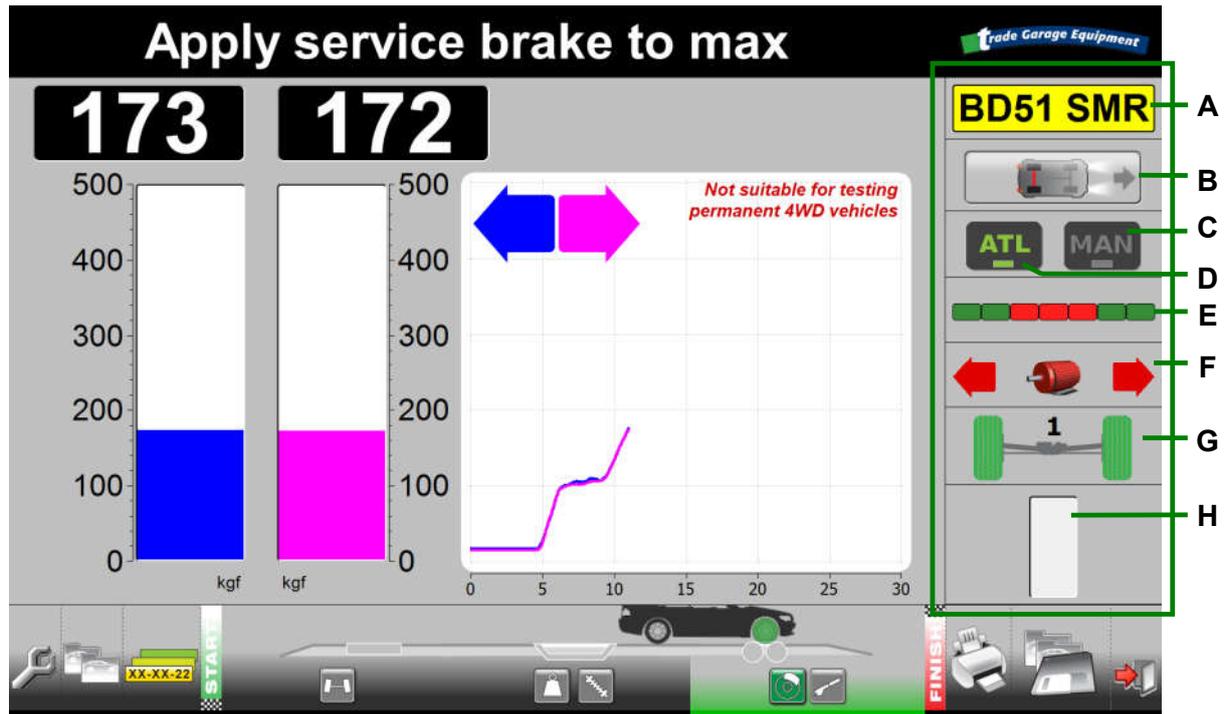


The icons along the bottom show which screen is active.

AREA	SCREEN
①	General Settings
②	Customer/Vehicle
③	Select Test Vehicle
④	Drive to start position (start of the tests)
⑤	Stage of the test. Indicates (in green) what axle is tested; the front or rear in combination with one of the following tests: the service brake, parking brake, weighing, suspension or sideslip.
⑥	Results Overview
⑦	Print Results
⑧	Save Results
⑨	Exit

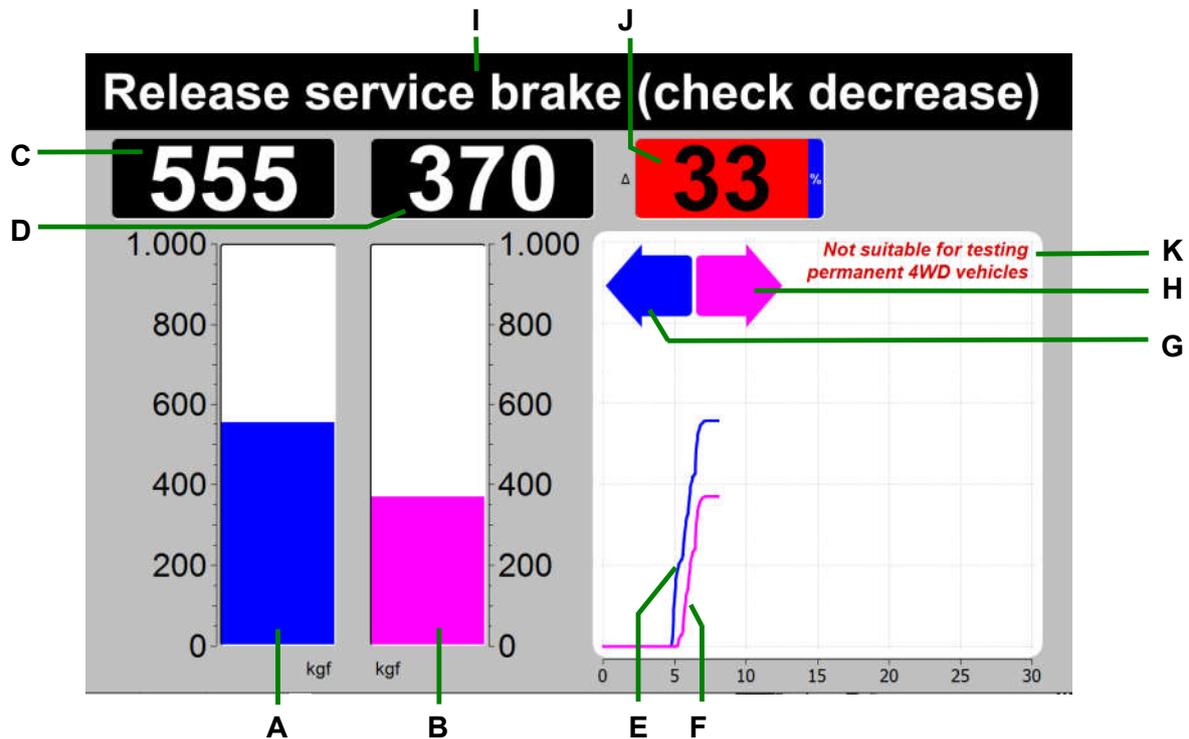
You can select (touch/click) these icons and go directly to a screen.

Use the ← and → buttons on the remote control or keyboard or to move between screens.



The icons and buttons along the right side of the test screens allow you to control and monitor the tests.

AREA	FUNCTION
A	Registration number of the vehicle being tested or ??-??-?? in quick test mode.
B	Vehicle type: passenger car. If applicable it shows 4x4. If applicable it shows the parking brake axle in red.
C	Manual button: The system stops at the end of each test, and you must manually select to the next test. Manual mode is enforced for class 1&2, class 3, class 4 (4x4 selectable).
D	ATL: All tests automatically. Automatic mode is disabled for class 1&2, class 3, class 4 (4x4 selectable).
E	Progress bar: the bar is red/green when a test is in progress and green when the test is stopped.
F	Motor icon: the motor is red when any motor in the test lane is running and green when all motors are stopped. The left arrow indicates when the left brake tester motor is running. The right arrow indicates when the right brake tester motor is running.
G	Axle: the number above the axle shows which axle of the vehicle is being tested: 1= front axle, 2 = rear axle, 3 = rear axle (class 7 only). When the floor unit detects that the wheels are in position, the wheels are shown in green.
H	Pause bar: the bar fills up when the system is pausing between tests. In automatic mode only.



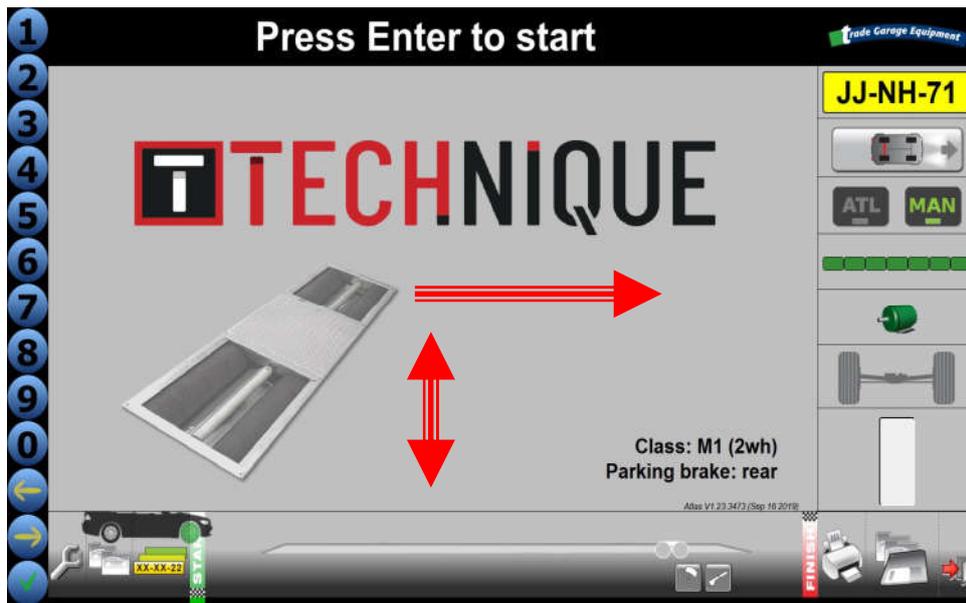
AREA	FUNCTION
A	Vertical bar diagram for brake force in KGF for the LEFT wheel of an axle.
B	Vertical bar diagram for brake force in KGF for the RIGHT wheel of an axle.
C	Brake force value in numerical values in KGF for the LEFT wheel of an axle.
D	Brake force value in numerical values in KGF for the RIGHT wheel of an axle.
E	Brake force graph for the LEFT wheel of an axle.
F	Brake force graph for the RIGHT wheel of an axle.
G	Indicates wheel lock LEFT (slip). When lock occurs, the arrow turns RED .
H	Indicates wheel lock RIGHT (slip). When lock occurs, the arrow turns RED .
I	Displays the prompts/user instructions.
J	Displays the imbalance LEFT/RIGHT in numerical values in % for of an axle.
K	Message (fixed): 'Not suitable for testing permanent 4WD vehicles'.

Note

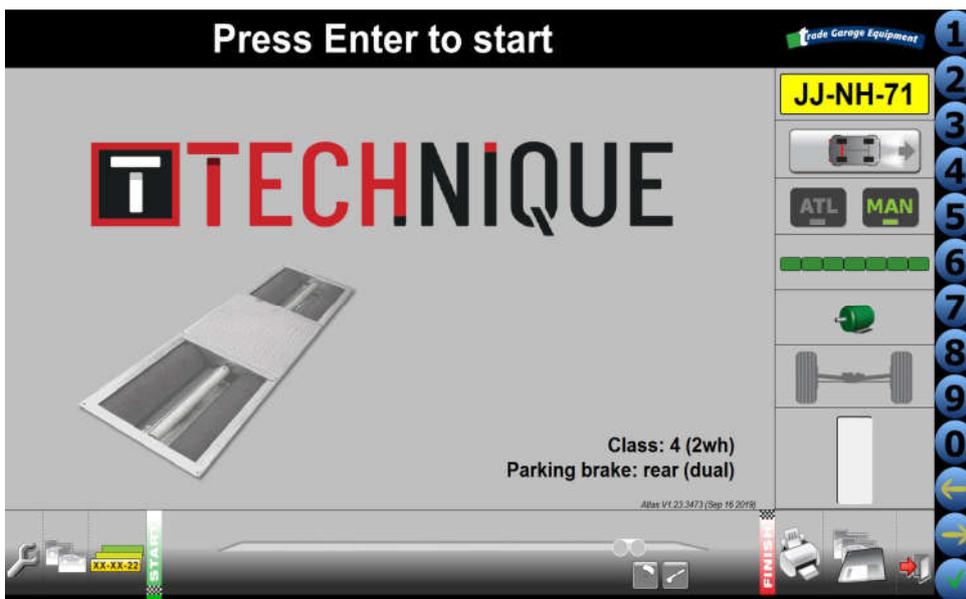
Brake forces are indicated in **kgf**.
 Weight is indicated in **kg**.
 Imbalance is indicated in **%**.
 Brake efficiencies are indicated in **%**.

Touch screen functionality

On the start screen.

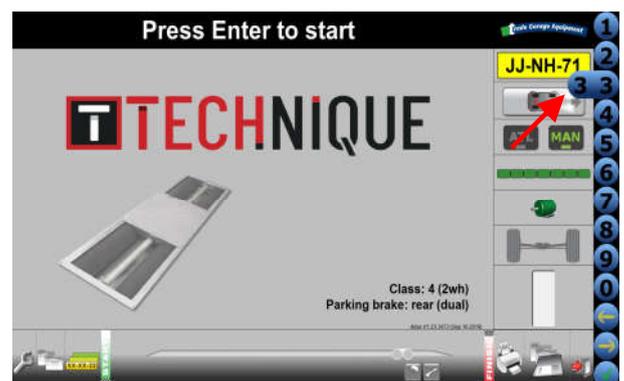
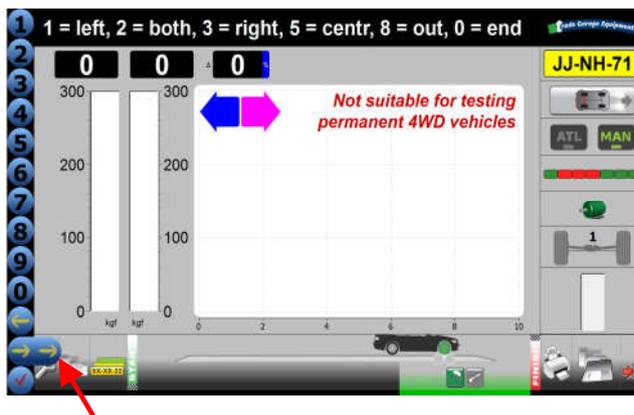


Swipe to the right and the bullets will appear on the left side of the PC screen and on the tablet (if available). Swipe to the left and the bullets disappear. The bullets will stay present on all screens. Swipe up/down to increase or decrease the bullet size.



Or, swipe to the left and the bullets will appear on the right side of the PC screen and on the tablet (if available). Swipe to the right and the bullets disappear. The bullets will stay present on all screens. Swipe up and down to increase or decrease the bullet size.

When you touch a bullet it will shortly expand as an indication it was touched.



Remote control

Navigate using the remote control, touch screen or keyboard

You can control the test lane program using the infra-red remote control (RC), touch screen (TOUCH) or keyboard (KB).

	KEY RC	FUNCTION	TOUCH	KB	
 <p><i>Image shown for illustration purposes only.</i></p>		General:			
	n/a	Switch full screen mode on or off		F11	
	F2	Switch basic screen mode on or off. In basic screen mode the icons at the bottom and the right are hidden. This allows for more room for the test results.	n/a		F2 or F10
	9	Increase the character size on test screens. Disabled during test.			+ (plus key) or 9
	7	Decrease the character size on test screens. Disabled during test.			- (minus key) or 7
	↑ and ↓	Switch between ATL and MANUAL mode. On Start screen only.			↑ and ↓
	1-8	Select vehicle type for quick test mode. On Start screen only. See chapter <i>Quick manual test mode Class M1, 4, 5L, 7.</i>			1-8
		On the test screens:			
	F3	Go to the start screen			Home or F3
	F4	Go to Results Overview screen			End or F4
	←	Go to the previous test			←
	→	Go to the next test			→
	OK	<ul style="list-style-type: none"> ▶ Start the test if not running ▶ Abort the test if running 			Enter
	1 2 3 5 8 0	Commands in MANUAL test screens: 1 = start left 2 = start both 3 = start right 5 = start both to centralize 8 = start both to drive out 0 = end of test			1 2 3 5 8 0
		On the test queue screens			
	↑ and ↓	Move the selection in the test queue			↑ and ↓
	OK	Test the selected vehicle			Enter

Note

In MOT stations equipped with two or more brake testers, it is necessary that each test lane is operated by one dedicated remote control only.

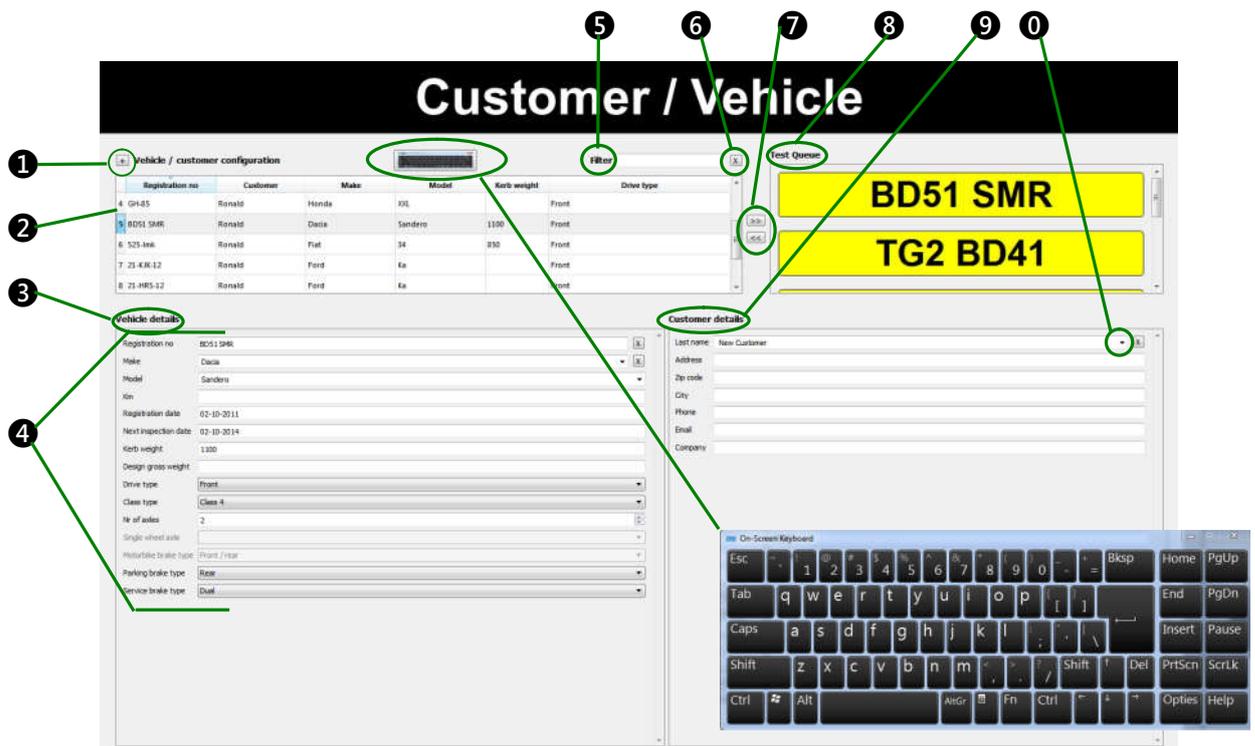
Please contact your supplier if two or more remote control sets are required.

Chapter 6 Vehicle/customer data

In This Chapter

Add a new vehicle to the database	21
Add a new customer	23
Assign a customer to a vehicle	23
Add a vehicle to the test queue	23
Add a vehicle to the test queue (MTS)	24
Select a vehicle from the test queue (non MTS)	25
Remove vehicle or customer data	25

Add a new vehicle to the database



- | | |
|---|---|
| 1 + button: Add a new vehicle to the vehicle list | 6 X button: remove the filter and show all vehicles in the list |
| 2 Vehicle list | 7 >> and << buttons: add or remove the selected vehicle to or from the Test Queue |
| 3 Details of the vehicle you selected in the vehicle list | 8 Test Queue |
| 4 Required fields | 9 Details of the customer selected in the Customer list |
| 5 Filter box | 0 Customer list |

Touch/click the keyboard icon. An 'on screen keyboard' appears for easy data entry using the touch screen. Touch/click the X to remove the keyboard from the screen.

The system uses fixed test limits to decide if a vehicle passes or fails the tests. The limits are automatically linked to the selected vehicle. See "General settings Limits Tab" on page 50.

The following information 4 is mandatory for all vehicle classes:

- ▶ Registration no. (number plate/license plate)
- ▶ Make
- ▶ Model

The following information for each vehicle class is required:

Specific Class 4

- ▶ Kerb weight.
Not required for ATL testing (automatic weighing).
In Manual testing, required for automatic efficiency calculation.
- ▶ Drive type (front, rear of 4x4 selectable).
- ▶ Class type.
Select Class M1 for Class 4-M1 first used on or after 01/09/2010.
Select Class 4 for any Class 4 and Class 4-M1 first used before 01/09/2010.
- ▶ Parking brake type (rear, front, transmission, other).
'Transmission' and 'other' will not allow you to perform a parking brake test.
- ▶ Service brake type (dual or single).

Specific Class 7

- ▶ Design Gross Weight (DGW).
Required for ATL and Manual testing. No automatic weighing for Class 7.
- ▶ Drive type (front, rear of 4x4 selectable).
- ▶ Class type.
- ▶ Parking brake type (rear, front, transmission, other).
'Transmission' and 'other' will not allow you to perform a parking brake test.
- ▶ Number of axles (2 or 3).
- ▶ Service brake type (dual or single).

Specific Class 5L

- ▶ Design Gross Weight (DGW/MAM).
Required for ATL and Manual testing. No automatic weighing for Class 5L.
- ▶ Drive type (front, rear of 4x4 selectable).
- ▶ Class type.
- ▶ Parking brake type (rear, front, transmission, other).
Transmission and other will not allow you to perform a parking brake test.
- ▶ Service brake type (dual or single).

Specific Class 3

- ▶ Registration date.
Registration date before or after January 1st, 1968 is relevant for service brake efficiency.
- ▶ Kerb weight.
In Manual testing only. Required for automatic efficiency calculation.
- ▶ Drive type (front, rear of 4x4 selectable).
- ▶ Class type.
- ▶ Single wheel axle (front or rear).
Relevant for the test sequence.
- ▶ Parking brake type (rear, front, transmission, other).
Transmission and other will not allow you to perform a parking brake test.
- ▶ Service brake type (dual or single).

Notes

A vehicle can not be added to the queue when the required fields are not entered. The characters in the registration plate will be presented in grey to indicate an incomplete entry.

The characters in the registration plate will be presented in red to indicate an invalid entry.
For example: a Class 7 vehicle is selected on a Class 4 brake tester.

Notes

Entry of other fields is optional. These do not influence the test.

More entry fields can be selected: Touch screen: Press and hold for a 'right' mouse click.

To add a new vehicle to the vehicle list:

- 1) Select the + button ❶.

A new vehicle is added to the vehicle list ❷. Its registration number is "New Vehicle".

- 2) In the **Vehicle details** area ❸, enter the details of the vehicle.

Enter at least the required information ❹.

The data is saved automatically. The vehicle list is updated when you click in the list.

Add a new customer

To add a new Customer:

- 1) Go to the **Customer/Vehicle** screen.

- 2) In the **Customer Details** area ❾, go to the **Last Name** field. This is a drop-down box.
From the drop-down box, select "New Customer".

- 3) Replace the text "New Customer" with the last name of the customer.

- 4) Enter the customer data (address, phone numbers etc.).

The data is saved automatically.

Assign a customer to a vehicle

If you want to assign a customer to a vehicle:

- 1) Go to the **Customer/Vehicle** screen.

- 2) In the **Vehicle list**, select the **Customer** field. This is a drop-down box.

- 3) From the drop-down box, select the last name of the customer.

Add a vehicle to the test queue

To add a vehicle to the test queue:

- 4) Go to the **Customer/Vehicle** screen.

- 5) In the list of vehicles ❷, select the vehicle you want to add to the queue.

- 6) Select the >> button ❷ to add the vehicle to the end of the queue ❸. You can use filter ❺ to find a vehicle in the list ❷. This filter filters on registration number, fleet number and last name of the customer.

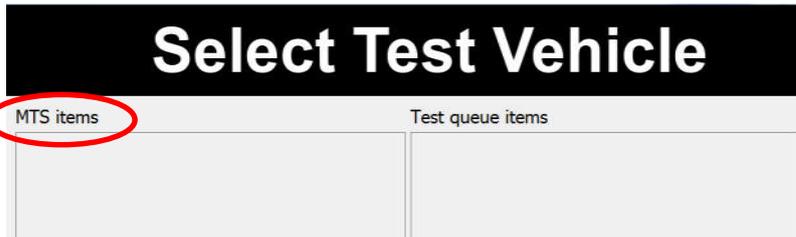
- 7) Start typing the registration number, fleet number or last name in the field **5**. Only the vehicles matching what you type will be shown.
- 8) Select the **X** button **6** to clear the field and show all vehicles.

Add a vehicle to the test queue (MTS)

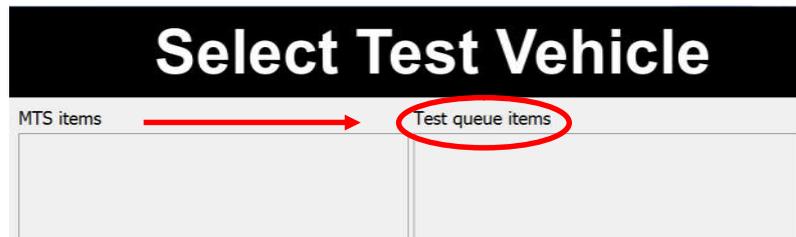
To add a vehicle to the MTS test queue:

- 1) Go to the **Select Test Vehicle** screen.

Once a vehicle has been requested for a test on the MTS system, the brake tester will automatically collect the requests. The vehicles to be tested will be shown on the **Select Vehicle** screen under the **MTS items**.



- 2) Double click on a (**grey**) registration plate in the MTS queue (MTS items). At this point a vehicle will be (re)created in the database with the configuration as specified by the MTS system. This will move the vehicle into the test queue on the right of the screen with a (**yellow**) registration plate.



- 3) Check the vehicle configuration in the **Customer/Vehicle** screen.
- 4) If the vehicle configuration has to be amended or more entry fields are required, alter the vehicle configuration. See chapter *Add a new vehicle to the database*.

Note

If using a non ATL version or Testing in manual mode then the vehicle weight must be manually entered or an incomplete result will be submitted.

In the list of vehicles **2**, click on the vehicle you have just altered.

- 5) After checking/changing the vehicle configuration go the **Select Test Vehicle** screen again and double click on the (**yellow**) registration plate in the Test Queue items on the right of the screen to confirm the (possible) alterations in the vehicle configuration.

Note

Don't Click the Registration plate on the left or it will reset the vehicle parameters in the database back to default, the vehicle details will then have to be entered again. If you have entered them incorrectly double click the Registration number in MTS items and repeat the configuration again from step 1.

- 6) Go to the Start screen.
- 7) Press **Enter** or **OK** to start the test sequence. See chapters 8 and 9 for instructions.

Select a vehicle from the test queue (non MTS)

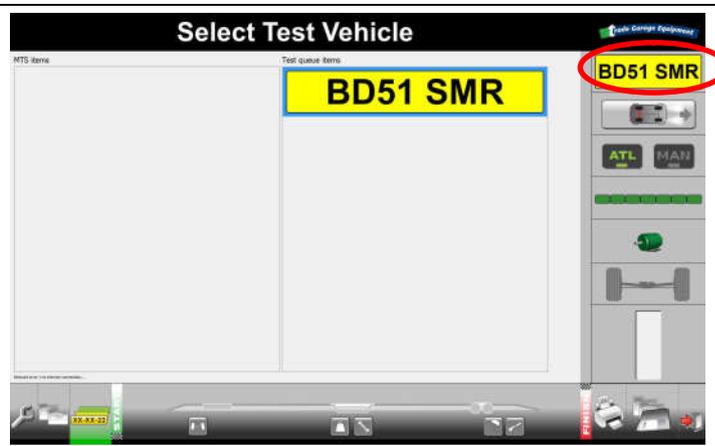
If the brake tester is not used in combination with the MTS, the procedure how to select the vehicle you are going to test:

- 1) Go to the **Select Test Vehicle** screen.
- 2) Select the (**yellow**) registration plate from the list.

Note

There is no MTS connection, therefore no (**grey**) registration plate visible in the MTS queue (MTS items).

- 3) Press **Enter** or **OK**.
The test data and limits for this vehicle will be loaded.
- 4) Go to the start screen.
- 5) Press **Enter** or **OK** to start the test sequence. See chapters 8 and 9 for instructions.

Select a vehicle from the queue	
	<p>The registration plate icon shows the registration number (BD51 SMR) of the selected vehicle.</p> <p>Touch Start/Press → to go to the start page "Service brake test front".</p>

Remove vehicle or customer data

To remove a vehicle from the list:

- 1) In the vehicle list ❷, select the vehicle you want to remove.
- 2) In the **Vehicle Details** area ❸, select the **X** button next to the **Registration** field.

To remove a customer from the list:

- 1) In the **Customer Details** area ❹, go to the **Last Name** field ❶. From this drop-down box, select the customer you want to delete.
- 2) Select the **X** button next to the **Last Name** field.

Note

When test results are stored for the vehicle or customer, these can not be deleted.

Chapter 7 Operating instructions; preparations

In This Chapter

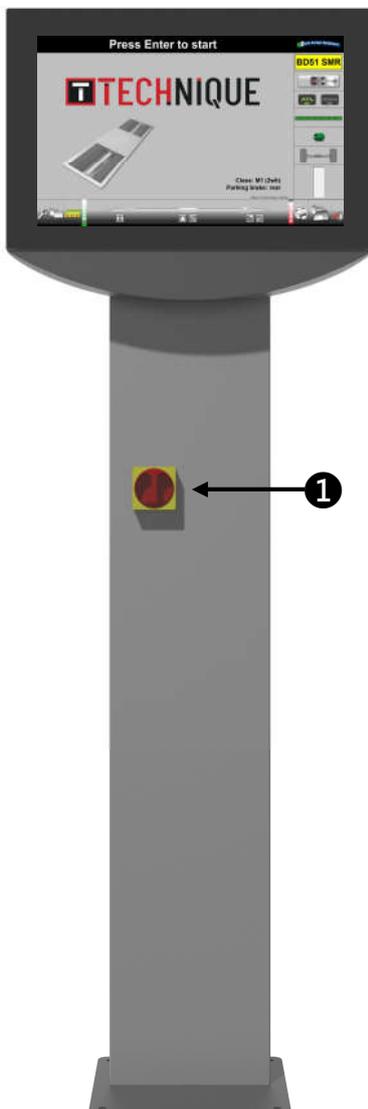
Operator safety	26
Start up the test lane/shut down the test lane	26
Emergency stop	27
Start up after an emergency stop	27
Preparations before starting a brake test	27

Operator safety

Operators and technical service should be familiar with all safety aspects. To ensure your safety, you must carefully read the chapter on safety (on page 7) before performing any tasks on the test lane.

Start up the test lane/shut down the test lane

To start up the test lane:



- 1) Verify that there is no vehicle on the brake tester.
- 2) Turn the mains switch **1** to switch on the unit.
- 3) The desktop main screen appears.
- 4) Select the brake tester program.
- 5) The Technique test program performs a self test and shows the following prompts:

“Connecting”

“Offset measurement”

“Warming up”

You can abort the warm-up phase. If you abort the warm-up phase, the calibration of the system cannot be guaranteed. Press **Enter** to abort the warm-up phase.

- 6) *“Press Enter to start”*
The brake tester is ready for testing.

Image shown for illustration purposes only.

To shut down the test lane:

- 1) Touch **Exit** or Press → until you enter the **Exit** screen.
- 2) Choose between Exit brake tester (exits test lane program) or Shutdown Computer (shuts down the computer immediately without a warning).
- 3) Turn the mains switch ❶ to switch off the unit.

Emergency stop

If an emergency situation occurs during a test, press **OK** on the remote control, or press **Enter** on the keyboard. This stops the current test immediately.

Caution

Restart the test only if you are sure it is safe to do this.

If you are sure it is safe to restart the test: press **OK** or **Enter** on the keyboard to restart the test. If you are not sure: reset the system (see "Start up after an emergency stop" on page 27).

Start up after an emergency stop

To start up after an emergency stop:

- 1) Turn the mains switch to switch off the unit.
- 2) Check and cancel/solve the reason for using the emergency stop.
- 3) Continue with the start-up procedure (see "Start up the test lane" on page 26).

Preparations before starting a brake test

In both manual and ATL test mode, before the vehicle enters the test lane, make sure that:

- ▶ The tire pressures are at the specified value.
- ▶ Examine the tires to ensure that the tire pattern is in good condition and that the tires are free from mud and stones.
- ▶ Determine whether the vehicle has a single brake control system or a split (dual) brake control system. This is important for the operator to check a PASS or FAIL on the brake efficiency.
- ▶ Remove the covers of the roller tester.
- ▶ The vehicle under test contains no load except the weight of the operator.
- ▶ During each individual test the car is in neutral.

Warning

Stay inside the car and do not move during any measurement. Nobody should touch the car during the test. Any movement in or on the car causes weight shift and influences the measurement.

Chapter 8 Operating instructions; manual mode

This chapter explains the operation of a complete MOT manual test. See the latest MOT inspection manual for any recent changes.

In This Chapter

Quick manual test mode Class M1, 4, 5L, 7	28
Manual test mode Class M1, 4, 5L, 7	33
Manual test mode class 3 (tested as Class 4)	34
Manual test mode 4WD selectable	35
Manual mode class 1&2	37

There are two ways to execute a test:

- 1) The quick manual test mode: select vehicle type and start the test.
- 2) The normal manual test mode: select a vehicle from the test queue and start the test.

Quick manual test mode Class M1, 4, 5L, 7

The quick test mode allows you to execute a complete vehicle test without entering vehicle and customer details (there is no vehicle selected from the test queue).

On the Start screen select 1 - 8 on the remote control/touch screen/keyboard to start the quick test mode and select one of the following vehicle types:

KEY	CLASS	2X2 OR 4X4 (SELECTABLE)	SERVICE BRAKE TYPE	PARKING BRAKE ON REAR OR FRONT AXLE
1	M1	2x2	Dual line	Rear
2	M1	4x2	Dual line	Rear
3	4	2x2	Dual line	Rear
4	4	4x4	Dual line	Rear
5	5L	2x2	Dual line	Rear
6	5L	2x2	Dual line	Front
7	7	2x2	Dual line	Rear
8	7	2x2	Dual line	Front

Depends on the configuration of the test lane. When configured as a class 4 brake tester, KEYS 5 until 8 are disabled.

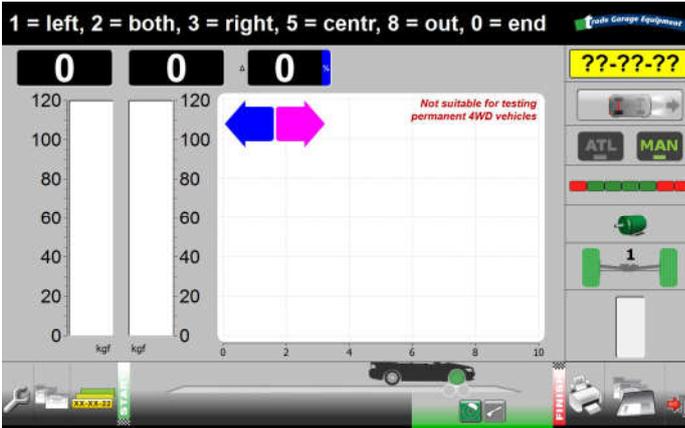
For combinations not listed under these short keys, go to the customer/vehicle screen and select the correct vehicle. See “Manual test mode Class M1, 4, 5L, 7” on page 33. Limits are linked to vehicle types 1 to 8 and will be used to judge PASS or FAIL at the end of the test.

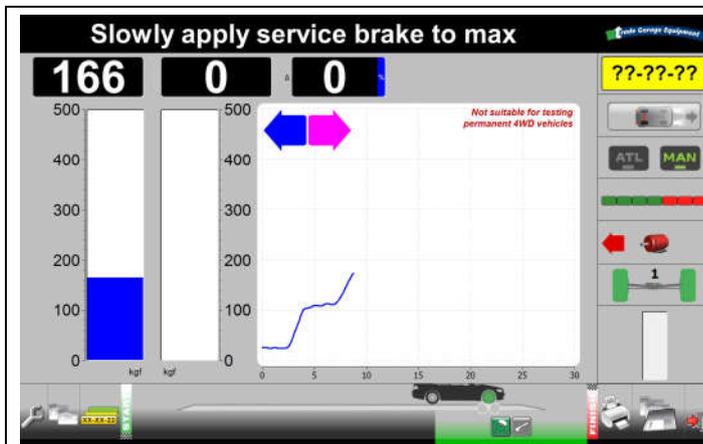
Note

Always see the car manufacturer’s prescriptions before testing 4x4 vehicles.

Perform a test

- ▶ See “Preparations before starting a brake test” on page 27 .
- ▶ KEY 1: Class M1, 2x2, parking brake on rear axle, dual line brake system is the default setting after start-up. This is the most common vehicle type in the quick manual test mode, the registration plate icon shows **??-??-??**. Quick test no. 3 is described below.
- ▶ In the Quick MANUAL testing mode, the weighing function is switched off.
- ▶ The axle imbalance is measured automatically at maximum force.
- ▶ When presented in *“Italic”*, this indicates a prompt on the screen.
- ▶ *Press Enter to start* clears all previous results.
- ▶ For an accurate measurement, the brake force has to be built up slowly.
- ▶ In manual mode, rollers can run independently or simultaneously.
- ▶ In manual mode, press → on the remote control to move to the next test.
You can also use the touch screen to select a test direct.

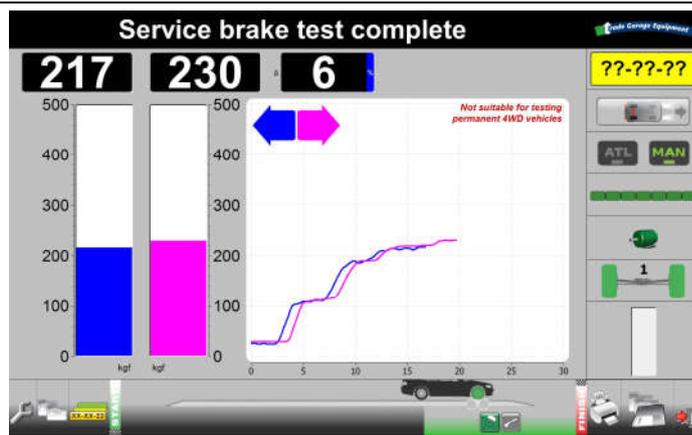
<p>Step 1. Select the correct vehicle type.</p>	
	<p>From the start screen: Select <u>MAN</u> for manual test.</p> <p>Select the vehicle type</p> <ul style="list-style-type: none"> Key 1. Class M1 (2wh) PB rear, DL Key 2. Class M1 (4x4) PB rear, DL Key 3. Class 4 (2wh) PB rear, DL Key 4. Class 4 (4x4) PB rear, DL Key 5. Class 5L (2wh) PB rear, DL Key 6. Class 5L (2wh) PB front, DL Key 7. Class 7 (2wh) PB rear, DL Key 8. Class 7 (2wh) PB front, DL <p>Press OK to start the first test.</p>
<p>Test 1. Maximum brake force & imbalance service brake front axle left & right wheel.</p>	
	<p><i>“Drive into brake tester”</i></p> <p>Options:</p> <ul style="list-style-type: none"> 1 = start <u>left</u> 2 = start <u>both</u> 3 = start <u>right</u> 5 = start both to <u>centralise</u> 8 = start both to drive <u>out</u> 0 = <u>end</u> of test <p>Select 5 to start both rollers to centralise the wheels: <i>“Centralising vehicle”</i>.</p> <p>Select 2 to start both and run left and right simultaneously.</p>
	<p>During the test, the operator has to check for Bind, Rate of Increase, Fluctuation and Rate of Decrease.</p> <p>For measuring maximum brake force, the rollers can be driven independently or simultaneously. Described is the independent test left and right.</p>



Select 1 to start the left roller:
"Slowly apply service brake to max."

Rollers stop at:
 -Lock;
 -Maximum force stable for 3 seconds;
 -Brake release;
 -The brake force pushes the vehicle wheels out of the rollers;
 -Abort test (press OK on the remote).
 (valid for all tests).

The maximum force left is stored.
 Stay in the rollers.



Repeat for the right side.

Select 3 to start the right roller.
"Slowly apply service brake to max."

The maximum force right is stored.
 The imbalance left-right is stored.

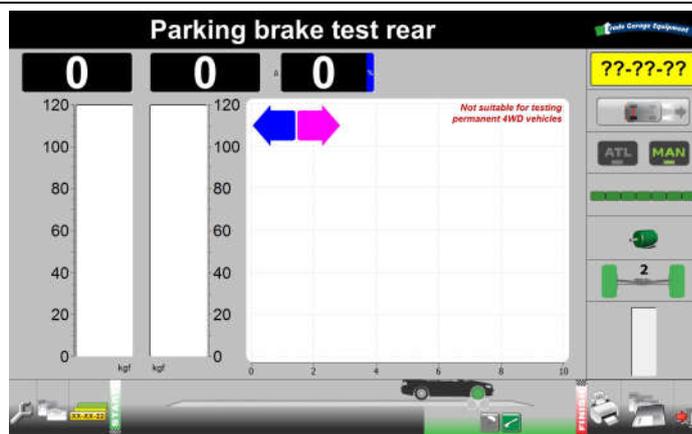
Exit the rollers. Select 8. Out.

"Wait for drive out help"
"Drive out the brake tester"
"Service brake test Complete"

Remark: When maximum brake force is measured running both rollers simultaneously (by selecting 2 start both), the imbalance is automatically calculated.

Test 2. Maximum brake force & imbalance parking brake rear axle left & right wheel.

Press → for *"Parking brake test rear"*



Press OK to start the test.

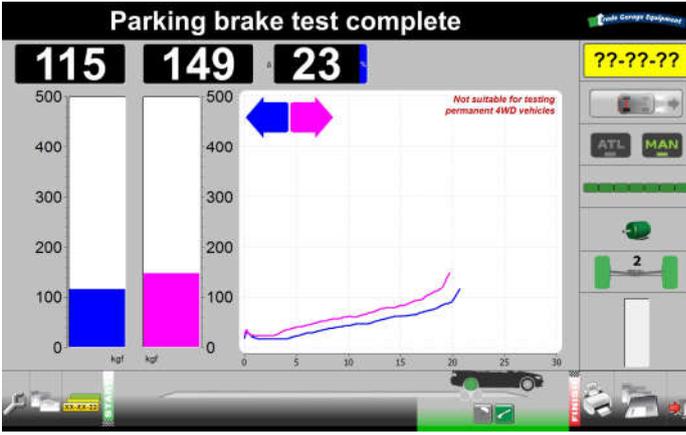
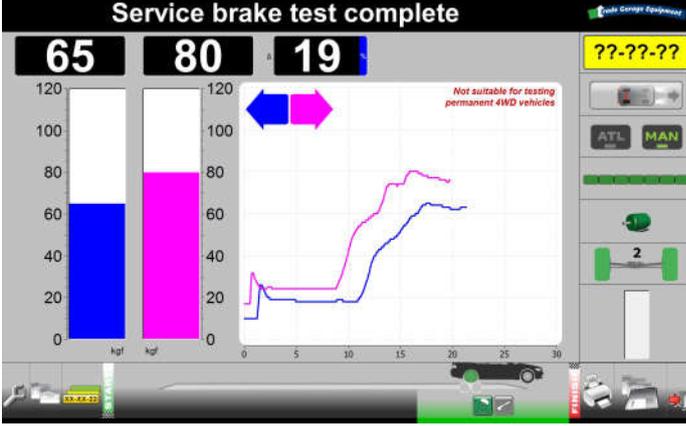
"Drive into brake tester"

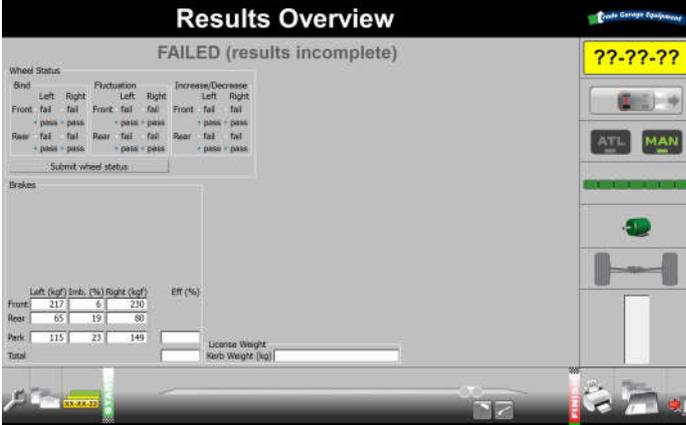
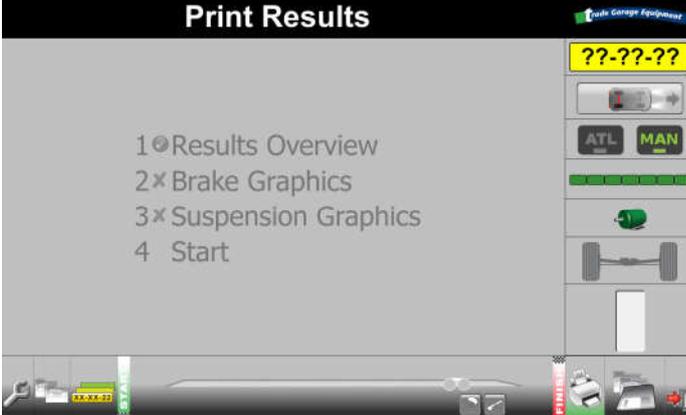
- Options:
 1 = start left
 2 = start both
 3 = start right
 5 = start both to centralise
 8 = start to drive out
 0 = end of test

Select 5 to start both rollers to centralise the wheels: *"Centralising vehicle"*.

Select 2 to start both and run left and right simultaneously.

During the test, the operator can check for grab. Grabbing is only relevant for the parking brake when a single line braking system is fitted.

	<p>Select 1 to start the left roller: 'Slowly apply parking brake to max.'</p> <p>For single line braking system only: 'Slowly apply parking brake to max (check grab)'.</p> <p>The maximum force left is stored.</p> <p>Repeat for the right roller. The maximum force right is stored. The imbalance left-right is stored.</p> <p>Select 0. end of test. "Parking brake test complete"</p> <p>Stay in the rollers.</p>
	<p>Remark: When maximum brake force is measured running both rollers simultaneously (by selecting 2 start both), the imbalance is automatically calculated.</p>
<p>Test 3. Maximum brake force & imbalance service brake rear axle left & right wheel.</p>	<p>Press → for "Service brake test rear"</p>
	<p>Press OK to start the test.</p> <p>Select 5 to start both rollers to centralise the wheels: "Centralising vehicle".</p> <p>Select 2 to start both and run left and right simultaneously.</p> <p>During the test, the operator has to check for Bind, Rate of Increase, Fluctuation and Rate of Decrease.</p> <p>Select 1 to start the left roller: "Slowly apply service brake to max." The maximum force left is stored.</p> <p>Repeat for the right roller. The maximum force right is stored. The imbalance left-right is stored.</p> <p>Exit the rollers. Select 8. Out.</p> <p>"Wait for drive out help" "Drive out the brake tester" "Service brake test complete"</p>
	<p>Remark: When maximum brake force is measured running both rollers simultaneously (by selecting 2 start both), the imbalance is automatically calculated.</p>
<p>Next step: Results overview.</p>	<p>Press → for "Results overview"</p>

	<p>Enter wheel status for all wheels for the service brake: Bind, Fluctuation, Increase/Decrease’.</p> <p>Enter wheel status for all wheels for the parking brake (only relevant when a single line braking system is fitted): Grab.</p> <p>Select: Submit wheel status.</p> <p>Conclusion is presented: FAILED (results incomplete)</p> <p>In manual Quick test, no vehicle weight is measured or entered.</p> <p>The operator has to judge pass or fail, or perform a test with vehicle data. See “Manual test mode Class M1, 4, 5L, 7” on page 33.</p>
<p>Next step: Quick print.</p>	<p>Make Quick print out (press 4).</p>
<p>Next step: Print results screen.</p>	<p>Press → for “Print”</p>
	<p>Options:</p> <ol style="list-style-type: none"> 1. Results overview 2. Brake graphics 3. Suspension graphics 4. Start <p>All are disabled. Printing is only possible when a vehicle is selected. See “Manual test mode Class M1, 4, 5L, 7” on page 33.</p> <p>Or press 4 on the Results Overview screen for a quick print.</p>
<p>Next step: Save results screen.</p>	<p>Press → for “Save”</p>
	<ol style="list-style-type: none"> 1. Save 2. Save, new test 3. Clear, test again 4. Recall results <p>1 and 2 are disabled. Saving is only possible when a vehicle is selected. See “Manual test mode Class M1, 4, 5L, 7” on page 33.</p>
<p>Next step: Enter Customer/vehicle data or Next step: Perform new test.</p>	

Note
It is only possible to make a quick print in a quick manual test mode. The print will not judge PASS or FAIL and will not present the limits.

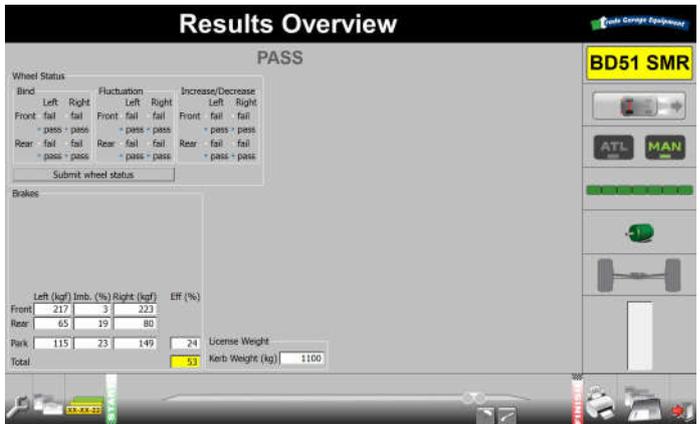
Manual test mode Class M1, 4, 5L, 7

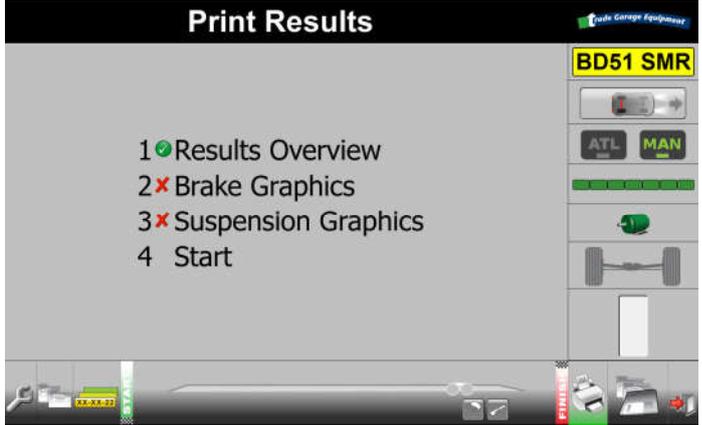
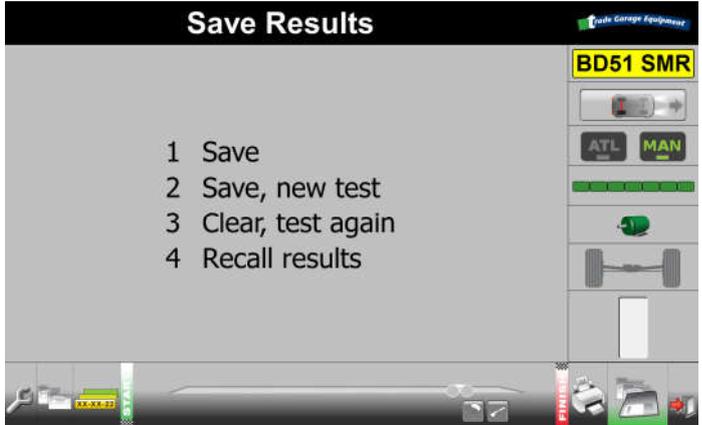
Not all vehicle types can be selected in the quick test mode. The extensive manual test mode allows you to execute a complete vehicle test with entering vehicle and customer details in the customer/vehicle screen. See “Chapter 6 Vehicle/customer data” on page 21.

If preferred, the vehicle tested under the Quick test mode can also be completed with vehicle data. This is required for Printing and Saving test results.

Perform a test

- ▶ See “Preparations before starting a brake test” on page 27 .
- ▶ In the MANUAL testing mode, the weighing function is switched off.
- ▶ The axle imbalance is measured automatically at maximum force.
- ▶ When presented in “*Italic*”, this indicates a prompt on the screen.
- ▶ For an accurate measurement, the brake force has to be built up slowly.
- ▶ In manual mode, rollers can run independently or simultaneously.
- ▶ *Press Enter to start* clears all previous results.

<p>Step 1: Select a vehicle from the queue.</p>	<p>See “Add a vehicle to the test queue” on page 23 for instructions.</p>
	<p>The registration plate icon shows the registration plate (BD51 SMR) of the selected vehicle.</p> <p>From the start screen: Select <u>MAN</u> for manual test.</p> <p>Press OK to start the first test.</p> <p>This manual test is the same as described for the Quick test with the following manual test sequence:</p>
<p>Test 1. Maximum brake force & imbalance service brake front axle left & right wheel.</p>	
<p>Test 2. Maximum brake force & imbalance parking brake rear axle left & right wheel.</p>	<p>Press → for “<i>Parking brake test rear</i>”</p>
<p>Test 3. Maximum brake force & imbalance service brake rear axle left & right wheel.</p>	<p>Press → for “<i>Service brake test rear</i>”</p>
<p>Next step: Results overview.</p>	<p>Press → for “<i>Results overview</i>”</p>
	<p>Submit wheel status.</p> <p>The vehicle weight (kerb weight or DGW) has been entered in the vehicle data.</p> <p>Therefore a conclusion can be presented: PASS or FAILED.</p>

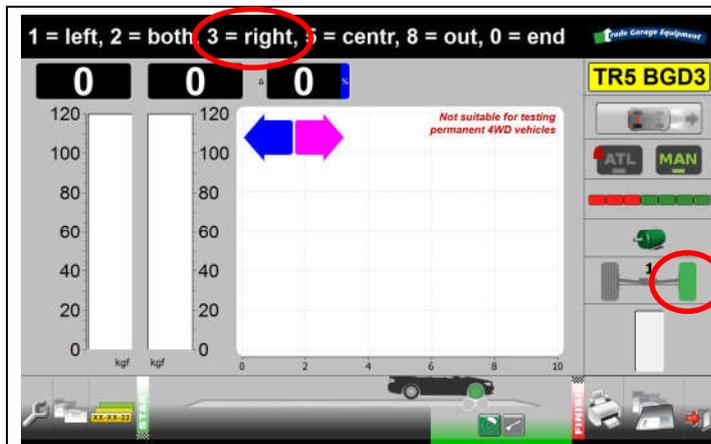
<p>Next step: Print results screen.</p>	<p>Press → for "Print"</p>
	<p>Options:</p> <ol style="list-style-type: none"> 1. Results overview 2. Brake graphics 3. Suspension graphics 4. Start <p>All are enabled. A vehicle has been selected. Printing is possible.</p> <p>See "Chapter 10 Analyse, print, save and review results" for instructions.</p>
<p>Next step: Save results screen.</p>	<p>Press → for "Save"</p>
	<ol style="list-style-type: none"> 1. Save 2. Save, new test 3. Clear, test again 4. Recall results <p>All are enabled. A vehicle has been selected. Saving is possible.</p> <p>See "Chapter 10 Analyse, print, save and review results" for instructions.</p>
<p>Next step: Perform new test.</p>	

Manual test mode class 3 (tested as Class 4)

Special attention is required for a Class 3 vehicle (which is tested as a Class 4). Class 3 vehicles can only be tested in MANUAL mode after entering the vehicle details.

The 3 wheel mode allows the operator to start the right side of the roller bed, if the middle roller of this side only is pressed. If testing on the left side of the roller bed is required, please contact your supplier.

<p>Step 1: Select a vehicle from the queue.</p>	<p>See "Add a vehicle to the test queue" on page 23 for instructions.</p>
	<p>The registration plate icon shows the registration plate (TR5 BGD3) of the selected vehicle.</p> <p>A lock on ATL indicates you can only test in MANUAL mode.</p> <p>"Class: 3, Parking brake: rear (dual)" is presented.</p> <p>The single wheel axle is entered in the vehicle data.</p> <p>From the start screen: Press OK to start the first test.</p>



The single wheel can only be tested on the right side of the brake tester. Function 1 or 2 will not respond. The axle icon shows the tire in green on the right side only.

This manual test is the same as described for the Quick test with the following manual test sequence:

Test 1. Maximum brake force service brake front wheel.	During the test, the operator can check for Bind, Rate of Increase, Fluctuation and Rate of Decrease.
Test 2. Maximum brake force & imbalance parking brake rear axle left& right wheel.	Press → for "Parking brake test rear"
Test 3. Maximum brake force & imbalance service brake rear axle left & right wheel.	Press → for "Service brake test rear"
Next step: Results overview.	Press → for "Results overview"
Next step: Print results screen.	Press → for "Print"
Next step: Save results screen.	Press → for "Save"
Next step: Perform new test.	

Manual test mode 4WD selectable

Special attention is required for a Class M1,4,5L,7 vehicles with selectable 4WD. There are 2 Quick test short keys available. These can only be tested in MANUAL mode.

KEY	CLASS	2X2 OR 4X4 (SELECTABLE)	SERVICE BRAKE TYPE	PARKING BRAKE ON REAR OR FRONT AXLE
2	M1	4x4	Dual line	Rear
4	4	4x4	Dual line	Rear

For all other combinations, vehicle details have to be entered.

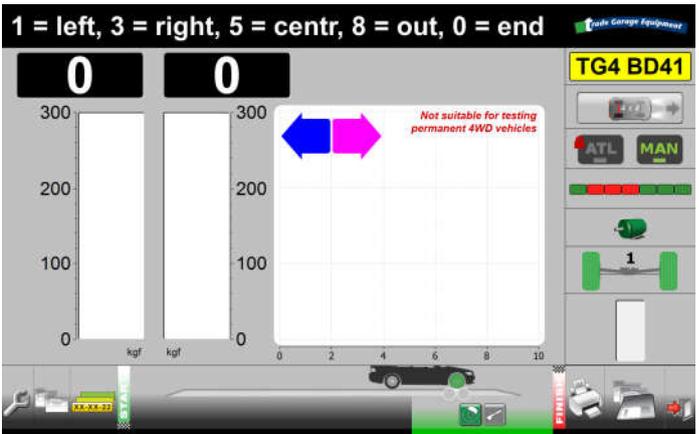
The 4WD mode allows the operator to test 4x4 vehicles. The brakes of each wheel are tested separately one after the other. On one side the rollers turn in normal direction, while the other side the rollers turn in reverse direction.

Notes

Not suitable for testing permanent 4WD vehicles.

The axle imbalance is measured automatically at maximum force when starting the right wheel of the axle.

Always refer to the car manufacturer's prescriptions before testing these types of vehicles.

Step 1. Select the correct vehicle type (quick test) OR	
Step 1: Select a vehicle from the queue.	See "Add a vehicle to the test queue" on page 23 for instructions
	<p>The registration plate icon shows the registration plate (TG4 BD41) of the selected vehicle.</p> <p>The vehicle icon presents "4x4"</p> <p>A lock on ATL indicates you can only test is MANUAL mode.</p> <p>"Class: 7 (4x4), Parking brake: rear (dual)" is presented.</p> <p>From the start screen: Press OK to start the first test.</p>
	<p>This manual test is the same as described for the Quick test with the following differences:</p> <p>When testing one side, the other side runs in opposite direction. An imbalance test can not be measured.</p> <p>During the test, the operator can check for Bind, Rate of Increase, Fluctuation and Rate of Decrease.</p> <p>The following manual test sequence applies:</p>
Test 1. Maximum brake force & imbalance service brake front axle left & right wheel.	
Test 2. Maximum brake force & imbalance parking brake rear axle left & right wheel.	Press → for "Parking brake test rear"
Test 3. Maximum brake force & imbalance service brake rear axle left & right wheel.	Press → for "Service brake test rear"
Next step: Results overview.	Press → for "Results overview"
Next step: Print results screen.	Press → for "Print"
Next step: Save results screen.	Press → for "Save"
Next step: Perform new test.	

Manual mode class 1&2

Special attention is required for a Class 1&2 vehicle. Class 1&2 vehicles can only be tested in MANUAL mode after entering the vehicle details. The rollers will not start automatically when the vehicle enters the roller brake tester. Weighing sensors are required for Class 1&2 testing.

The 2wheel mode allows the operator to start the right side of the roller bed, if the middle roller of this side only is pressed. If testing on the left side of the roller bed is required, please contact your supplier.

See “add a new vehicle” on page 23 for instructions.

Specific Class 1&2

The following information is required for all vehicle classes:

- ▶ Registration no. (number plate/license plate)
- ▶ Make
- ▶ Model
- ▶ Drive type (front or rear have to be selected)
- ▶ Class type (Class 1, Class 2 or Class 2 with sidecar)
- ▶ Motorbike brake type (brake system: Front/Rear, Semi Linked or Fully Linked)

Notes

A vehicle can not be added to the queue when the required fields are not entered. The characters in the registration plate will be presented in grey to indicate an incomplete entry.

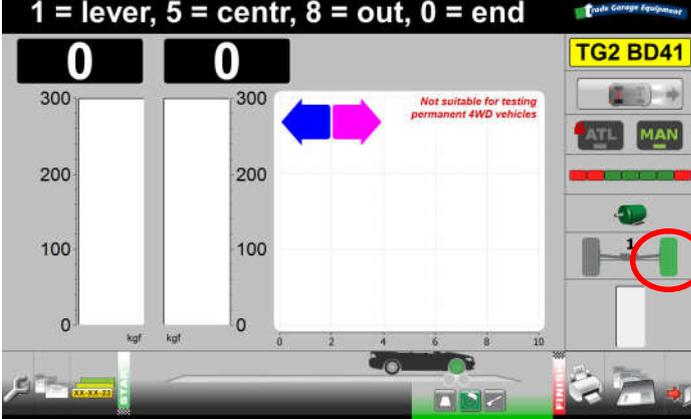
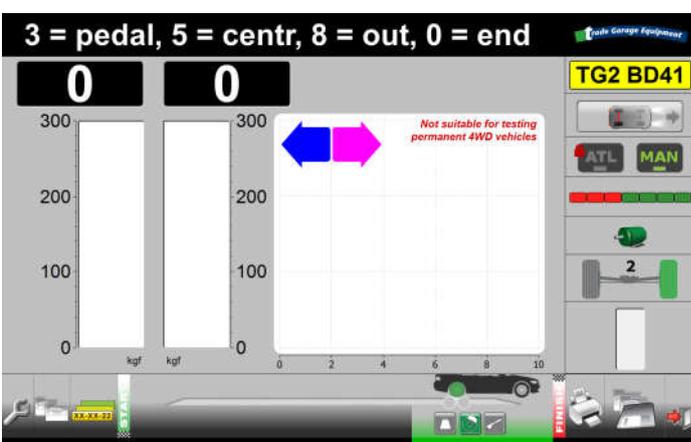
The characters in the registration plate will be presented in red to indicate an invalid entry. For example: a Class 7 vehicle is selected on a Class 4 brake tester.

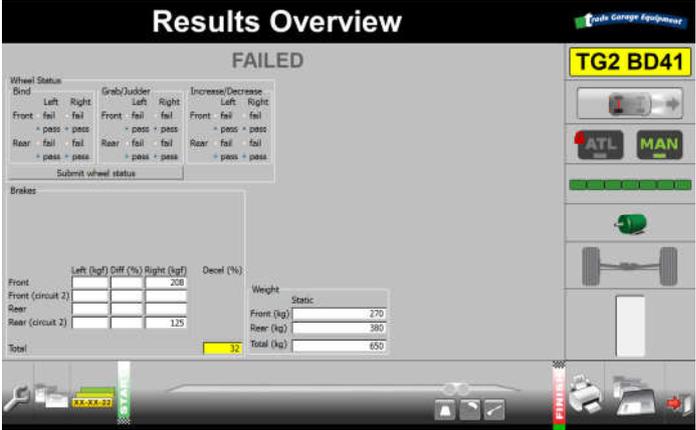
Note

*For testing Class 1 & 2 vehicles on the T8400, the adaptor plate T8400MC is required.
For testing Class 1 & 2 vehicles on the T8500, the adaptor plate T8500MC is required.
For testing Class 1 & 2 vehicles on the T8700, the adaptor plate T8700MC is required.*

Perform a test

- ▶ See “Preparations before starting a brake test” on page 27 .
- ▶ Weighing is mandatory when testing class 1 & 2.
- ▶ In this specific MANUAL testing mode, the weighing function is switched **on**.
- ▶ When presented in “*Italic*”, this indicates a prompt on the screen.
- ▶ For an accurate measurement, the brake force has to be built up slowly.
- ▶ *Press Enter to start* clears all previous results.
- ▶ The described test is for a common brake control system. Brake control 1 (lever) operates the front wheel. Brake control 2 (pedal) operates the rear wheel. This is the Front/Rear brake type.

<p>Step 1: Select a vehicle from the queue.</p>	<p>See “Add a vehicle to the test queue” on page 23 for instructions.</p>
	<p>The registration plate icon shows the registration plate (TG2 BD41) of the selected vehicle.</p> <p>A lock on ATL indicates you can only test in MANUAL mode.</p> <p>“Class: 1 or 2, Parking brake: none” is presented.</p> <p>From the start screen: Press OK to start the first test.</p>
<p>Test 1. Weight measurement front wheel.</p>	<p>Press → for “Service brake test front”</p>
<p>Test 2. Maximum brake force service brake front wheel.</p>	
	<p>The single wheel can only be tested on the right side of the brake tester.</p> <p>The axle icon shows the tyre in green on the right side only.</p> <p>Select 5 to start to centralise the wheel: “Centralising vehicle”.</p> <p>Select 1=Lever. The prompt “Apply service brake to max (lever)” appears.</p> <p>During the test, the operator can check for Grab, Bind, Rate of Increase, Fluctuation and Rate of Decrease.</p> <p>Select 8 Out.</p> <p>“Service brake test complete”</p>
<p>Test 3. Weight measurement rear wheel.</p>	<p>Press → for “Weight measurement rear”</p>
<p>Test 4. Maximum brake force service brake rear wheel.</p>	<p>Press → for “Service brake test rear”</p>
	<p>Select 5 to start to centralise the wheel: “Centralising vehicle”.</p> <p>Select 3=Pedal. The prompt “Apply service brake to max (pedal)” appears.</p> <p>During the test, the operator can check for Grab, Bind, Rate of Increase, Fluctuation and Rate of Decrease.</p> <p>Select 8 Out.</p> <p>“Service brake test complete”</p>

Next step: Results overview.	Press → for “Results overview”
	<p>Submit wheel status.</p> <p>A conclusion can be presented: PASS or FAILED.</p>
<p>The overall analysis is based on the following criteria:</p>	<ol style="list-style-type: none"> 1. Brake efficiency brake control 1 2. Brake efficiency brake control 2 3. Wheel analysis 4. Wheel lock analysis
Next step: Print results screen.	Press → for “Print”
Next step: Save results screen.	Press → for “Save”
Next step: Perform new test.	

Chapter 9 Operating instructions; ATL mode

This chapter explains the operation of a complete MOT ATL test. See the latest MOT inspection manual for any recent changes.

In This Chapter

ATL mode	40
ATL test including suspension test and sideslip meter	43

ATL mode

Brake tester	Test vehicle	Weight measurement
T8400A class 4 ATL	Class 4, M1	Weighing automatic by means of weighing system. <i>Entered kerb weight is not used for efficiency calculation.</i>
T8500A class 4 ATL	Class 4, M1	Weighing automatic by means of weighing system. <i>Entered kerb weight is not used for efficiency calculation.</i>
T8700A Class 7 ATL	Class 4, M1	Weighing automatic by means of weighing system. <i>Entered kerb weight is not used for efficiency calculation.</i>
T8700A Class 7 ATL	Class 5L	Enter DGW/MAM. Weighing system is switched off.
T8700A Class 7 ATL	Class 7 with 2 axles	Enter DGW. Weighing system is switched off.
T8700A Class 7 ATL	Class 7 with 3 axles	Enter DGW. Weighing system is switched off.

Weight measurement

The static weight measurement is done on the brake tester or on the suspension tester. This depends on where the weight sensors are installed in your test lane.

To perform the weight measurement:

- 1) Drive the car onto the measuring plates of the suspension tester or into the rollers of the brake tester.
- 2) Ensure that the wheels are on the center of the measuring plates or placed properly on the rollers.
- 3) Disengage the gearbox (if applicable).

Note

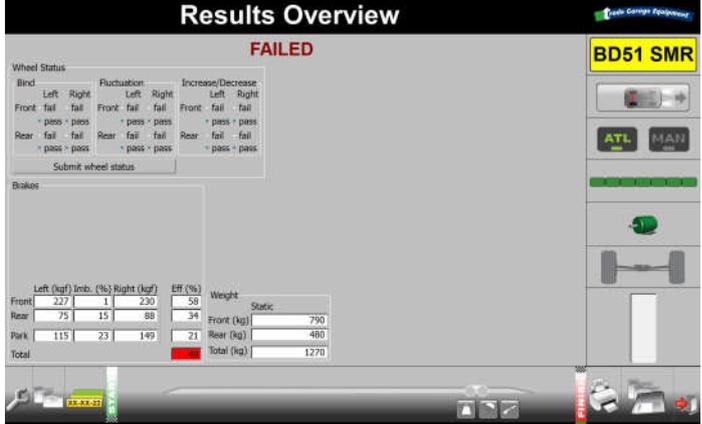
Do not apply any brakes.

The weight measurement starts automatically.
The weighing results are displayed on the screen.

Perform a test

- ▶ See “Preparations before starting a brake test” on page 27 .
- ▶ When presented in “*Italic*”, this indicates a prompt on the screen.
- ▶ The imbalance is measured automatically at maximum force during the brake force test of an axle.
- ▶ For an accurate measurement, the brake force has to be built up slowly.
- ▶ *Press Enter to start* clears all previous results.
- ▶ In ATL mode, the operator is guided through the test by means of prompts on the screen.

<p>Step 1: Select a vehicle from the queue.</p>	<p>See “Add a vehicle to the test queue” on page 23 for instructions.</p> <p><u>Mandatory fields for a correct ATL test:</u> Make, Model, Registration number Class M1, 4, Class 7, Class 5L Parking brake front or rear Dual line or single line service brake type.</p> <p>The limits are automatically linked.</p>	
	<p>The registration plate icon shows the registration plate (BD51 SMR) of the selected vehicle.</p> <p>Select ATL for automatic test.</p> <p>“<i>Class: 4 (2wh), Parking brake: rear (dual)</i>” is presented.</p> <p>From the start screen: Press OK to start the first test.</p> <p>Follow the instructions on the screen.</p> <p>Prompts for Bind, Rate of Increase, Fluctuation and Rate of Decrease appear during the service brake test front axle and service brake rear axle.</p> <p>The prompt for Grab appears during the parking brake test (single line braking system only).</p> <p>Attention: Rollers start automatically without interference of the remote control or keyboard.</p>	
<p>Specific test (parking brake on front axle)</p>	<p>Class M1, 4 test sequence #</p>	<p>Class 5L, 7 test sequence #</p>
<p>Weighing front axle</p>	<p>1</p>	<p>-</p>
<p>Service brake/imbalance test front axle</p>	<p>2</p>	<p>1</p>
<p>Parking brake/imbalance test front axle</p>	<p>3</p>	<p>2</p>
<p>Weighing rear axle</p>	<p>4</p>	<p>-</p>
<p>Service brake/imbalance test rear axle</p>	<p>5</p>	<p>3</p>

Specific test (parking brake on rear axle)	Class M1, 4 test sequence #	Class 5L, 7 test sequence #
Weighing front axle Service brake/imbalance test front axle Weighing rear axle Parking brake/imbalance test rear axle Service brake/imbalance test rear axle	1 2 3 4 5	- 1 - 2 3
Example screens for Weighing Front & Weighing Rear.		
	After the last test service brake rear axle, the 'Results overview' screen appears.	
Next step: Results overview.		
	<p>Enter wheel status for all wheels for the service brake: Bind, Fluctuation, Increase/Decrease.</p> <p>Enter wheel status for all wheels for the parking brake (only relevant when a single line braking system is fitted): Grab.</p> <p>Select: Submit wheel status. The overall conclusion PASS/FAILED is presented.</p> <p>PASS in Green FAILED in Red</p> <p>A conclusion can not be generated if the wheel status has not been submitted.</p> <p>If a vehicle passes on wheel lock (for service brake or parking brake efficiency), this will be included in the conclusion. See the latest MOT inspection manual for pass on wheel lock regulations for efficiency and imbalance.</p> <p>Example: PASS (service brake lock)</p>	
The overall analysis is based on the following criteria:	<ol style="list-style-type: none"> 1. Brake efficiency service brake 2. Imbalance service brake front axle 3. Imbalance service brake rear axle 4. Brake efficiency parking brake 5. Imbalance parking brake 6. Wheel analysis 7. Wheel lock analysis 	
Next step: Print results screen.	Press → for "Print"	
Next step: Save results screen.	Press → for "Save"	
Next step: Perform new test.		

ATL test including suspension test and sideslip meter

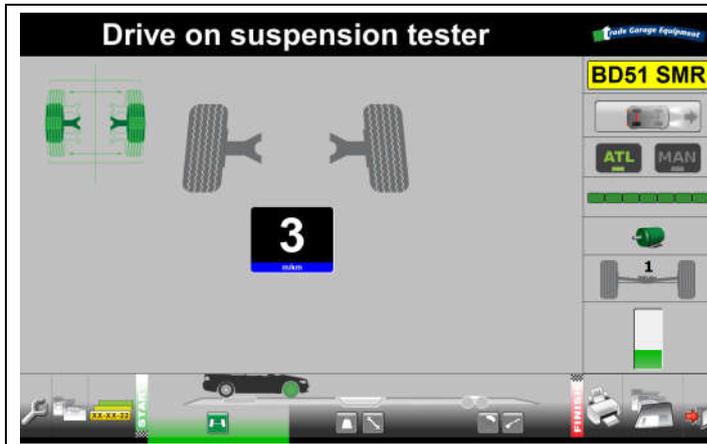
This chapter explains a full ATL test including a side slip- and suspension test.

Specific test (parking brake on rear axle)	Class 4 test sequence #	Class 5L, 7 test sequence #
Sideslip test front axle	1	1
Weighing front axle	2	-
Suspension test front axle	3	2
Service brake front axle	4	3
Side slip test rear axle	5	4
Weighing rear axle	6	-
Suspension test rear axle	7	5
Parking brake rear axle	8	6
Service brake rear axle	9	7

Perform a test

- ▶ See “Preparations before starting a brake test” on page 27 .
- ▶ Verify that there is no leakage at the shock absorbers. Any leakage may not be measured with the suspension test.
- ▶ When presented in “*Italic*”, this indicates a prompt on the screen.
- ▶ For an accurate measurement, the brake force has to be built up slowly.
- ▶ The imbalance is measured automatically at maximum force during the brake force test of an axle.
- ▶ *Press Enter to start* clears all previous results.
- ▶ In ATL mode, the operator is guided through the test by means of prompts on the screen.

<p>Step 1: Select a vehicle from the queue.</p>	<p>See “Add a vehicle to the test queue” on page 23 for instructions.</p> <p><u>Mandatory fields for a correct ATL test:</u> Make, Model, Registration number. Class 4, Class 7, Class 5L Parking brake front or rear Dual line or single line service brake type.</p> <p>The limits are automatically linked.</p>
	<p>From the start menu the first prompt will be “<i>Drive on suspension tester</i>”.</p> <p>To perform the sideslip test:</p> <ol style="list-style-type: none"> 1) Stop the car a few meters in front of the sideslip meter. 2) Drive the car towards the sideslip meter at walking speed. 3) Disengage the gearbox just before the front wheels touch the sideslip meter. <p>Note <i>Do not apply any brakes and do not touch the steering wheel.</i></p>
<p>Sideslip front axle.</p>	



- 4) Let the wheels of the car roll over the sideslip meter.
The display shows the toe-in or toe-out in m/km. A positive value means toe-in, a negative value means toe-out.

Weighing front axle (class M1, 4 only).



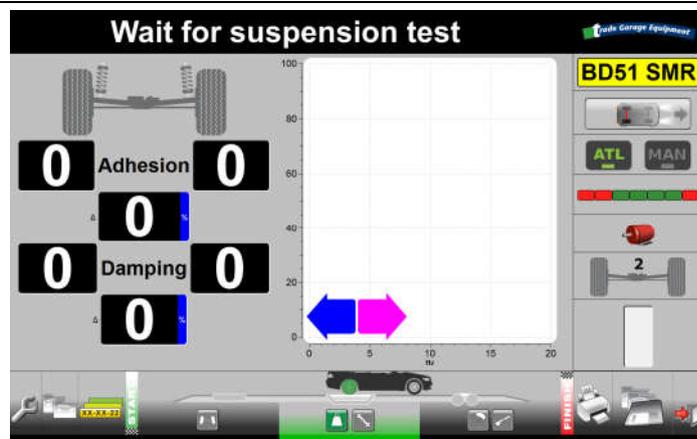
- To perform the suspension test:
- 1) Drive onto the measuring plates of the suspension tester.
 - 2) Ensure that the wheels are on the center of the measuring plates.
 - 3) Disengage the gearbox.

Note

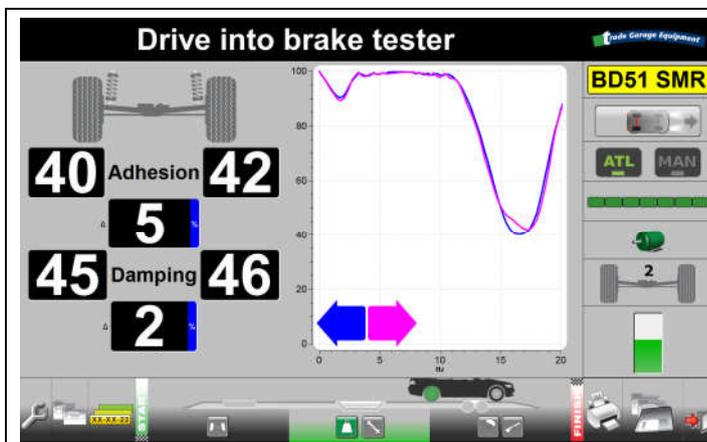
Do not apply any brakes.

- a. The weight is measured.
- b. The suspension test automatically starts: the motor starts, reaches full speed and is switched off.

Suspension test front axle.



- 4) Wait until the test results are displayed on the screen.



- 5) Move the wheels from the suspension tester.

“Drive into brake tester”

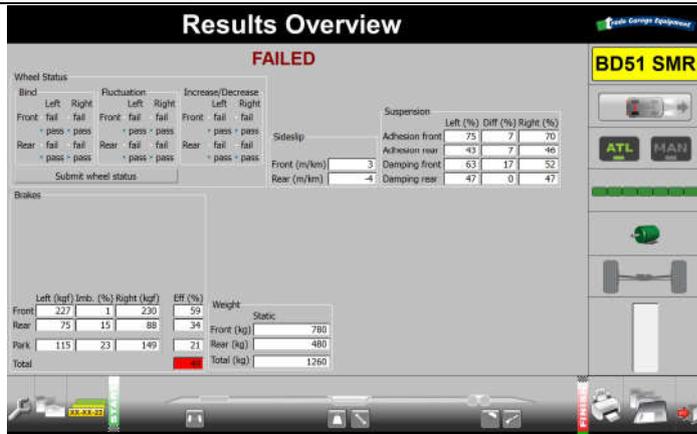
Follow the instructions on the screen for the ATL brake test, sideslip test rear axle and suspension test rear axle.

Attention:

Rollers start automatically without interference of the remote control or keyboard.

After the last test service brake rear axle, the 'Results overview' screen appears.

Next step: Results overview.



Enter wheel status for all wheels for the service brake:
Bind, Fluctuation, Increase/Decrease.

Enter wheel status for all wheels for the parking brake (only relevant when a single line braking system is fitted):
Grab.

Select: Submit wheel status.
The overall conclusion PASS/FAIL is presented.

PASS in Green
FAILED in Red

A conclusion can not be generated if the wheel status has not been submitted.

If a vehicle passes on wheel lock (for service brake or parking brake efficiency), this will be included in the conclusion. See the latest MOT inspection manual for pass on wheel lock regulations for efficiency and imbalance.

Example:
PASS (service brake lock)

1. Brake efficiency service brake
2. Imbalance service brake front axle
3. Imbalance service brake rear axle
4. Brake efficiency parking brake
5. Imbalance parking brake
6. Wheel analysis
7. Wheel lock analysis

The overall analysis is based on the following criteria:

The suspension test and sideslip test are not part of the MOT test. There are no limits linked to these values. It can not fail the vehicle.

Next step: Print results screen.

Press → for "Print"

Next step: Save results screen.

Press → for "Save"

Next step: Perform new test.

Chapter 10 Analyse, print, save and review results

In This Chapter

Analyse the test results	46
Print test results	47
Save test results	48
Review test results from earlier tests (Report)	48

Analyse the test results

To analyse the detailed results for each test, including graphics, use the ← and → keys to navigate through the test screens. For both MANUAL and ATL mode.

In the **Test Screens** and **Results Overview** screen, colors are used to indicate whether the test results are within the limits:

- ▶ White background: normal, the test result is within the limit.
- ▶ Yellow background: warning, the test result is near the limit.
- ▶ Red background: the test result has exceeded the limit.

Overall end result indication after ATL test:

- ▶ Pass: all test results are within legal limits (**green text**)
- ▶ Failed: one or more test results have exceeded the legal limit (**red text**)

Overall end result indication after MANUAL test:

- ▶ Pass: all test results are within legal limits (grey text)
- ▶ Failed: one or more test results have exceeded the legal limit (grey text)

Results Overview Trade Garage Equipment

FAILED

BD51 SMR

Wheel Status

Bind	Left	Right	Fluctuation	Left	Right	Increase/Decrease	Left	Right
Front	fail	fail	Front	fail	fail	Front	fail	fail
Rear	pass	pass	Rear	pass	pass	Rear	pass	pass

Sideslip

Front (m/km)	3
Rear (m/km)	-4

Suspension

	Left (%)	Diff (%)	Right (%)
Adhesion front	75	7	70
Adhesion rear	43	7	46
Damping front	63	17	52
Damping rear	47	0	47

Brakes

	Left (kgf)	Imb. (%)	Right (kgf)	Eff (%)
Front	227	1	230	59
Rear	75	15	88	34
Park	115	23	149	21
Total				49

Weight

	Static
Front (kg)	780
Rear (kg)	480
Total (kg)	1260

Navigation: START, FINISH, Print, Save, Home

Example result overview for a Class 4 ATL test including suspension- and sideslip test.

Suspension test and adhesion

The test results show the weight and adhesion values.

If the adhesion value is:

- ▶ Between 0 and 20% the adhesion is dangerously low.
- ▶ Between 20 and 40 %: the adhesion is sufficient.
- ▶ Between 40 and 60 %: the adhesion is good.
- ▶ More than 60%: the adhesion is excellent.

A difference between left wheel adhesion and right wheel adhesion that exceeds 20% should be investigated (if the static wheel loads on the left and right side are about equal).

Suspension test and damping

The suspension test results also show damping values. The damping factor shows how good the wheel bounce resonance is controlled. For most cars the damping factor is between 20% and 40%. If the difference between right side and left side exceeds 50%, further investigation is necessary.

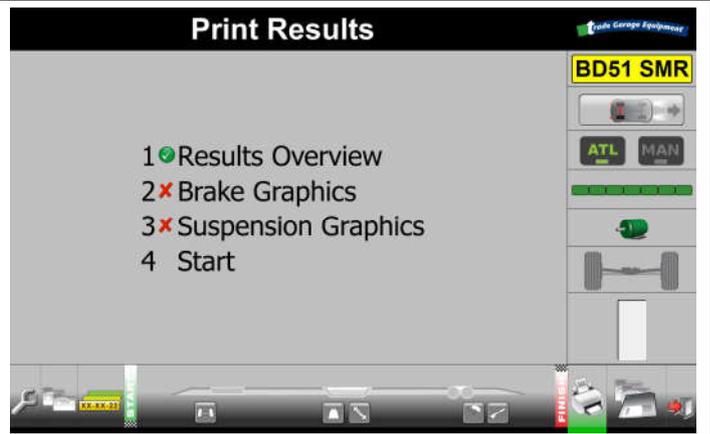
Sideslip test

The test results show the toe-in and toe-out. A positive value means toe-in, a negative value toe-out. If the toe-in or toe-out value is:

- ▶ Less than 4 m/km: the alignment is sufficient.
- ▶ Between 4 and 7 m/km: you are advised to check the wheel alignment.
- ▶ More than 7 m/km: you must check the wheel alignment.

Print test results

On the **Print Results** screen, you can print the test results direct from the test lane program.

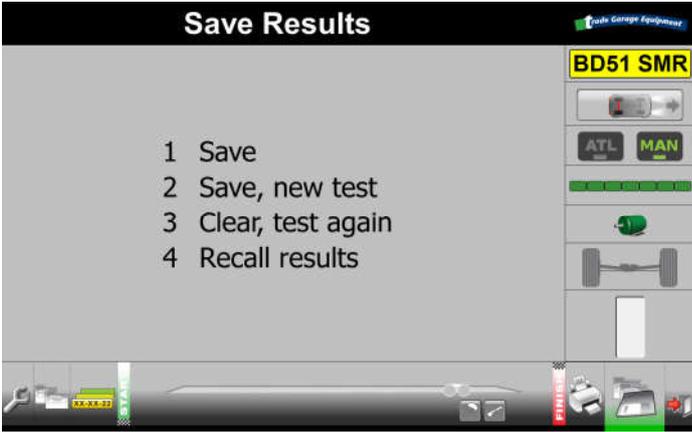
	KEY	FUNCTION
	1	Select the results overview
	2	Select the graphics for the brake tests
	3	Select the graphics for the suspension tests
	4	Start printing

To print the test results:

- 1) Press **1-3** to select one or more results to print. To de-select a result, press **1-3** again.
- 2) Press **4** to print the selected results.

Save test results

On the **Save Results** screen, you can save the test results for later review and submit the report to the DVSA.

	KEY	FUNCTION
	1	Save the test results (not available in quick test mode for passenger cars (on page 28)).
	2	1. Save (ok): The results are stored in Report and automatically submitted to the DVSA.
	3	Save the test results and go to the Select Test Vehicle screen for a new test (not available in quick test mode). The results are stored in Report and automatically submitted to the DVSA.
	3	Clear, test again: the results are not saved. The program returns to the start screen to test the same vehicle again.
	4	If you select 4, Recall results, the program is minimized and Report starts up.
		Click the Back to Atlas button in Report to return to the test lane program.

Note

If the **Save** button displays **1 Save (error)**, check the internet connection. Once re-connected, save as normal. If you save without a connection, the results can not be submitted afterwards.

Review test results from earlier tests (Report)

To review test results from earlier tests, use Report. You can start Report from the Test lane program:

- 1) Touch **Save Results** or Press → until you enter the **Save Results** screen.
- 2) Press 4, Recall results, the Test lane program is minimized and Report starts up.
- 3) In Report double click the vehicle's registration number from the list.

When you select a registration number, all tests for this vehicle appear, listed by date and time. You can use the **Filter** box to find a vehicle in the list (see "Add a vehicle to the test queue" on page 23). The filter of Report only filters on registration number, not on name.

- 4) Select the date and time you want to review.
- 5) Use the tabs to view details of the test.
- 6) Click the **Back to Technique** button to return to the Test lane program.

If you press the **Refresh** button in Report, the program retrieves the latest results from the Test lane program.

Chapter 11 General settings

When you select the button with the tool icon in the lower left corner of the screen, the **General settings** appear. This screen has three tabs.

General settings Test tab

On the Test tab you can change settings that are used in the test run.

Test Settings

Brake Measurement

- Pressure Force Meter
- Pedal Force Meter
- Lever Force Meter
- Ovality
- Rolling Resistance

Suspension Settings

- Suppress suspension test

Remember to check tire pressure!

Preferences

- Switch to basic mode during test

Automatic mode

- Speed adjustment: default
- When test finished go to start page: disabled
- Automatic restart after: disabled
- Print automatically at end of a test

Automatic retest

- Restart suspension test: disabled
- Restart brake test when not driven out: disabled
- Restart service brake test when brake force below: 100 N
- during the first: 3 seconds of the parking brake test

For the brake measurements/suspension settings you can choose the following options:

- ▶ Brake measurement. All disabled for testing in GB.
- ▶ Suspension Settings

Suppress suspension test. When a suspension tester is configured, if preferred, the operator can suppress the suspension test in the sequence. This will not suppress the weighing facility.

In the **Preferences** part you can select the following:

- ▶ Switch to basic screen mode during test: in basic screen mode the icons at the bottom and the right side of the screen are hidden. This allows for more room for the test results.
- ▶ Automatic mode (all tests run automatically), **Speed adjustment**: if you set Speed adjustment to for example 10%, the delay between two tests is extended with 10%. The default value results in a delay that is long enough for an experienced user.
- ▶ **When test finished go to start page**: set the time the program shows the **Results Overview** until it returns to the start page. If disabled, the program does not return to the start page at the end of the test.
- ▶ **Automatic restart after**: set the time the program waits until it restarts the test. If disabled, it does not restart the test. Automatic restart clears the last results.
- ▶ **Automatic retest**: Disabled. Not supported for the UK.

General settings General tab

On the **General** tab you can change e.g. the print. You can also define or choose the operator. Just type a name and it is saved.

The screenshot shows the 'General' tab of a settings window. It is divided into several sections: 'General' with fields for Language (English), Operator (Kieron), and Print settings (Selected printer: PDFCreator, Print header: Undefined print header, and a checkbox for Black/White print mode); 'Test mode' with radio buttons for Manual and Automatic; 'Interface' with options for Serial (COM1), TCP (169.251.1... port: 22200), and RF remote (Not used); and 'Database Backup' with a field for Backup directory (E:/profile/My Documents) and a 'Backup Now' button. A 'Software Lock' section on the right contains fields for Service ID, Calibration ID, Software CRC, and Calibration CRC, along with an 'Update' button. A status message at the bottom of the Database Backup section reads: 'Database backup finished successfully at do sep 26 11:26:09 2019'.

Test mode: select the default test mode: Manual or Automatic ATL.

- ▶ **Interface:** TCP connection to the test lane. Do not change!
- ▶ **RF Remote.** If visible. Not used. Do not Change!
- ▶ **Database Backup:** there is no automatic backup of the database, you have to do this manually. Press the **Backup Now** button to start the backup to for example to a removable disk.
- ▶ **Software Lock:** presents date and time of the last configuration or calibration change.

General settings Limits Tab

On the **Limits** tab you can check the test limits for the various vehicle types. The system uses test limits to decide if a vehicle passes or fails the tests.

The screenshot shows the 'Limits' tab of a settings window. It features a 'Vehicle limits' section with a dropdown for 'Description' (UK_class_4_7_dual) and a 'Type' dropdown (Legal). Below this are several sub-sections for different vehicle parameters, each with 'Warning level' and 'Error level' spinners. The 'Front axle' section is active, showing 'Service brake imbalance' (Warning: 20%, Error: 25%), 'Adhesion' (Warning: 0%, Error: 0%), 'Damping' (Warning: 0%, Error: 0%), 'Service brake efficiency' (Warning: 60.0%, Error: 50.0%), 'Parking brake efficiency' (Warning: 20.0%, Error: 16.0%), 'Emergency brake efficiency' (Warning: 0.0%, Error: 0.0%), 'Service brake pedal force' (Warning: 0 kgf, Error: 0 kgf), 'Adhesion difference' (Warning: 0%, Error: 0%), 'Damping difference' (Warning: 0%, Error: 0%), and 'Sideslip (toe in)' (Warning: 0 m/km, Error: 0 m/km). There are also 'Sideslip (toe out)' fields.

- ▶ From the drop-down box **Description** select your predefined set of limits. These limits can not be changed.

Chapter 12 Troubleshooting

This chapter helps to find solutions for problems that can occur when you use the test lane.

In This Chapter

Troubleshooting tables

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Troubleshooting tables

SYMPTOM	POSSIBLE CAUSE	ACTION
Roller brake tester does not start	The emergency stop button was pressed.	Release the emergency stop button and restart.
Display does not show anything	Main power failure. Disturbance from cables. Defect in display.	Verify that all three phases are present. Verify that there are no loose cables near the display. Contact a service engineer.
The roller brake tester shows no results.	The warm-up was not finished yet.	Remove the car from the tester and wait until the warm-up is finished.
Noisy motor and brake forces too low.	Main power problems.	Verify that all three phases are present.
Test results are not accurate.	Incorrect tire pressure. Car is not in neutral. Load was not steady during test. Wrong test mode selected Test procedure not correctly followed.	Verify if the tire pressure equals the value for 'lightly loaded vehicles'. Redo the test and set the gear to neutral before the test starts. Do not move during the test. Select correct test mode and redo the test. See the test procedure.

Chapter 13 Preventive maintenance

This chapter describes the maintenance the operator is responsible for.

In This Chapter

Maintenance safety	52
Maintenance schedule	52

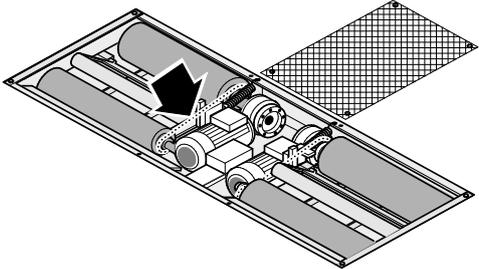
Maintenance safety

- ▶ You are not allowed to calibrate or adjust the test lane. Only trained service engineers are allowed to calibrate or adjust.
- ▶ Shut down the test lane before you perform any maintenance on the test lane.

Danger
 Remove or switch off the fuses from the main electrical supply before you start the installation.

Maintenance schedule

Most of the parts of the test lane are free of any maintenance. The bearings and gear boxes are greased for life.

PART	ACTION
During operation Test lane	Verify that there are no abnormal noises and other unusual signs during operation.
Daily Test lane	Before you start the test, verify if the safety limit switches at the slippage detection rollers function correctly: Turn the slippage detection roller. The lights of the proximity switches light up.
Weekly Test lane	Clean the parts of the test lane Keep the test lane clean and dust free. Clean the sheet metal with a lukewarm soap solution. <hr/> Caution <i>Do not use aggressive or abrasive detergents.</i> <i>Do not use a high pressure cleaner.</i> <hr/>
Every three months Transmission chains roller brake tester	Verify that the chains are in good condition. Check for wear. Grease the chains: 1) Open the center cover of the roller brake tester. 2) Grease the chains with a chain lubricant. Use a lubricant like Iwis VP6 Kombi Superplus or comparable. 

Chapter 14 Declaration of conformity to CE directives

Manufacturer:	Altus-Escon-Company B.V. (Altesco)
Address:	Drachmeweg 26 2153 PA Nieuw Vennep The Netherlands
Equipment:	Modules for testing class 1, 2, 3, 4, 5L, 7 vehicles for brake and/or suspension and/or sideslip.
Equipment modules:	Technique T8000 series
Year of declaration:	2019

Altus-Escon-Company B.V. declares under his own responsibility that the above identified products are conform to the international standards described in the Low Voltage Directive 2006/95/EC, the Machinery Directive 2006/42/EC and in the EMC Directive 2004/108/EC.

It is pointed out that it is not allowed to take modules into operation as part of a compounded installation before the latter has been declared to comply with the Machinery Directive. Any alteration to the equipment, improper use or installation voids this Declaration.

Most of the Altesco equipment modules are conform to the national Dutch standard "Regeling Voertuigen 2009" and are certified, possibly under a different model designation by Nederlands Meetinstituut (NMI).

The Altesco equipment is provided with the CE-mark:



Nieuw Vennep, The Netherlands

Altus-Escon-Company B.V., Victor C. Stuyts, President