

Brake Tester Class 4 & Class 7

CBT041/070

Operations Manual

I322752 Issue 2



Crypton - A Brand of the Continental Corporation



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1. ABOUT THIS MANUAL

These operating instructions are intended for the operators and owner of the Crypton Brake Tester.

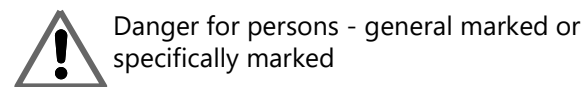
Operators are trained automotive personnel, who must be instructed in the operation and safety requirements of this equipment.

The **owner**, is responsible for the conditions surrounding the operation of the Brake Tester (e.g.: accident prevention, check of components, etc.).

The following symbols are used in these operating instructions:

i Information - provides information

! Caution - draws attention to dangers for equipment or vehicle



Electrocution, risk of injury, risk of burning etc.

i Before starting up and operating the unit, always read through the operating instructions and particularly the safety instructions thoroughly. In this way, you can avoid any uncertainties with respect to use of the unit, thus ensuring your own safety and preventing damage occurring to the unit.

Your use of the product means that you accept the following conditions:

1.1 Copyright

Software and data are the property of Crypton or its suppliers and are protected against unauthorized reproduction under copyright laws, international contracts and other national legal provisions. The reproduction or sale of data and software or any part thereof is prohibited and punishable by law; in the event of violations, Crypton reserves the right to prosecute and to assert claims for damages.

1.2 Liability

As far as possible, all the data in this program is based on information from the manufacturer and importers. Crypton furnishes no guarantee for the correctness and completeness of software or data; we assume no liability for damage caused by faulty software and data. At any event, the liability of Crypton is limited to the amount which the customer has actually paid for this product. This exemption from liability does not apply to damages caused intentionally or by gross negligence on the part of Crypton.

1.3 Warranty

Any use of hardware and/or software not been approved by Crypton constitutes a modification of our products, and hence exclusion of all liability and warranty claims, even if the hardware has been subsequently removed, or the software erased in the interim.

Our products must not be modified in any way. Furthermore, our products may only be used with original accessories.

Disregard for the above will render all warranty claims invalid.

The present Crypton tester may only be used with operating systems approved by Crypton. Using the Crypton tester with different operating systems to those which we have approved will render our warranty obligation null and void, in accordance with our terms of delivery. In addition, we cannot assume liability for damages and consequential damages which are the result of the use of a non-approved operating system.

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2. SAFETY INSTRUCTIONS

Observe the safety instructions for your own safety and that of your customers.

The safety instructions indicate possible dangers. At the same time, they show you what action to take in order to avoid such dangers.

Use only for the purpose specified

The Brake Tester is for the user-friendly testing of brakes. The measured values displayed do not, however, replace expert visual examination after the tests, on a lifting platform, for instance.

Do not use except for the purpose specified

- **Do not** start vehicle engine by means of roller-drive motors.
- Drive the vehicle **slowly** onto the set of rollers to avoid unnecessary loading strain.
- **Only** drive the vehicle off the Brake Tester in a forward direction and with the rollers still moving.

Operating conditions

- Never expose operating and display units to direct sunlight!
- Operational temperature between +5 °C and +40 °C
- Duration of test: in order to avoid overheating of the drive motors, we recommend the following testing cycle: after testing 2 vehicles, allow a 5-minute break.

2.1 Safety precautions for operating staff

! Always observe Safety and Accident Prevention guidelines, and regulations !

! If the Brake Tester is not in use, switch off the energy supply at the main switch. Secure mains switch against unauthorised use. Cover the roller sets of the brake tester when not in use.

! Do not park vehicles on the Brake Tester.

! Work on the Brake Tester may only be carried out by qualified electrical / mechanical engineers.

! The bolts securing the covers must be **firmly** tightened to avoid damage to tyres.

! Drive the vehicle **slowly** onto the set of rollers to avoid unnecessary loading strain.

! Only drive off the Brake Tester in a forward direction, and only with the test rollers running.

! Do not start vehicle engine by means of brake testers roller drive motors.



When the Brake Tester is switched on, no persons or vehicles should be standing on, or near the roller set



When the Brake Tester is in operation, no persons are allowed to stand near the components.

There is a risk of fatal injuries to anyone near the test rollers.



No repairs or other work may be carried out on a vehicle when **in the roller set** of the Brake Tester.



The Brake Tester interacts with a monitor. In order to be able to tell whether the system is on or off,. Also, Never switch the monitor off while the rest of the system is under power. Please ensure all energy management functions of the PC are disabled. Do not enable a screensaver.



Operating personnel must wear **work-clothes** without loose straps and loops. This includes work-shoes without laces. Loose straps and laces may catch in the roller sets and endanger the operator.




The vehicle under test must be **at right angles** to the rollers, otherwise it will edge sideways. **There is a risk of fatal injuries to anyone near the test rollers.**



Correct the position of the vehicle by "slewing" it while rollers turning. Ensure no persons are too close to test area during use, if the vehicle "climbs" out of the roller set there is a **risk of fatal injuries** to anyone near the test rollers.

2.2 Health and Safety regulations for the owner

 The brake tester, and testing area, must be designated by correct safety signage in accordance with the **EC Safety Signs Directive (92/58/EEC)**.


The edge of the installation pit for the roller set must be designated by a painted warning line in accordance with **EC Safety Signs Directive (92/58/EEC)**. Further information may be obtained from **The Health and Safety Executive**: www.hse.gov.uk
Contact HSE Info line 0845 345 0055

2.3 Commissioning into service and general settings

The Brake Tester must be 'set-up' to work in accordance with particular features and requirements. This is done by Factory configuration, and also at the time of installation. If there is a change in the components, software level or workshop address, changes to the programs configuration may be required. Contact Crypton Product Support in this event. You can operate Brake Tester either using the PC keyboard, or the remote control.

2.4 Notes for using Brake Tester


Status display:

 **The Brake Tester interacts with a monitor. In order to be able to tell whether the system is on or off. Never switch the monitor off while the rest of the system is under power. Please ensure all energy management functions of the PC are disabled. Do not enable a screensaver.**

PC unit:

i If you have to re-boot the PC unit, wait 30 seconds before switching it on again!

2.5 Switching off Brake Tester

 Remember to shut down the PC using the Crypton desktop 'shutdown' icon or select shutdown from the Windows.@start menu, before switching off the Brake Tester.

3. ICONS & DISPLAYED INFORMATION

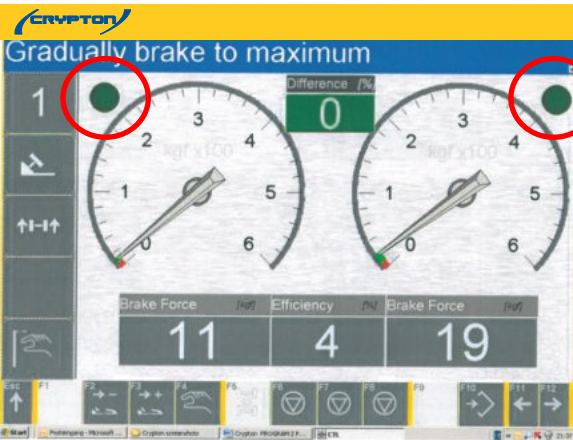
Screen icons F1 to F7 are contextual, captions and functions will change depending on what stage of brake test, or set up process, the program is currently in.

On Front Screen - F7 (Configuration) and F8 (Admin) are password protected and strictly for use by an approved engineer, or with guidance of Crypton Product Support.

Icon functions are indicated by the key legends. Further explanations are included in the following pages of this manual, where relevant.

Brake force is displayed in Kgf, and imbalance (difference) is displayed as a percentage - unless specifically configured otherwise.

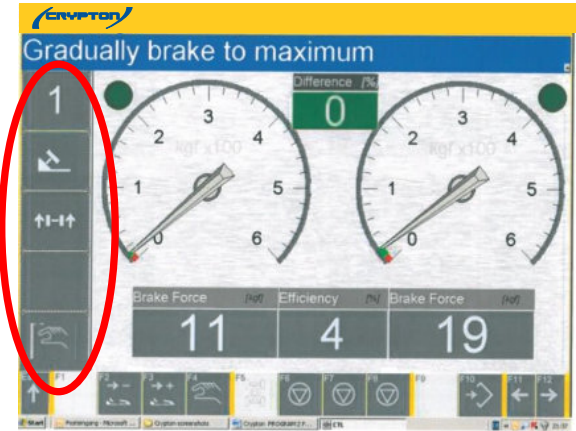
Test values are saved automatically in automatic mode, if using in manual mode then click F10, or press equivalent handset key to store results.



Where slip limits are achieved the brake tester will automatically 'lock'.






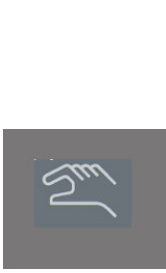
Visual indication is provided by the green indicators above the dials.

When slip is achieved and the brake tester 'locks' the indicators colour will change to light Green.




Test printouts will indicate the brake tester locked by placing an asterisk *in front of the relevant test value.


During a test, the left side information pane of the screen displays status.

	Axle number	
	Brake type: Handbrake or	 pedal
	Roller Status: Arrows indicate which roller is turning, left, right or both.	
	Mode: Automatic or	 manual



 Ensure that no persons are in the vicinity of the Brake Tester
There is a risk of fatal injury to anyone near the test rollers

3.1 Switching on the Brake Tester
Ensure that the rollers of the Brake Tester are free from load before switching on using the rotary Master Switch.

 **NOTE**
The accident prevention Regulations Switch off the Master Switch in the event of danger

3.2 Switching on the PC

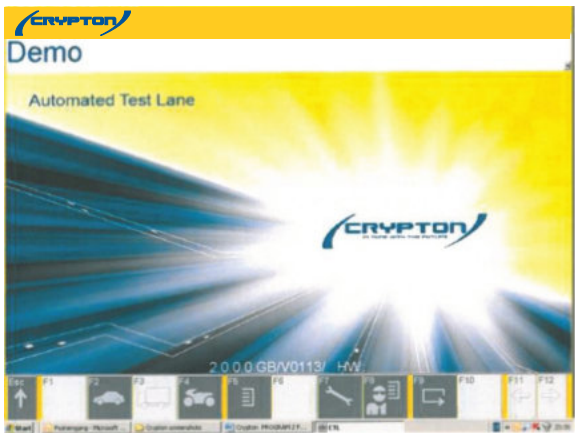
When the PC unit is successfully started the Crypton desktop screen will appear.

i Depending on machine type your desktop and icons may differ from the example below.



Start the Brake Tester application by double clicking on the 'Test Lane' icon

Wait until the Brake Tester software has initialised, the following screen will appear:



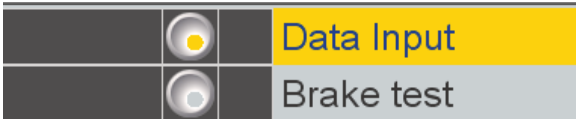
On Front Screen - F7 (Configuration) and F8 (Admin) are password protected and strictly for use of an approved engineer, or with guidance of Crypton Product Support only.

3.3 Preparing the vehicle

- Check the tyre pressure of the vehicle and correct if necessary.
- Check the tyres before the test and clean if necessary. Mud and oil on tyres and/or rollers will greatly affect brake force values.
- Sand on the vehicle tyres considerably shortens the service life of the test stand rollers ("sandpaper" effect)!
- The coating of the test rollers is not suitable for vehicle tyres with spikes.

3.4 Entry of customer and vehicle data

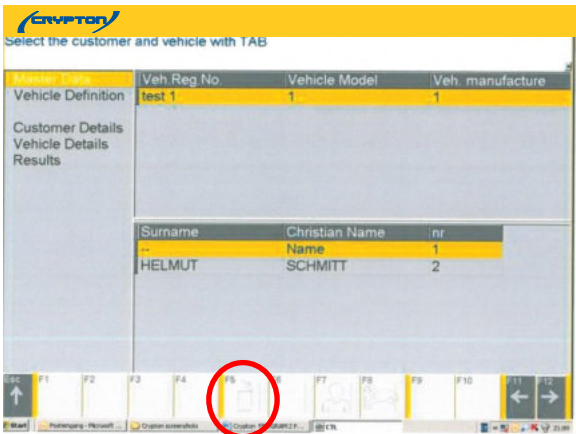
- **Select Data input**
From front screen, select the type of test to be done, e.g. 'F2' Car (Class IV and VII) or 'F4' Bike (Class 1).



- **Press F12** to start data entry for local jobs without MTS data or F5 for MTS data retrieval.

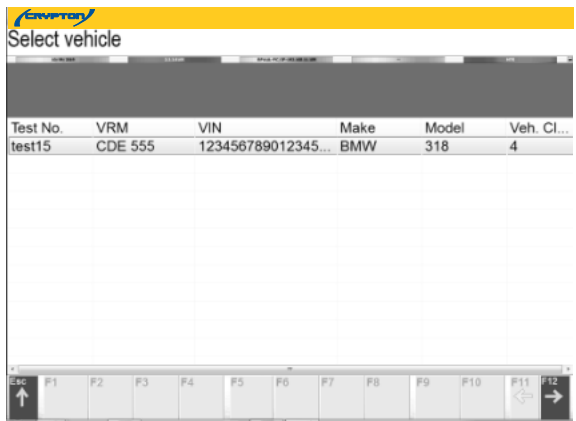
Each button means the following:

- Esc = Close the program
- F2 = Select a car
- F4 = Select a motorcycle
- F5 = Select a job from MTS database
- F7 = Configuration password protected for technicians
- F8 = Administration for selecting jobs that have been saved, load car results
- F9 = Restart the program

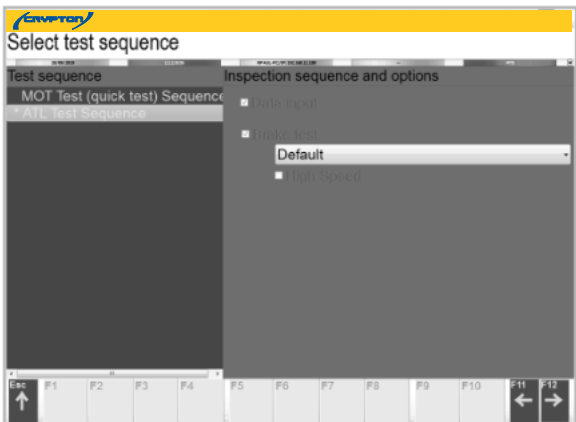


i Pressing F12 again will present a list of previously tested vehicles; double click an entry to automatically load existing details, if desired.

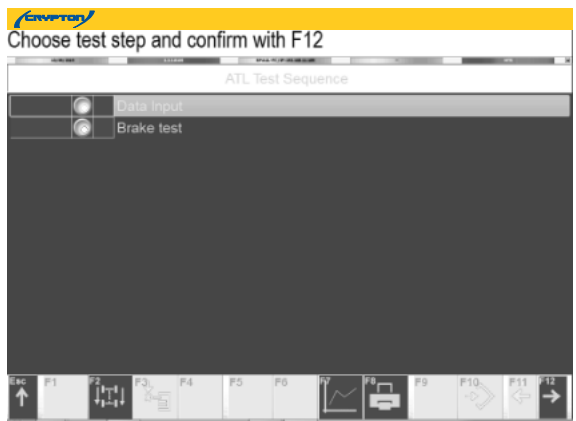
3.5 With MTS entry



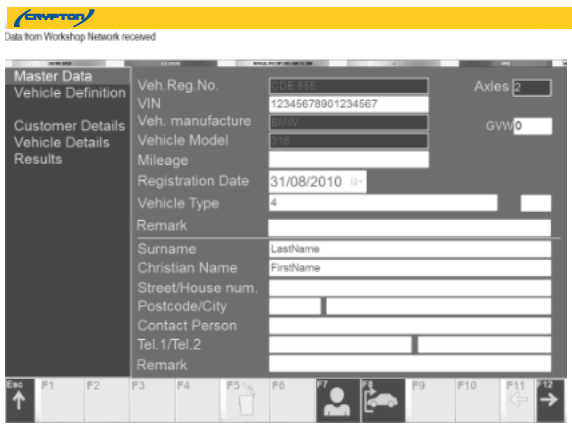
After selecting F5 to call up job from MTS data base, select vehicle and press F12



ATL test is the default mode as well as the handbrake test with both wheels rotating together. Press F12 to move forward.

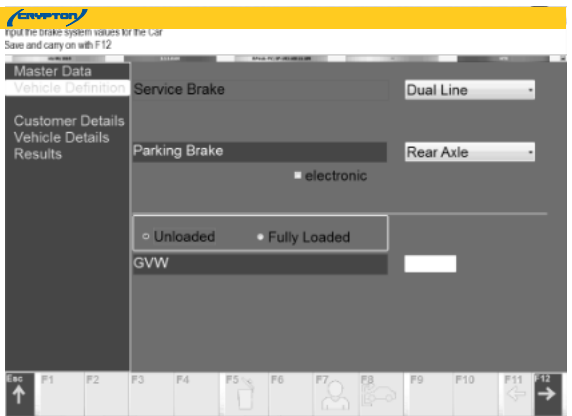


Data input screen will come up, press F12 to move to the next step.



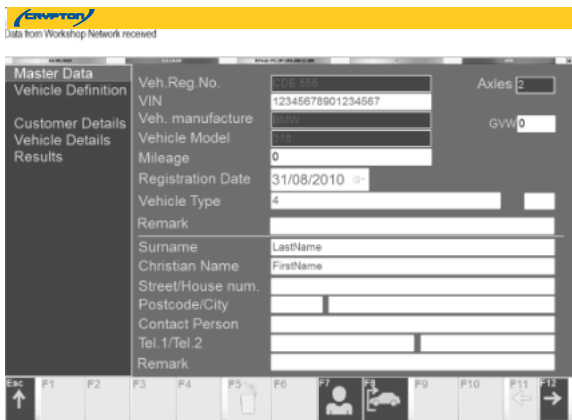
Details of the vehicle to be tested will be displayed, including the vehicle type. If class VII is being tested make sure that the GVW is inserted into the box according to the vehicle DTP plate.

Press F12 to move forward.

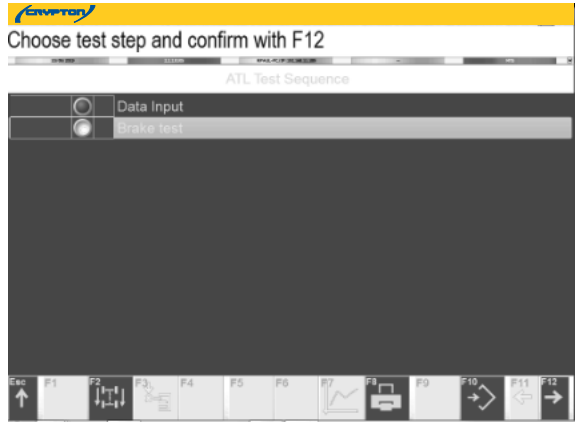


Default values are default for duel or fixed line and parking on rear axle. If these need changing then do so manually.

Default position for class VII testing is unloaded. Press F12 to move forward.



Details of vehicle being tested will be shown, check and press F12 to move forward.



Data input is shown with a green diode to indicate all vehicle data has been configured.

Press F12 to move forward.



Prepare to drive onto the roller set with the front axle.

Drive the vehicle forward so that the front axle wheels are in position at the centre of each roller.

(Caution, beware that no part of the wheels are touching either the centre cover plate or outside of the roller set.)

Once the front wheel are on the rollers, select neutral and lock the rear brakes manually or with the rear axle handbrake to avoid rolling out of the rollers when braking.

In automatic ATL mode, rollers will rotate. Follow on screen instructions.

The above screen shows the following symbols from top to bottom left side.

- First axle
- Service brake testing
- Rollers rotating or have stopped. (Direction arrow appears and graphics of wheels move once rollers have started rotating.)
- Automatic mode

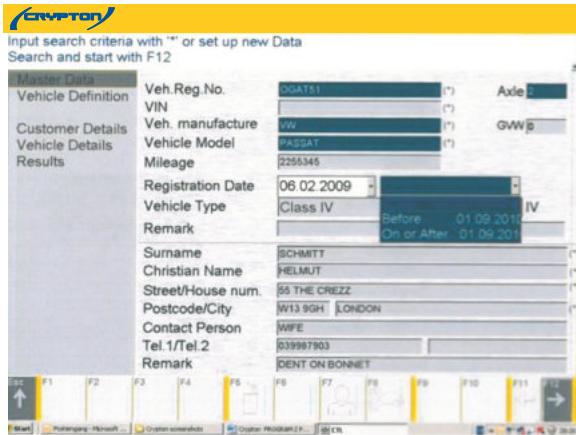
For manual testing, change to manual by pressing F4 once to bring up a hand sign indicating manual mode.

Buttons F2 and F3 can change the axle being tested manually.

- F4 changes from automatic to manual mode.
- F6 starts left roller only in manual mode
- F7 starts right roller only in manual mode
- F8 starts and stops both rollers only in manual mode.

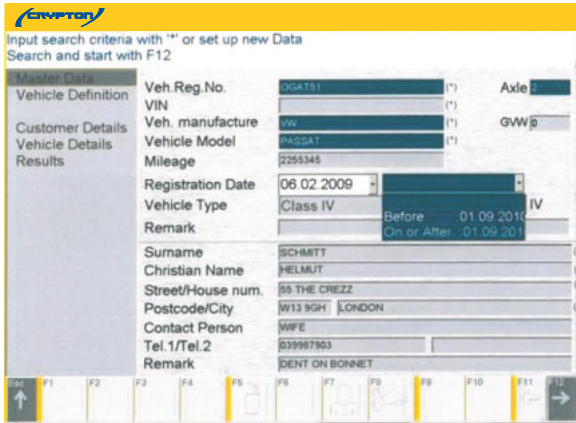
PROCEED TO SECTION 4 - AUTOMATIC TEST PROCEDURE

3.6 Without MTS entry



For a vehicle not previously tested, enter the customer data. Fields in dark blue are mandatory.

Other information is optional but can be useful for calling up this customer or vehicle in the future.



It is important to select whether the vehicle registration is before or after September 2010.



If vehicle is registered after 31 September 2010, select the type of vehicle according to the drop down box.



If the vehicle has a fixed line or front parking brake then this can be changed by clicking on vehicle definition. Default is as shown above and in most cases this screen does not need to be opened. This screen is also used to select a class VII is laden or unladen.

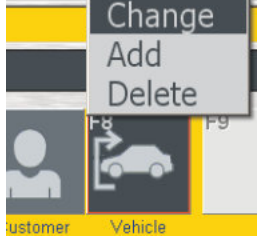
i Once Master data screen is saved with F12, further details can be entered in the sub-menus:

Ensure F12 is used to save each screen before progressing to the next sub-menu.

Once data input is complete return to 'Master Data' screen, and click F12 to proceed.

i The program assumes hand brake is on axle two, and the vehicle has a dual line braking system. If the vehicle to be tested differs from this, changes can be made under the 'vehicle Definition' menu. This sub-menu is only available after Master Data has been successfully saved with F12.

i If you need to change Car or Customer details, click F7 and/or F8 to amend. The program retains data from last customer & vehicle by default, click F7 and/or F8 to amend.



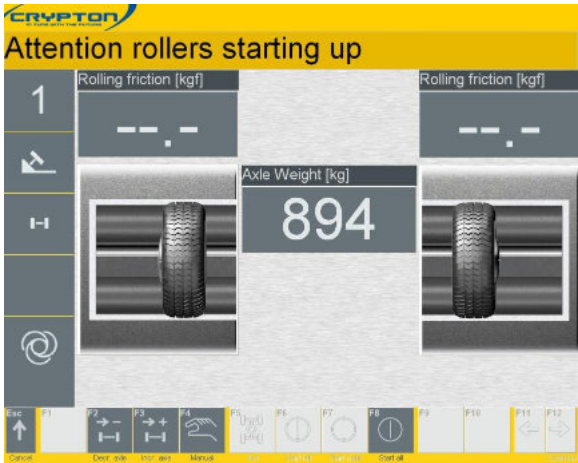
PROCEED TO SECTION 4 - AUTOMATIC TEST PROCEDURE

4. AUTOMATIC TEST PROCEDURE

Carefully drive onto the rollers, ensure your approach is straight.

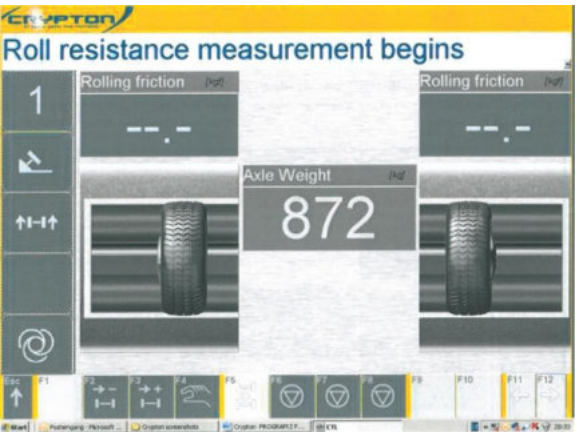
As soon as an axle drives onto the rollers of the brake tester, the display starts the brake test sequence. The rollers start to run and brake measurement of the vehicle can commence.

Straighten your position while rollers are turning if required. Always follow instructions on screen.



4.1 Rolling resistance, front axle

This test step checks the wheel(s) are running freely, i.e., to ensure a brake pad is not stuck etc Test time approx. 2 s.



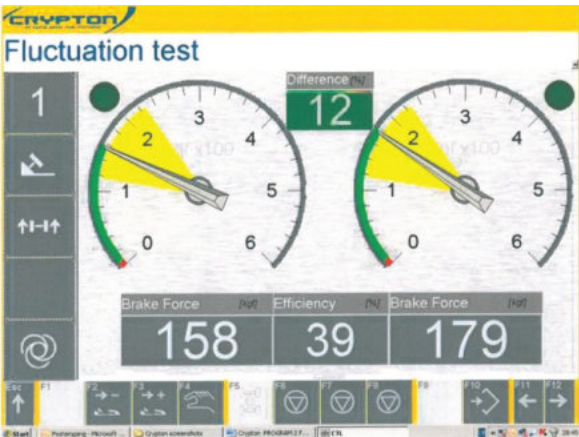
Both rollers will rotate at the same time. A short period after starting is given over to calculating the rolling resistance of the unblocked wheels on the axle. This is also the time to straighten up the vehicle in the rollers using the steering to help.

Do not brake!

4.2 Fluctuation Test



After the rolling resistance has been completed a shaded area is shown in which you are asked to brake to fluctuation test, at which time you should be checking the rate of increase. If you stay within the shaded area, you should not lock out the rollers. If you accidentally do lock out, then this procedure will start again

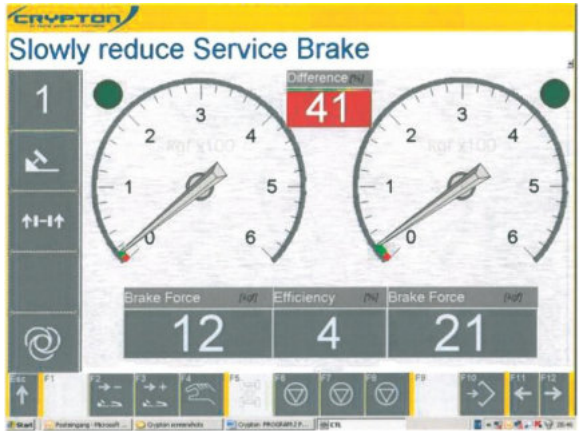


By holding the needles in the shaded area as steady as possible, a fluctuation test may be carried out.

The maximum difference during the whole procedure is indicated. The deceleration box is the percentage of deceleration shown during braking.

The fluctuation test will stay displayed for minimum 3 seconds but you may hold longer if you need to.

After 3 seconds a new instruction will ask you to reduce the service brake force.



You may reduce the service brake force to the rolling resistance red shaded area, checking for the rate of decrease.

4.3 Max Brake Force Test



Once the brake force has been released, you will be instructed to brake to maximum.

If the slip cut off limit is not reached by maximum brake effort, you can reduce brakes to approximately 50% of maximum, hold steady and the brake tester will stop after a period of approximately 10 seconds.

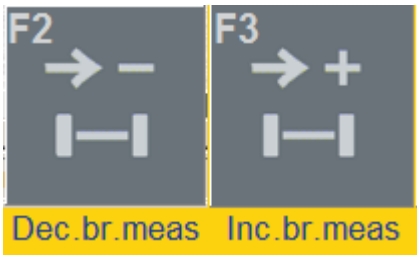
The highest Brake effort achieved during this step will be recorded by the program.



You may or may not slip lock out. If you do, the indicating green lights will come on otherwise you may brake to maximum and then release down to the rolling resistance to allow the rollers to stop, indicating the maximum reading but without slip lock out.

First Axle complete!

You may skip back, or forward, through the elements of a the test sequence on a particular axle using F2 and F3 - when key legends show 'Dec br meas' and 'Inc br meas' respectively.

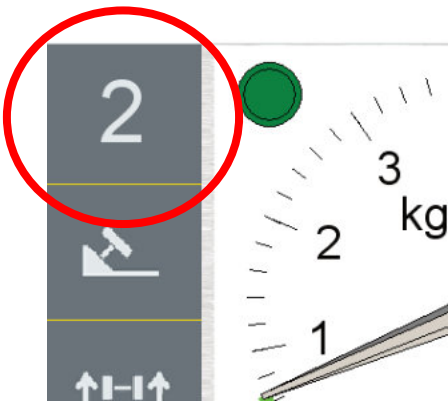


4.4 Testing the Rear Axle Brakes

The rollers will now start up again to assist you in driving out forwards for testing axle 2.

■ Drive out when prompted. Put next axle carefully into rollers.

NOTE
The change of axle number in the left hand information pane



i Axle can be decremented or incremented using F2 or F3 when key legend shows 'Decr axle' and 'Incr axle' respectively. If an error has been made or the axle has changed because the car has left the rollers this can be useful.

TIP:
It's often easier to restart the test where a false exit from the rollers has resulted in axle incrementation.



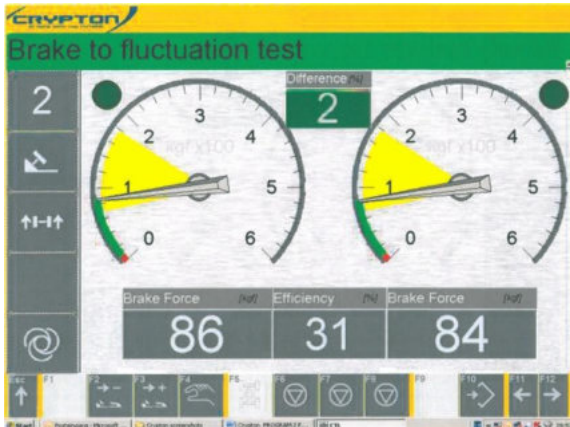
The rear axle service brake test is identical to that of the front axle.



Rear axle is in the rollers, axle weight is shown and they are about to start up



Rolling resistance is shown for both sides.



Apply service brake to fluctuation checking the rate of increase.

NOTE
That there is also an imbalance displayed on the second axle which is recorded at maximum braking for the MOT rear axle test results.

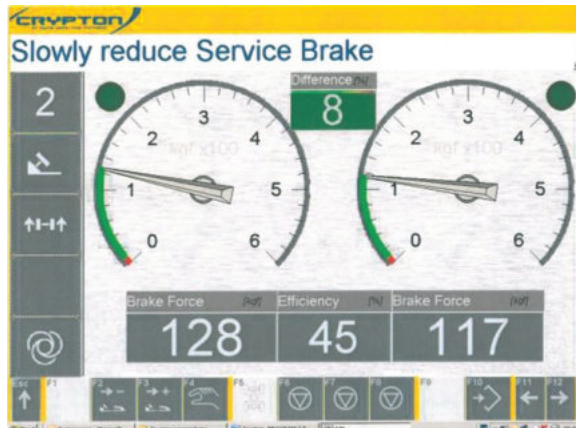
4.5 Testing the Parking brake (handbrake)

The Parking brake test will be requested during the MOT sequence, on the axle that was chosen at the data input stage.

The parking brake symbol is displayed on the left side of the screen. The parking brake should be off before the rollers start automatically rotating.



You are now in the area to carry out the fluctuation test.



Reducing the brake force and checking the rate of decrease.



After braking to maximum, either the slip lock out will happen indicated by green lights or once you have achieved maximum braking without any slip lock out, release completely and the maximum results without slip lock out will be shown.



With both rollers rotating at the same time, follow the instructions and brake gradually to maximum.

Due to the severity of some parking brakes, the vehicle could roll backwards out of the rollers before full braking has been achieved. If this happens the rollers will stop rotating. Let the vehicle roll back into the rollers by letting off the parking brake.

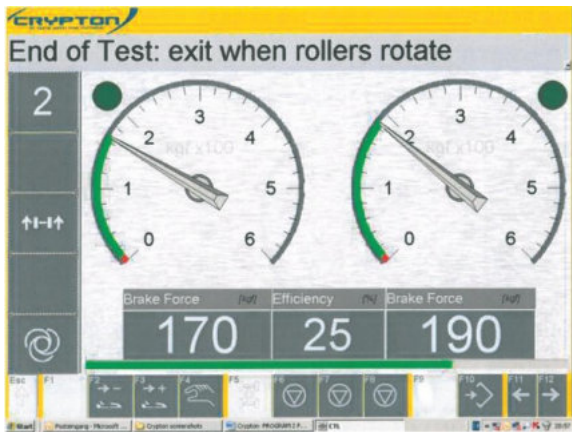
i Handbrake test is available for either the front axle or rear axle(s).

The Handbrake is assigned to axle 2 by default. This can be changed during data input. If the test for handbrake is selected for the front axle it will not appear on the rear axle, and visa versa.

i If the slip cut off limit is not reached by maximum handbrake effort, you can reduce brakes to approximately 50% of maximum, hold steady and the brake tester will stop after a period of approximately 10 seconds.

The highest Brake effort achieved during this step will be recorded by the program.

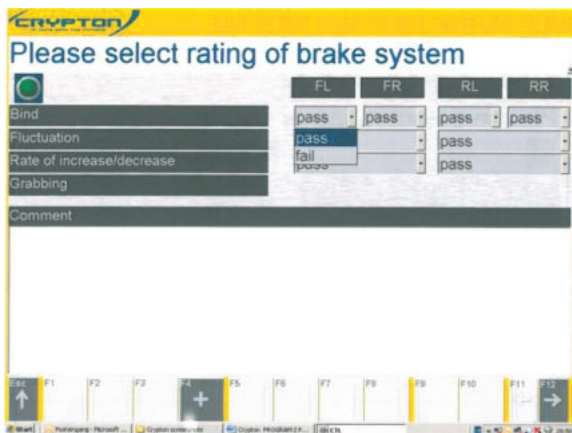
4.6 Ending the test



Once all measurements have been completed, drive the vehicle out of the rollers, apply the handbrake and go to the control unit.

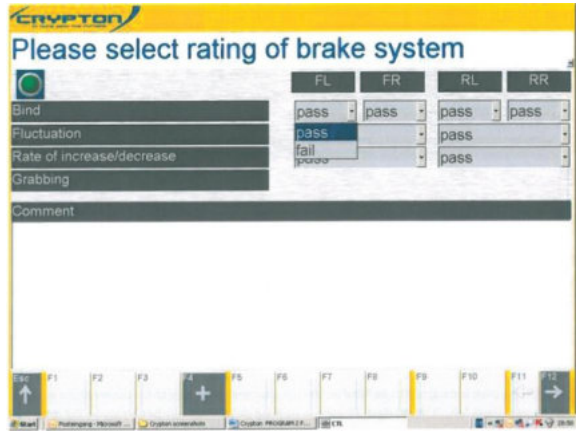
■ Click F12

4.7 Assessment



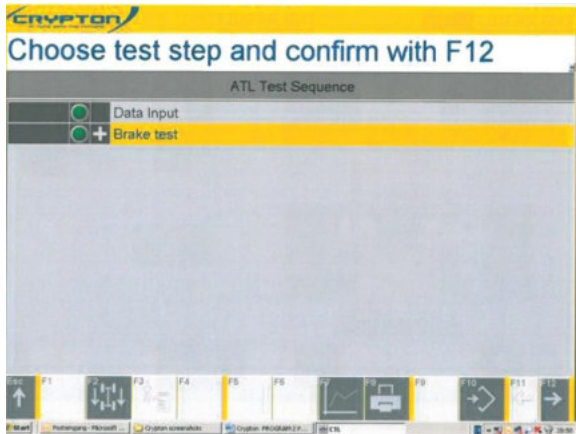
The ratings page is designed to be filled out by the examiner according to his observations during the brake test. Front left, FL, front right, FR etc can be filled out individually by clicking on the drop down boxes as pass or fail.

Alternatively, selecting button F4 will fill out all boxes as pass. Comments can also be written below, which will be shown and printed out on the protocol print out at the end of the test.



■ Selecting button F4 will fill out all boxes as pass. Comments can also be written below, which will be shown and printed out on the protocol print out at the end of the test. an 'All Pass' icon 'F4' is provided for quick finalisation of a satisfactory brake test.

■ Once the rating screen has been completed click F12.

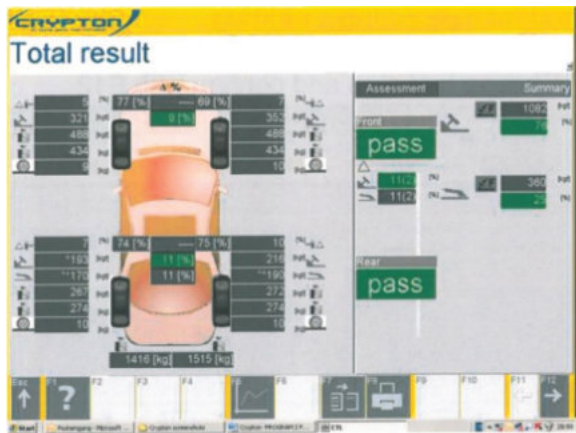


A plus sign next to the brake test means the vehicle has passed according to the criteria. A minus means a fail. There are many ways to view and examine the results as well as to print out various protocols.

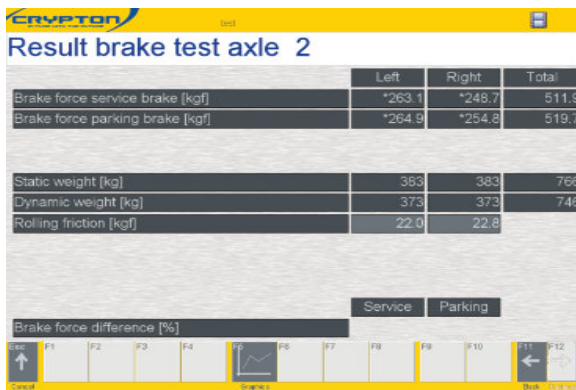
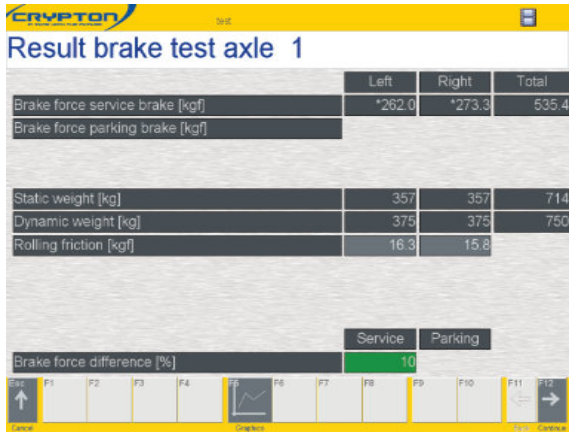
- View detailed results - 'F7', from here you can also view Graphs.
- Save the test - 'F10'
- Print - 'F8'

The following pages discuss these options in greater detail

4.8 Viewing Results



The total results of all information required for inputting into the MOT VOSA computer is shown in a pictorial form on this page. The individual wheel brake forces are shown at each station for service and hand brakes. The imbalance is shown at the front centre and the total weight at the rear of the vehicle. The assessment rating is shown further to the right and then far right is the summary of the total results. By placing the mouse over the imbalance results, one can read the exact brake force readings between each wheel where the maximum imbalance percentage occurred. Click F12 to see results of axle 1, and F12 again for axle 2. Graphs are available using F5 on these screens.



4.9 Some explanations of terms

- Rolling friction: This is the resistance force when the brake is not actuated, The values are dependent upon the axle weight and whether the axle is driven or not:
 - Non-driven wheels: <21 Kgf
 - Driven wheels: ,41 Kgf

An excessive difference may also indicate a fault and should be investigated during the course of the visual inspection, e.g. disc-brake calliper joint too tightly braced or blocked, brake piston seized up, faulty wheel bearing, etc.

- Ovality: (only shown on applicable test type) The maximum and minimum value over the wheel revolutions are measured for approx. 5 seconds (average peak-to-peak value). This is compared with the maximum braking force. This produces the result in percent, which is dependent upon the braking force at which the out-of-roundness was determined.

Values > 10 % indicates a worn brake disk or drum and should have been clearly perceived during braking. This out-of-roundness can be clearly seen as a wavy line on the graphic result screen (see "Graph of braking force versus time").

- Maximum braking force in Kilograms Force (Kgf): This is the maximum braking force for the measurement as a whole.

- Imbalance in %: The imbalance in percent is calculated from the relationship of the highest braking force Between the right and left-hand wheels of an axle to the maximum braking force.

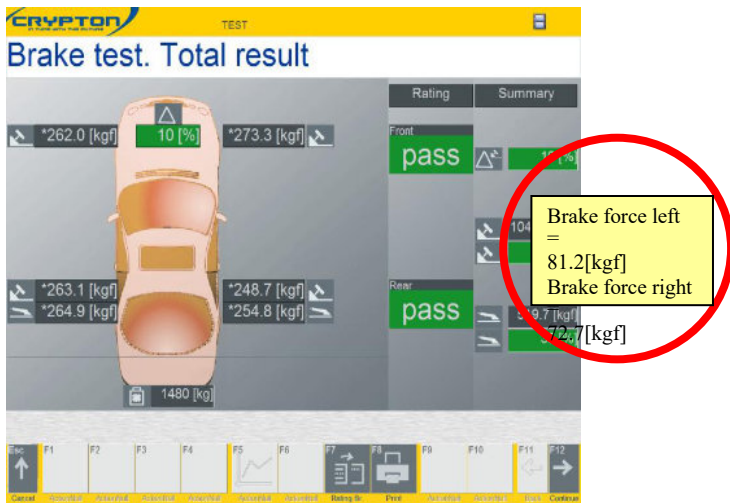
Imbalance (%) =
$$\frac{(\text{high_value} - \text{low_value}) \times 100}{\text{higher_value (L_or_R)}}$$

If the imbalance is above 20% it is useful to examine the braking force characteristic curve in the graph screen in order to determine the point at which large differences occur (at low or high braking forces), and where the fault might lie (e.g. poor performance or late response on one braking side).

Imbalance is checked throughout the range of brake force during the imbalance test, the highest imbalance value is automatically recorded by the program. However it is disregarded when the brake force from each wheel is less than 40 kg.

You can find the left and right brake efforts for the moment the highest imbalance occurred by holding the mouse pointer over the imbalance result field, shown on the 'Total results' screen.

A pop-up will appear showing the left and right brake forces



Braking efficiency by axle in %:
The braking efficiency of an axle in % is derived from the sum total of individual braking forces of the wheels divided by the measured axle weight (class IV) or the Gross Vehicle weight (class VII).

$$z_in_(\%) = \frac{\text{Sum: total brake forces left and right wheel (Kgf)}}{\text{measured_axle_weight_force(Kgf)}} \times 100$$

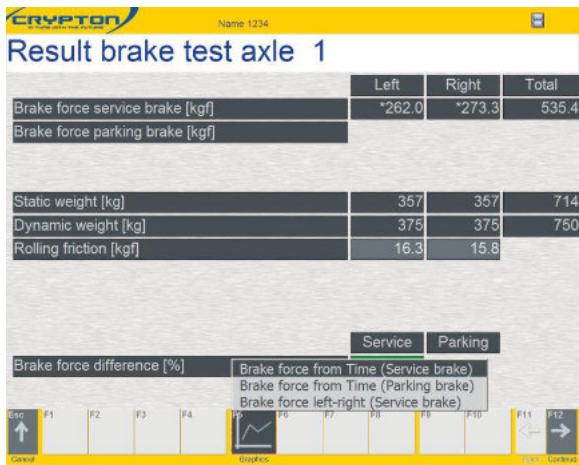
Overall braking efficiency in %:
The braking efficiency in % is derived from the sum total of individual braking forces divided by the vehicle weight, whereby the vehicle weight corresponds to the sum total of measured weight (class IV), or the entered Gross Vehicle weight(class VII).

$$z_in_(\%) = \frac{\text{Sum: total brake forces (Kgf)}}{\text{Vehicle weight}} \times 100$$

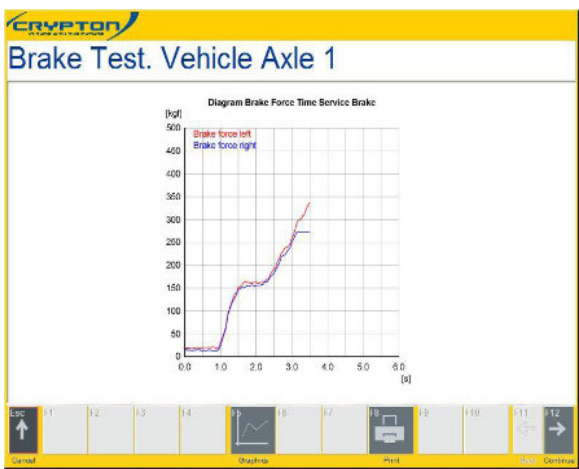
4.10 Graphs

i you may be required to agree to the Adobe SVG viewer licence when the program loads Graphs for the first time.

i **F12** and **F11** switch between the individual axles. ESC enables you to return back to the results screen.



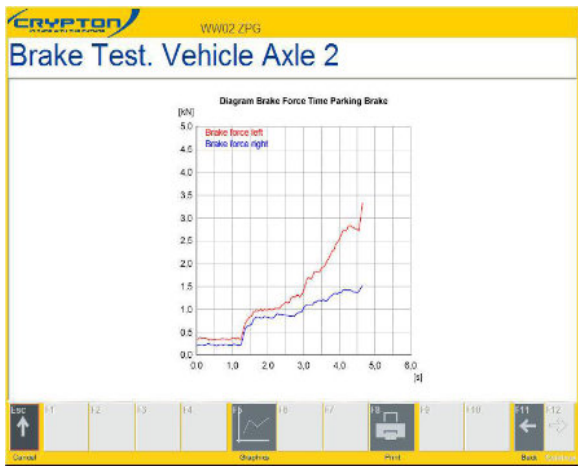
Press F5 from the results screen of axle 1 or two to view the Graphs.
Brake force from Time (service Brake).



The graph shows braking force over time. The left-hand side in red and the right-hand side in blue.

You can click F12 to view next axle, or F11 to return to previous.

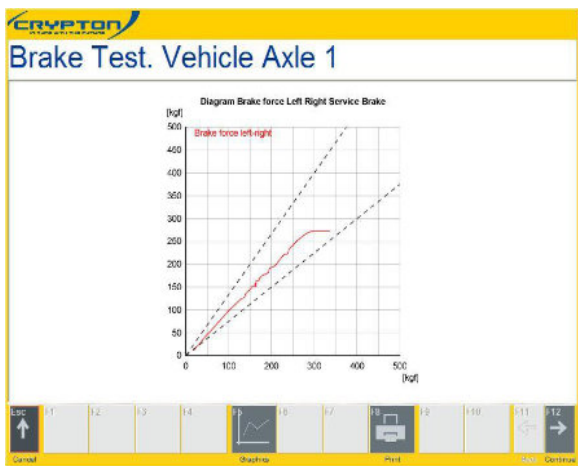
Brake force from Time (Parking Brake).



The graphics will show the parking brake over a period of braking time. The red line is the left side, and blue the right.

Brake force Left-Right (Service Brake)

The graphic will now show the brake force difference between the left and right wheels.



This graph displays the difference in braking force between the left and right-hand wheels. As far as possible, the curves should be regular and situated centrally. They indicate whether a vehicle pulls strongly towards the left or right (front axle) or tends to skid (rear axle) during braking. The dotted lines represent the preset maximum braking force difference.

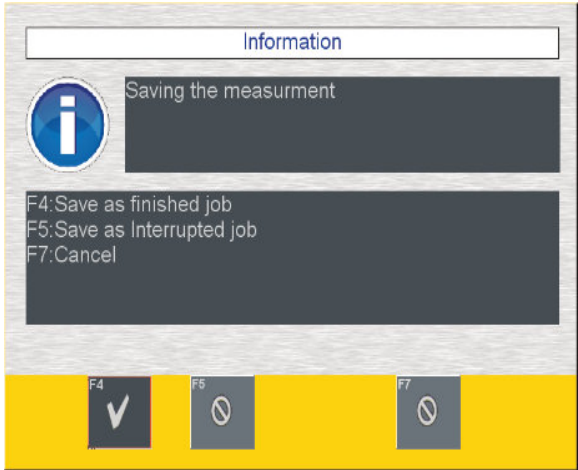
click F12 to view next axle, or F11 to return to previous.

i More Graphs are available by clicking F5 from within a Graph screen.

i All Graphs can be printed using F8 if required

4.11 Saving Results

Click F10 and the save dialogue box will be displayed.



- **F4 to save a completed test**
- **F5 to save an 'interrupted test'**
- **F7 to cancel the save.**

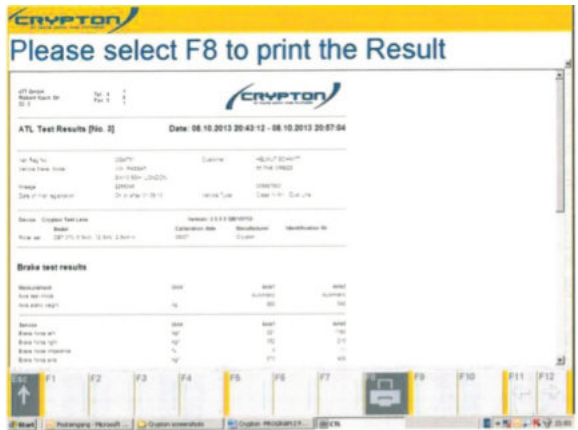
Saved tests can be viewed by clicking the 'Job' icon – F5, on the front screen of the program.

From here, Previous test results can be viewed or reprinted.

i an interrupted test can be completed at a later date or time.

4.12 Printing

- **Click Print – F8, a preview of the printout is loaded to screen**



- **Click F8 again to send the page to the printer. Further copies can be printed by clicking F8 as required**

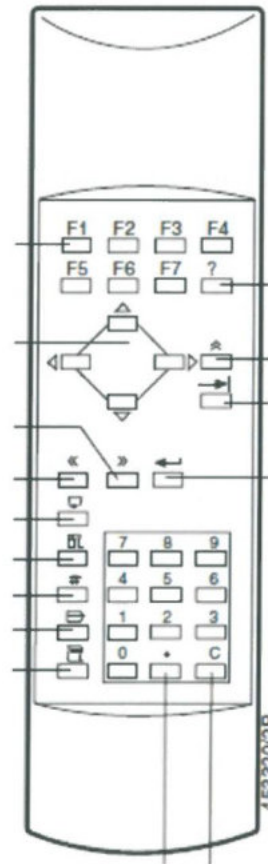
5. TESTING IN MANUAL MODE

The brake tester is supplied with an Infra-red handset to enable manual testing. This puts the control of the rollers with the operator.

This feature can be used to make a quick check of an individual braking component of the vehicle, or to test one element of the MOT test manually, i.e. handbrake can be tested against individual wheels manually, rather than per axle as in automatic mode.

i If any element of an MOT test is performed manually the final print will display the relevant axle was tested manually

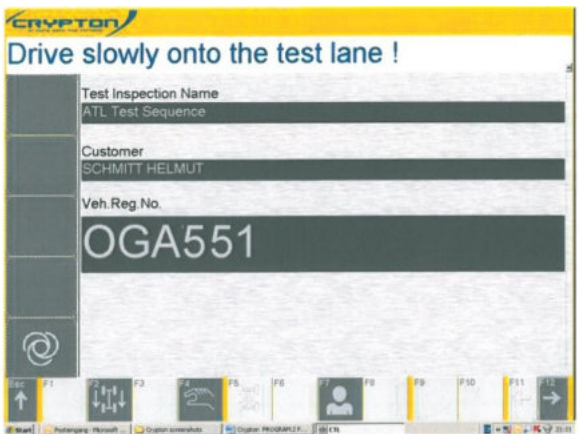
5.1 Handset



The following buttons are required to carry out manual testing:

- **F6: start left roller**
- **F7: start right roller**
- **F8: start and stop both rollers**
- **F4: to carry on in manual mode after stopping rollers**
- **F3: selects handbrake application on second axle**

NOTE:
No other buttons need to be used for carrying out a manual brake test.



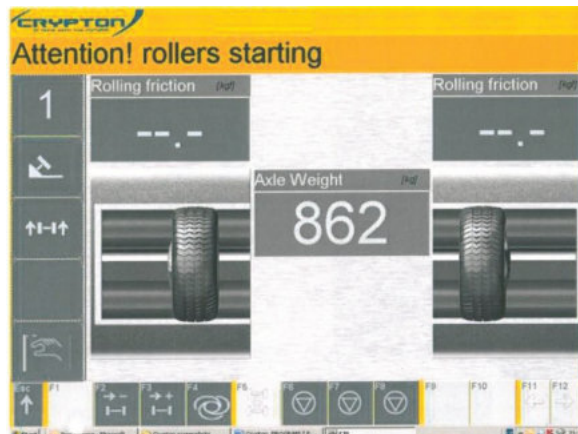
Input data and vehicle details as shown in the automatic procedure above, then select manual mode using the F4 button on the IR remote control. The screen above will be shown with the manual indication (hand) being shown in the bottom left information box. The vehicle can now be driven into the rollers:

i the rollers will not start until a command is given using the IR remote control.



Once the vehicle is in the rollers Press F8 to start both rollers together in order to straighten up the vehicle and start the rolling resistance readings. The left roller will always start up first in sequence.

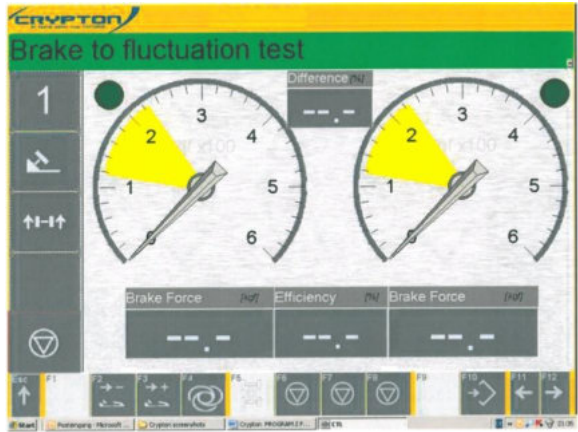
Press F7 to stop the right roller and carry out a manual test on the left side if you want to carry out single side testing or leave both rollers running to carry out testing on both rollers together.



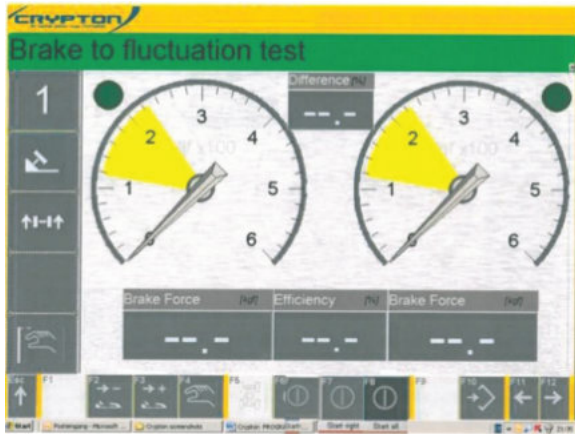
Rolling resistance is carried out and the vehicle squares itself up on the rollers



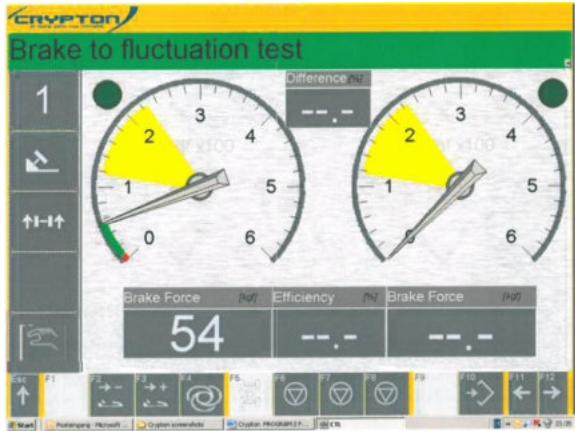
Once the rolling resistance is shown and the vehicle is squared, press F8 on the IR remote control to stop both rollers.



The indication that all rollers have now stopped will be shown on the left side in the bottom information box

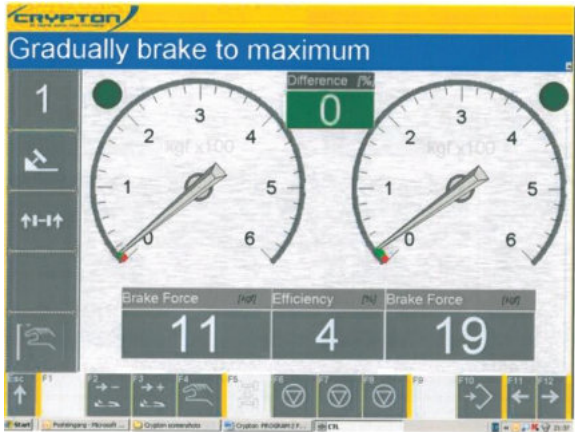


Press F4 on the IR remote control to resume testing in manual mode.



Brake to fluctuation either on left side or both rollers together. You are checking the rate of increase and then holding the needle within the yellow shaded area. After fluctuation test has been carried out, release the brake (s) so the needle drops to the bottom, checking the rate of decrease.

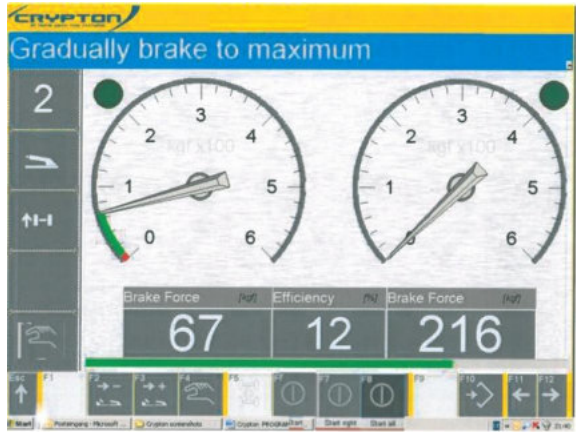
NOTE:
At any time you can manually carry out the fluctuation test by pressing F9.



Pressing F6 left side, F7 right side or F8 both sides, brake to maximum. You will either lock out with the green light illuminated or no lock out occurs in which case you can release the brakes and the roller(s) will stop giving the maximum reading. Otherwise you can press F10 at the maximum reading when the result will be recorded and the rollers will stop.



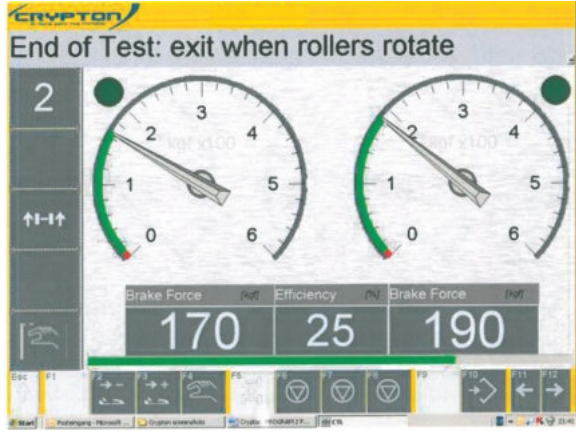
The procedure of testing axle 2 should be carried out exactly the same as for axle 1 i.e. carry out the following:
1. Press F8 start both rollers and achieve rolling resistance as well as straightening up
2. Press F8 to stop both rollers
3. Press F4 to select manual mode
4. Press F6 to start left side and brake to maximum
5. Press F7 to start right side and brake to maximum
6. Press F8 to start both rollers
7. Release brakes to bring needles down to zero



Press F3 to move from service brake to parking brake.

Start the rollers by pressing either F6 (left side), F7 (right side) or F8 (both together). Brake to maximum and lock out.

NOTE:
If the rollers do not lock out, release the handbrake slightly and the maximum brake force will be shown without lock out indication.



After driving out of the rollers the program will move onto the next page for evaluation of the tester's observations similar to the automatic test.

F8 selects the protocol print out to examine results or print them out.

F7 will give you a pictorial view of the results as well as gaining access to graphs of the test.

i In manual mode, any readings required for a test printout must be saved at the end of each measurement – use F10, or the appropriate handset key.

6. MOTORCYCLES TESTING (OPTIONAL ACCESSORY)

Testing of Class 1 vehicles (Motorcycles) is possible on both the CBT041 and CBT070 brake testers, with the addition of the relevant kit.

Part numbers
CMK041: Class IV Motorcycle test kit - for CBT041.

CMK070: Class VII Motorcycle test kit – for CBT070.

(Approved engineer installation ONLY)

For enquiries regarding the kit Contact UK Sales on 0121 725 1400
Email : Sales@cryptontechnology.com



Each kit includes a special roller cover plate (to suit the brake tester type), its purpose is to guide the motorcycle wheels during the test and also provides a safe base for the rider / tester to place their feet - safely away from the rotating rollers.

i Testers are required to apply for, and conform to the latest DVSA MOT regulations when testing motorcycles

i Motorcycles should only be tested with the respective class IV or class VII motorcycle testing cover plate fitted onto the designated testing roller. The other roller should be covered with the standard cover plate.

The rider / tester should not place feet or legs into the rollers during the test. Special foot-rests are provided on the motorcycle testing cover plate.

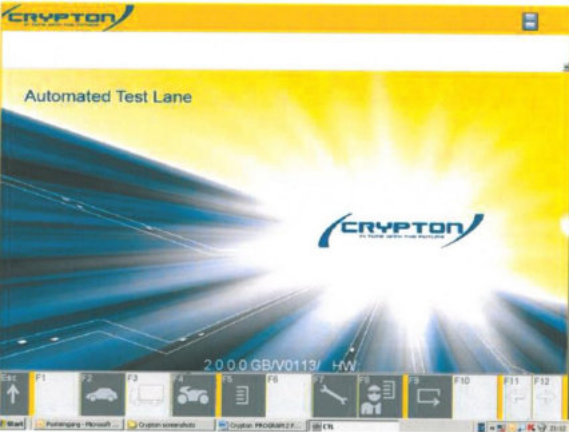
i Motorcycle testing should only be done in manual mode.

6.1 Procedure for testing Motorcycles

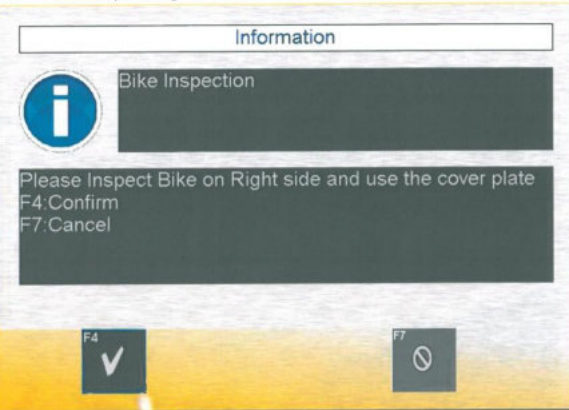
Fit special test cover to designated test roller, and put standard cover over the roller not to be used.

Use the switch fitted to the side of the control unit to put the Brake Tester into single wheel test mode

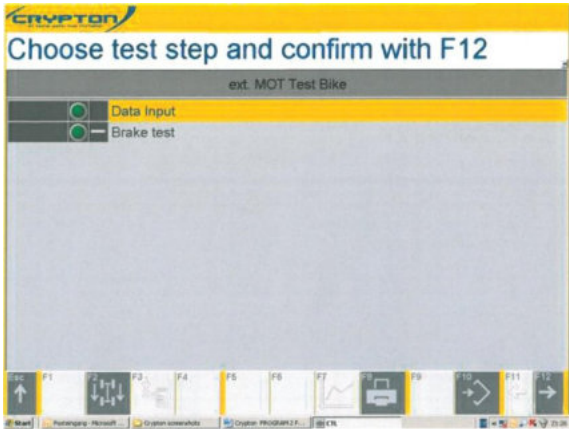
! This switch also serves as the emergency stop in single wheel mode



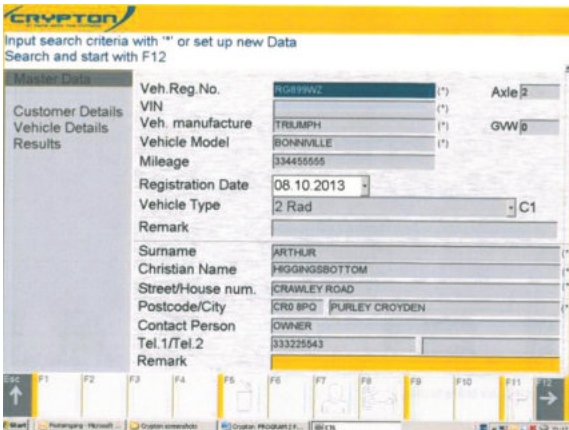
Select F4 to switch to motorcycle testing mode. Note the hand symbol in the left hand information bar to confirm.



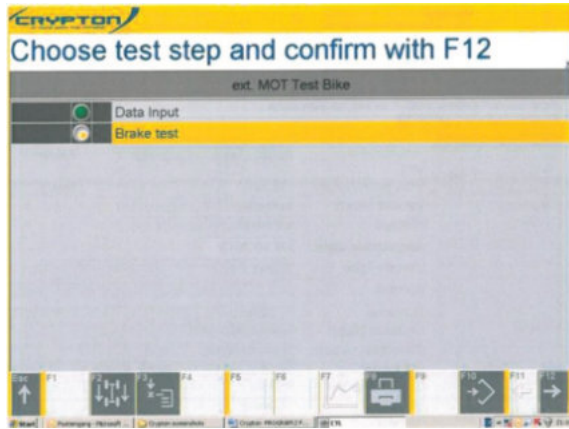
Select F4 to agree with the information shown



Select F12 for data input



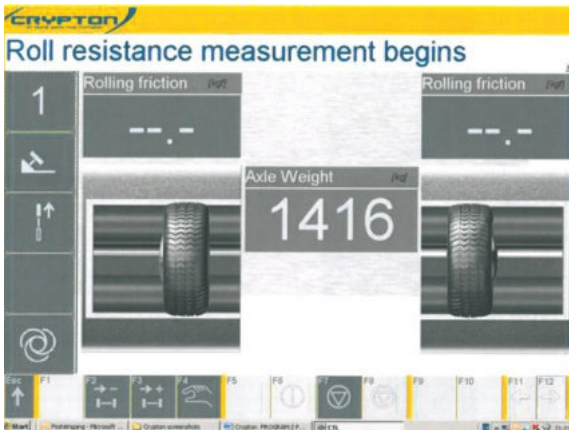
Fill out the fields required and select F12



Select F12 for to start brake testing

Drive the motorcycle carefully onto the roller, ensure a straight approach. Vehicle weight is automatically recorded.

! The rider / tester should place feet on special testing plate's footrests.



Using the remote control, start the roller by pressing F6 (left) or F7 (right) as required.

Roll resistance test begins and the axle weight is displayed.

Straighten up the bike if required.



Apply brakes **slowly** to maximum, Check for Judder and bind.

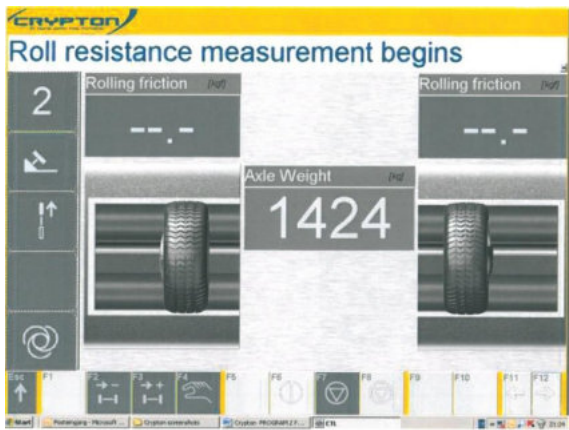
If maximum braking effort cannot achieve automatic slip shutoff stop the rollers manually using the relevant handset button or screen icon.

Save the reading (if required) using F10, or the relevant handset button.

Drive carefully out of the brake tester.

6.2 Rear Wheel Testing

Drive the rear wheel carefully into the roller and repeat steps as for front wheel.



Rear wheel rolling resistance starting

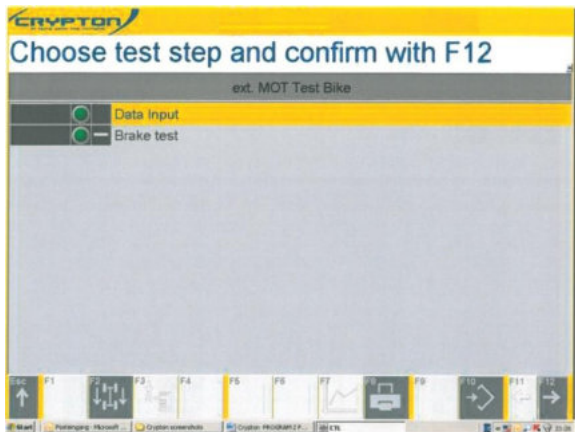


Apply rear brake to maximum

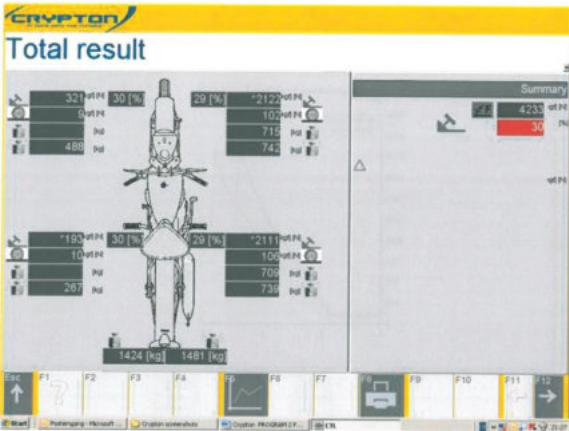


Save results with remote control F10 once maximum is achieved. Then press the associated button to start rollers to drive out.

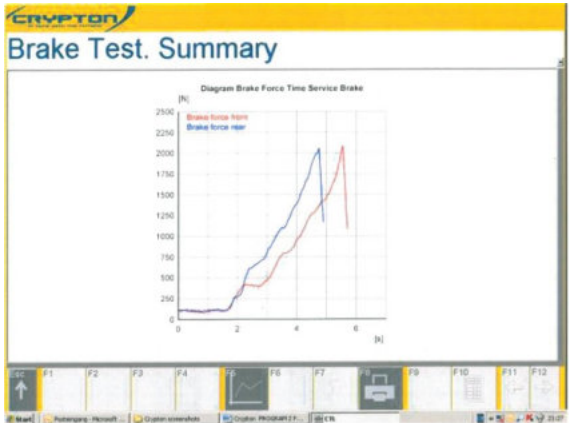
Ending the test



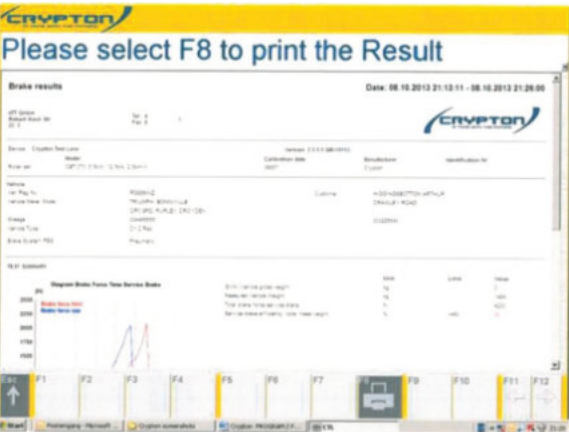
At the end of test, press F 12 to view the results



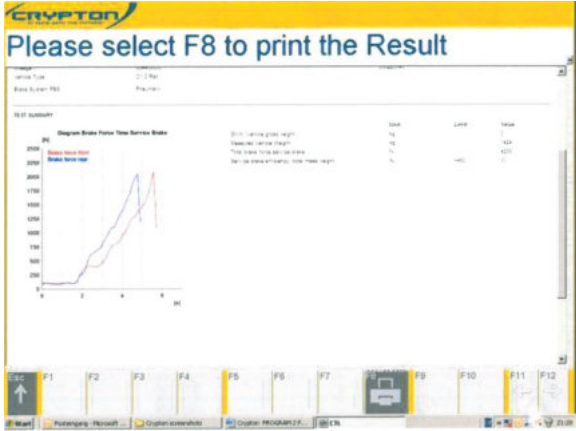
Press F6 for graphs



Press F8 once for protocol results with graph



Scroll up or down to view protocol with graph



Press F 8 once more to print out protocol with graph. Press Esc to return back to total test result

If results were saved during the test, a printout can be obtained. Otherwise brake efforts can be taken from the screen during the test.

The program will not offer an assessment screen to rate the braking for a motorcycle test. Assessment and final pass or fail result is left to the discretion of the tester.

Don't forget to set the switch back before testing class IV or class VII

7. FOUR WHEEL DRIVE (OPTIONAL ACCESSORY)

Testing of brake effort on suitable four wheel drive vehicles is possible on both the CBT041 and CBT070 brake testers, with the addition of the relevant kit.

Part number: **CBT000-4WD.**

(Approved engineer installation ONLY)

For enquiries regarding the kit Contact UK Sales on 0121 725 1400 or email sales@cryptontechnology.com

IMPORTANT
Refer to the manufacturers data and information to confirm a vehicles suitability for testing. In particular the correct tyre condition, type of tyre, pressure and profile depth.

All testing must be done strictly in accordance with the instruction of the Manufacturer.

Testing of some permanent four wheel drive systems may not be possible. Always refer to manufacturer's information

Due to the influence of torque split some four wheel drive systems may not be measured precisely. Always refer to manufacturers' information

7.1 Procedure for testing four wheel drive vehicles

Enter the vehicle details as previously described for the standard test and proceed to 'brake test'.



Select F5 when the icon legend displays 4x4

The four wheel drive test sequence will run much like the standard test described earlier in the manual.

However, each wheel is tested individually. The Rollers drive the wheels in a contrary motion.

Only the forward driven wheels brake effort is measured. Left side is tested first, followed by right.



NOTE:
The right side information pane shows an icon to indicate contrary motion of the rollers.

Follow on screen prompts until the test is complete.

8. CALIBRATION

Calibration must be carried out by an approved person.

For service contract options and further information contact Crypton Sales on 0121 725 1400 or email sales@cryptontechnology.com

9. ERROR MESSAGES

i Some errors are produced due to a 'one-off' event during a test (i.e. vehicle vacated rollers during test)

Contact Crypton Product Support to report an error that has not cleared, or relates to potential component failure, or for any further assistance.

9.1 Error Codes

Error code 00 05 *

During the zero balance adjustment, the left or right touch roller limit switch was closed. Cause:

- Vehicle in roller set during zero balance adjustment.
- Connecting line between inductive sensor and wiring box defective
- Inductive sensor defective

Error code 00 10 *

Test stand is set to RH/LH running operating mode and the speed switch to 5 km/h. This mode of operation is only permissible for 2.5 km/h, since this is an uncontrolled RH/LH running which must not be used for passenger cars (5 km/h).

Error code 00 11 *

During self test 1 hardware components are initialised and the CPU control card A1 is initialised. Cause:

- Control card A1 defective.

Error code 00 20 *

If the brake force for cars > 15.5 Kgf and for trucks is > 76.5 Kgf within the last 2 seconds before the measurement final values then the braking action was too fast and the measurement is not correct.

Error code 00 21 *

Checksum Error

- flashing not completed or interrupted
- EPO flash device broken

Error code 00 22

When switching on an error on the EEPROM is determined. Cause:

- There are no values in the EEPROM after changing PCB

Remedy:

- Confirm error with "C"
- Use the configuration menu step 59, accept and save basic values

Error code 00 23 *

Mistake when reading the EPROM. Cause:

- No EPPROM fitted
- EEPROM defective.
- Control board A1 defective..

Error code 00 24 *

Mistake on writing the EPROM. Cause:

- No EPPROM fitted
- EEPROM defective.
- Control board A1 defective

Error code 00 25 *

User problem with the remote control. Wrong values have been entered.

Error code 00 27 *

Timeout when writing the EPROM. Cause:

- No EPPROM fitted
- EEPROM defective.
- Control board A1 defective

Error code 00 29

System failure

Error code 00 30 *

The measuring value has exceeded a maximum permissible measuring value in the measuring range „passenger car“. If this value is exceeded, the roller set is deactivated for safety reasons. Cause:

- Inspection of a truck in the passenger car mode

Error code 01 01 *

Weight varies by more than 3%

Error code 05 00 *

Start-up locking protection or no turning signal from touch roller when activating the motors. Cause:

- Vehicle brake not released
- Inductive sensor defective
- Printed circuit board A1 defective

Error code 05 30 *

When switching on the unit, the left/right touch roller limit switch was closed. Cause:

- Vehicle in roller set when switching on.

Error code 10 05

When switching on the test stand the STOP button was pressed at the same time.

Error code 10 15 *

When switching on the configurations menu did not recognise the printer. Cause:

- Printer has not been configured properly
- Defective printer cable
- No printer installed
- Defective printer

Problems with the weighing scales

Error code 10 30 *

No signal from the left weighing sensor. Cause:

- Weighing scales are activated in the configuration menu but are not installed.
- Break in the sensor wires.
- Defective weighing scales on the left side is probably not the case as there are four sensors on the left side which produce an overall signal.

Error code 10 31 *

When switching on there is no Cal-Check function on the left side of the scales. Cause:

- Sensor leads are defective
- Cal-Check leads are damaged or broken

Error code 10 32 *

Scales left are not calibrated.

Error code 10 35 *

On switching on the Zero point of the left scales according to the EEPROM is compared to the actual physical weight. If the difference is too high, this error code will appear. Cause:

- Scales are not calibrated
- Vehicle is on the test bench or in the left rollers

Error code 10 40 *

No signal from the right weighing sensors. Cause:

- Scales are activated in the configuration menu but physically not installed.
- Damaged sensor lead
- Right scales are defective which is probably not the case as there are four sensors on the left side which produce an overall signal.

Error code 10 41 *

On switching on there is no Cal-check function on the right scales. Cause:

- Defective sensor lead.
- Cal-Check lead is damaged

Error code 10 42 *

Right scales are not calibrated.

Error code 10 45 *

On switching on the Zero point of the right scales according to the EEPROM is compared to the actual physical weight. If the difference is too high, this error code will appear. Cause:

- Scales are not calibrated
- Vehicle is on the test bench or in the right rollers

Problems with the Inductive sensor

Error code 11 00 *

No signal from the left touch roller Cause:

- Roller set is activated in the configuration menu but physically not installed.
- Inductive sensor is defective
- Sensor leads are damaged or broken
- The gap between the induction sensor and the touch roller is >3mm

Error code 11 05

No signal from the left switch Cause:

- Roller set is activated in the configuration menu but physically not installed.
- Inductive sensor is defective
- Sensor leads are defective
- The gap between the inductive sensor and the cam switch is >3mm

Error code 11 10 *

No signal from the right touch roller. Cause:

- Roller set is activated in the configuration menu but physically not installed.
- Inductive sensor is defective
- Sensor leads are damaged or broken
- The gap between the induction sensor and the touch roller is >3mm

Error code 11 15

No signal from the right switch. Cause:

- Roller set is activated in the configuration menu but physically not installed.
- Inductive sensor is defective
- Sensor leads are defective
- The gap between the inductive sensor and the cam switch is >3mm

Error code 11 16

The safety blocking device for the roller set has been activated 3 times in succession.

Cause:

- Vehicle is on the rollers with blocked brakes.
- The inductive sensor is defective: check the switch gap and the wiring.

Error code 11 40

No signal from the left roller rot. speed sensor.

Cause:

- brake in the cable

Error code 11 45

No signal from the right roller rot. speed sensor.

Cause:

- brake in the cable

Problems with the radio control sensors

Error code 14 10 *

No RC communication to the receiver on the control board A8.

Cause:

- The RC module is activated in the configuration menu but is not connected
- Wrong DIP switch position on the control board A2 S1
- The control board A8 is defective

Error code 14 20 *

No signal from the pressure sensor Pm (RC version) during the measurement.

Cause:

- Pressure sensor Pm is activated in the configuration menu but is not installed.
- Pressure sensor is defective
- Accu is discharged

Error code 14 30 *

No signal from the pressure sensor Pz (RC version) during the measurement.

Cause:

- Pressure sensor Pz is activated in the configuration menu but is not installed.
- Pressure sensor is defective
- Accu is discharged

Error code 14 40 *

No signal from the brake force meter (RC version) during the measurement.

Cause:

- Brake force meter (RC version) is activated in the configuration menu but is not installed.
- Brake force meter is defective
- Accu is discharged

Problems with pressure sensors (cable version)

Error Code 15 01 *

After switching on the unit the pressure sensor pm (cable version) compares the actual pressure with that from the e prom. The error will occur If the difference between these two readings is greater than 0,15.

Cause:

- Pressure sensor pm (cable version) is activated in the configuration menu but is not connected
- Pressure sensor pm (cable version) is not calibrated
- Pressure sensor pm (cable version) is charged while switching on

Error code 15 02 *

No signal from the pressure sensor pm (cable version).

Cause:

- Pressure sensor pm (cable version) is activated in the configuration menu but is not connected
- Pressure sensor is defective
- Sensor leads are defective

Error code 15 03 *

Pressure sensor Pm (cable version) not calibrated.

Error code 15 06 *

After switching on the unit the pressure sensor pz (cable version) compares the actual pressure with that from the e prom. The error will occur If the difference between these two readings is greater than 0,15.

Cause:

- Pressure sensor pz (cable version) is activated in the configuration menu but is not connected
- Pressure sensor pz (cable version) is not calibrated
- Pressure sensor pz (cable version) is charged while switching on

Error code 15 07 *

No signal from the pressure sensor pm (cable version).

Cause:

- Pressure sensor pm (cable version) is activated in the configuration menu but is not connected
- Pressure sensor is defective
- Sensor leads are defective

Error code 15 08 *

Pressure sensor Pz (cable version) not calibrated.

Problems with the control board

Error code 19 00

Power supply of 12V DC for sensors is not available

Cause:

- Control board A1 is defective.
- Short circuit in the sensor connections

Error code 19 10

Reference voltage VREF is not available for the control board A1. This voltage is necessary for the AD converter to work properly.

Cause:

- Control board A1 defective.

Error code 19 20

24V AC for the contactor control is not available.

Cause:

- Control board A1 defective.
- Fuse F2 defective
- Trafo T1 defective.

Error code 19 30 *

No CAN-Bus communication under the control boards is possible.

Cause:

- A PCB board is defective.
- CAN load resistor is not installed.
- CAN leads are defective.

Error code 19 40 *

Battery cell on the control board A1 is not installed or discharged.

User Problems

Error code 20 20 *

A single limit switch on one of the rollers has been pressed longer than 5 seconds.

Cause:

- Vehicle is not correctly situated on both rollers.
- One of the limit switches is defective

Error code 20 25

When the equipment was switched on, the function EINRICHTEN >0< was pressed

Problems with the Brake Force Sensor

Error code 25 00 *

No signal from the left brake force sensor.

Cause:

- Roller set configurations menu is activated but it is not connected
- Left brake force sensor is defective
- Sensor lead is defective

Error code 25 01 *

When switching on there is no Cal-Check function of the brake force sensor on the left side.

Cause:

- Roller set is activated in the configurations menu but is not installed.
- Sensor leads are damaged or broken.
- Cal-Check connections (leads) are broken

Error code 25 02 *

Left brake force sensor is not calibrated.

Error code 25 05 *

After switching on the equipment the zero point for the left side brake force on the e prom is compared with the actual existent brake force. The error code appears when the difference is too high.

Cause:

- The roller set is activated in the configurations menu but is not connected
- The left brake force sensor is not calibrated
- While switching on the equipment the left brake force sensor was activated

Error code 25 10 *

No signal from right hand brake force sensor.

Cause :

- The roller set is activated in the configuration menu but is not connected
- The right brake force sensor is defective
- The sensor leads are defective

Error code 25 11 *

When switching on there is no Cal-Check function of the brake force sensor on the right side.

Cause:

- Roller set is activated in the configurations menu but is not installed.
- Sensor leads are damaged or broken.
- Cal-Check connections (leads) are broken

Error code 25 12 *

Brake force sensors are not calibrated.

Error code 25 15 *

After switching on the equipment the zero point for right side brake force on the e prom is compared with the actual existent brake force. The error code appears when the difference is too high.

Cause:

- The roller set is activated in the configurations menu but is not connected
- The right brake force sensor is not calibrated
- While switching on the equipment the right brake force sensor was activated

10. AFTER SALES SERVICE

Apart from the routine maintenance and adjustments stipulated in this manual the equipment must not be tampered with in any way.

All further servicing must be carried out only by an engineer from an Authorised Agent. Failure to observe these conditions will invalidate the Guarantee.

On-Site Service / Overhaul / Spare Parts

If you require a Service Engineer to attend ON SITE, either due to an equipment fault, or for machine calibration, or if the equipment covered by this manual requires to be sent back for factory overhaul, or if you need spare parts, please contact our Product Support Department

■ **Outside UK mainland**
Service for export customers are provided by the agent from whom your equipment was purchased.

■ **UK After-Sales Service**
Call Crypton Support for details of local service agents.

■ **Technical Information**

Crypton also provide information and contracts covering:

■ Car Data, Fault Code Information, Diagnostic Information, Software Support Contracts, Software Updates & Accessories.

11. CONTACT DETAILS

■ **SALES**

Tel: 0121 725 1400
Email: sales@cryptontechnology.com

■ **SUPPORT**

Tel: 0121 725 1366
Email: support@cryptontechnology.com

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E & O E. The Company reserves the right to introduce improvements in design or specification without prior notice.

The sale of this product is subject to our standard terms, conditions and relevant product warranty.

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