Quality Test Lanes
ENERGOTEST

ENERGOLINE®5

SOFTWARE

operating

manual

Developed by: Energotest Ltd.

Valid from: 11.11.2013

Energoline5 Version: 5.0.6.4785 or higher

www.energotest.eu

TABLE OF CONTENTS

1 Launch of the program

1.1 PC configuration for ENERGOLINE software

- All parts of the computer (including printer) should be installed and work properly
- All necessary protective adjustments (tools) should be installed
- **Protection of PC and data is responsibility of the customers/users.** This includes;
  - archiving
  - refreshing the protection, critical errors of operating system
  - use of antivirus programs and its actualization
  - use of any kind of firewall
- It is recommended to connect PC to the uninterrupted power supply unit (UPS). Inappropriate power supply can lead to hidden errors.
- **The recommended minimal PC requirements**
  - 2 GHz processor
  - 512 MB RAM
  - 40 GB hard disk
  - VGA 800*600, 16 bit video card
  - Keyboard and mouse
  - Network card with 100 Mbit/s speed (for computer network or the printer which works through network)
  - Reliable internet connection (in case the program is connected to authority or official programs)
  - Colour monitor SVGA or TFT (minimal size 17"), keyboard, mouse
  - USB port: the number depends on connected equipment, but minimum 1 port has to support for the measuring system
  - USB port for printer (in case of using local printer, this port is unnecessary in case of network printer)
  - Printer: coloured or black and white, desk jet or laser jet
  - Licenced Windows should be installed on computer.
    - Windows 2000,
    - Windows XP Professional (SP3)
    - Windows 7 Professional or Home version (32 or 64 bit).
    - Windows 8 Professional or Home version (32 or 64 bit).
  - **Windows Vista and Windows Starter** versions are not tested and not used with Energoline5 software.

1.2 Additional software

In order to work with *ENERGOLINE*®*5* databases **ComSrv.exe** program should be started first. The

comSrv.exe software can be seen as: ComSrv
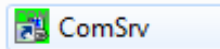
- Program file is located in *ENERGOLINE*®*5* folder. ComSrv.exe should be started before *ENERGOLINE*®*5*.
- The program can be take into the Startup menu in order to start automatically, when computer starts to work. It is recommended to set up it to work in minimized (tray) window.
- The work with program can be finished only after work with *ENERGOLINE*®*5* is finished. The ComSrv software not necessary to close. The windows can close this software on Windows SwitchOff/ ShutDown procedure.
- Completion of work with ComSrv.exe:
  ◦ click right button of the mouse on the program icon at the "taskbar"
  ◦ select "Close Alt+F4" option,
  ◦ choose "YES".

2 ENERGOLINE®5

2.1 General Information

- ENERGOTEST Kft, (2330 Dunaharaszti, Gomba u. 4, Hungary) possesses all of the rights of *ENERGOLINE®5.*

- *ENERGOLINE®5* software is developed by Energotest Kft, Hungary

- Database used by *ENERGOLINE®5* software is developed by ENERGOTEST Kft. Hungary, and controlled by **ComSrv.exe** program.

- *ENERGOLINE®5* software works in network mode, however it can be used in a standalone computer too.

- Because of the network mode the inspection stages can be made in different parts and differ by time (administration, measurement, analysis of inspection, print out of documents).

- On one workstation only one vehicle inspection can be made at the same time, but the system can work simultaneously with several vehicles and store their data, if the system has more than one working spots (workstations).

- *ENERGOLINE®5* saves all measurements and results and there is no possibility to delete any measurement and results.

- *ENERGOLINE®5* fulfill the WELMEC 7.2 software guide directives for protection level C. (*ENERGOLINE®5* software protects its executable files, parameter files, data files and communication from accidentally, intentional or unintentional changes)
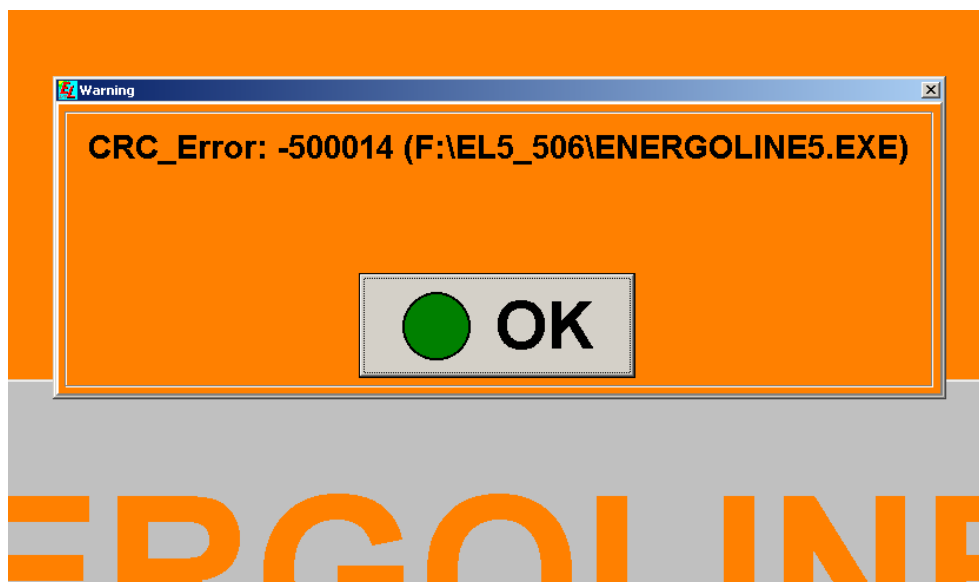
2.2 Modules

2.2.1 Starting window

After the program start up, the next window appears:

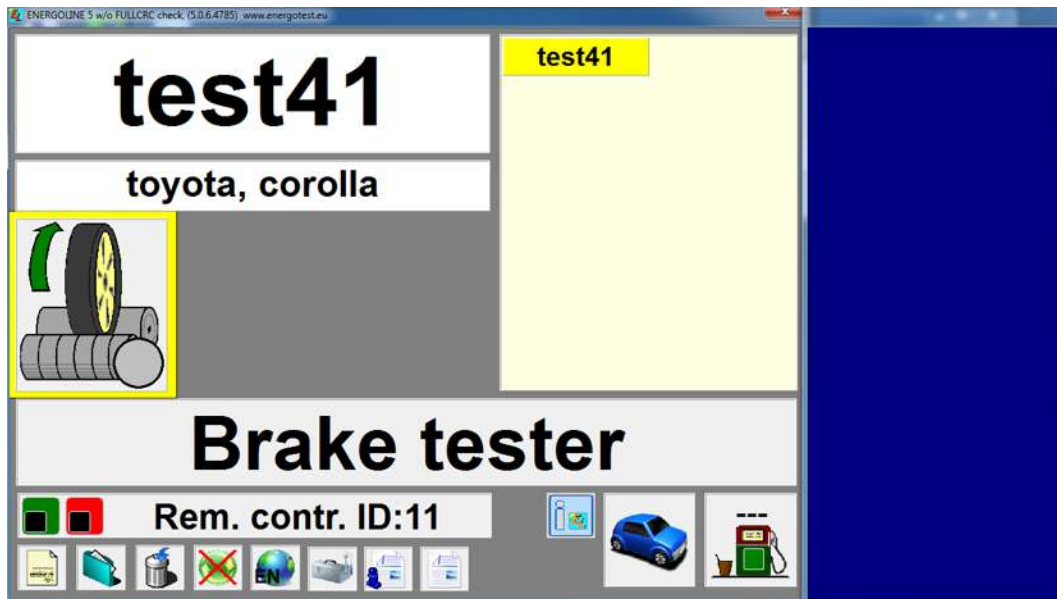In the orange window you can see which tasks are executed during the program loading.

ENERGOLINE®5 checks its integrity (checks the CRC values of files). If this check is failed, the software exits.

CRC error message after checking integrity

2.2.2 Main screen

After all starting tasks are executed, the main window appears.

The ENERGOLINE software aligned its screens to the monitor resolution. The screens has 4:3 ratio, and it is kept always. The remaining part of the monitor is covered by a blue window. It can be on the right side or under the ENERGOLINE window.

Let see the parts of the main screen:

2.2.2.1 Main window: vehicle data

At the upper left corner you can see the registration number of the selected vehicle. Below it the manufacturer and the type of the vehicle can be seen.
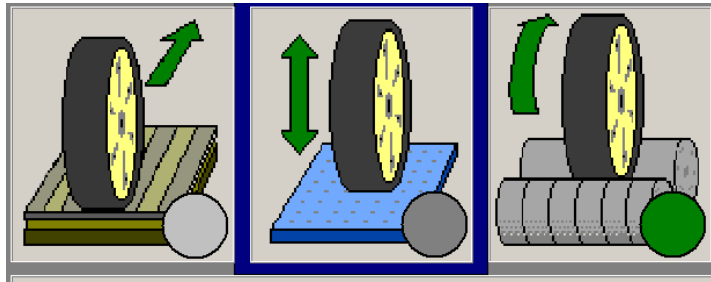

2.2.2.2 Main window: measurement types

In the middle of the main window you can see the measuring equipment icons. ENERGOLINE can handle any number of installed measuring equipment, and the installed ones have icons in this area. Here is an example a one equipment installation

In this installation 3 measuring equipment are installed.

Measuring equipment selected for measurement starts blinking in the yellow-blue frame. It blinks for 10 seconds (aiming the driver to detect the selected equipment). After the blinking period it becomes blue.

Another test equipment can be chosen by red (F2) button on the remote controller or on the keyboard with F2 key or a mouse click on the icon (but the click starts the test screen automatically).

The test can be started by choosing green (F3) on the remote controller or on the keyboard with Enter or F3 key or a mouse click on the icon.

Coloured circles located at the lower right side of the icon show the assessment of test result of the equipment:

- Green light means that the test is passed
- Red light means that the test is failed
- Light grey colour means that the transport has not been tested yet
- Dark grey colour means that the test is done but the results should not be valued
  The name of the chosen test type is shown under the icons.

2.2.2.3 Main window: list of vehicles

In the upper right side you can see the list of the registration numbers of those cars which are already registered and can be tested in the program.

AA2172CE	31408KB
42251KA	49147KA
AA2814AI	AA0489IC
kdc961	kdc961_2
kdc9613	

Registration numbers are highlighted with different colours.

- Light grey colour means that car is not selected in any workstation.
- Yellow colour means that the vehicle is already selected for measurement in one workstation, but the test has not been conducted yet. This vehicle cannot be selected on another place for testing.
- Red light means that the vehicle is already being tested.

The vehicle can be selected by click the left mouse button on the registration number panel in the list. After it is selected the registration number and car manufacturer and type will be shown on the left side of the main window, while in the list the registration number will be highlighted with yellow colour.

2.2.2.4 Main window: Remote Controller (RC) status

The program can be controlled by a RC. Several working stations can be installed in one system and RC can be used to all of them, but each workstation must have own receiver equipment. The remote controller can use infrared lights or BlueTooth radio for the communication.

The remote controller not necessary to be used for operating the software. A system without remote controller must be used by two person.

The functions of the remote controller can be changed from the keyboard of the PC.

The function keys working as:

- F2: Red button of RC. Functions:
  - Exit from the measurement screen
  - Stop measurement
  - Answering NO to a question
- F3: Green button of RC
  - Enter the measurement screens from main screen
  - Start the measurement
  - Answering YES to a question
  - SECONDARY FUNCTION: starts the wheel alignment procedure in the brake measurement screen.
- F4: Yellow button of RC
  - Start/stop the drive out procedure
- F6: Gray button of RC
  - Select the measurement type
  - SECONDARY FUNCTION: show the result screen
- F7: Orange button of RC
  - Starts the SECONDARY FUNCTION of the buttons
- F8: Blue button of RC
  - Select the measured axle (A: first axle, B second, …)

Rem. contr. ID:11

The RC status line is located under the test equipment name. In this line can be seen which RC number is connected to the workstation. The ENERGOLINE will only accept tasks only from this RC.

After starting the *ENERGOLINE®5* will blink the RC number and the RC type at this panel to show the type of RC.

At the beginning of RC status line coloured squares can be seen.

- Logoff the RC: the communication possibilities can be turned off by pressing simultaneously Shift and (F2) button on RC. After this *ENERGOLINE®5* will not accept any tasks request from RC. Shutdown colour is always the red (F2) colour.

- Login the RC: RC can be connected by pressing simultaneously Shift and (F3) button on RC. After successful connection *ENERGOLINE®5* will start accepting tasks from C and the identification number of RC will appear in the status line. The RC login connection colour can be any of the not-red colour (green, blue, orange, gray, yellow).

- With using of the identification number of RC the *ENERGOLINE®5* software avoid that another RC can have any unintentional effects.

- When a standalone workstation is used, the remote controller doesn't need to login and logout function. The *ENERGOLINE®5* remembers the last used RC and starts to use this one after restart.

2.2.2.5 Main window: functions

In the bottom part of the main window you can see the icons of different functions of the program.

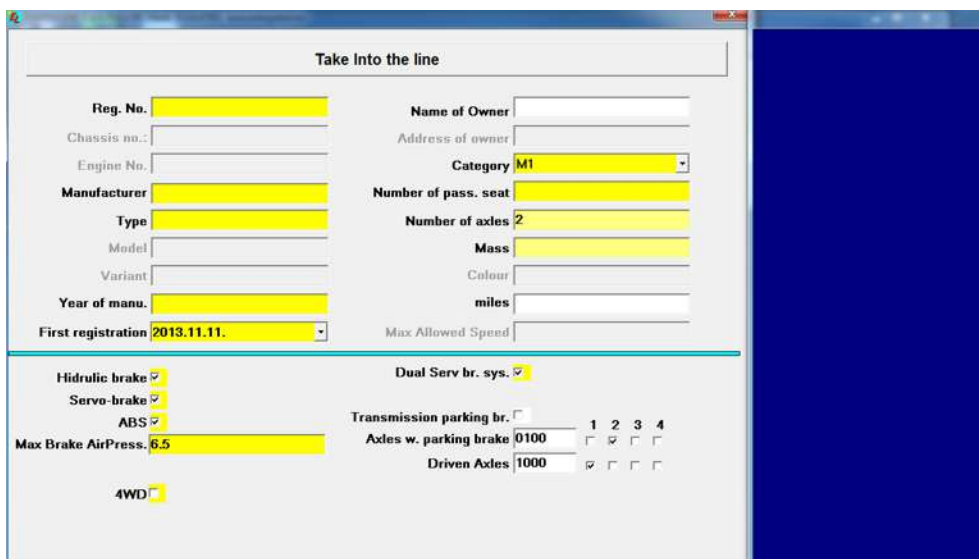Destination of icons:

- Registration

- History and diagrams

- Removal of vehicle from the test lane

- Automatic work on/off

- Language selection

- Service functions

- Test results (Energotest standard)

- Local official protocol form of the technical inspection. (can be the same as the previous, but generally differs)

- Shows the integrity values

- Working mode of the roller brake tester

- Used fuel (not working yet)

2.2.3   Registration (delivery of new vehicle to the test lane)

Click the left mouse button on the icon in the main screen. The next window will appear:

This window gives opportunity to add the data of the vehicle and its owner.

It is mandatory to fill in the yellow cells, light yellow cells are optional, but some cases they are become mandatory. White coloured cells are always optional.

After filling in the registration form the upper grey button can be clicked and the vehicle with its data stored into the inspection line database. In the list of vehicles (2.2.2.3 point) there are shown the vehicles are in the inspection line database.

After filling a field it is recommended to press the ENTER key. This make the Windows to select the next field to fill.

The required fields in the UK version: *(the fields are necessary based on the requirement of VOSA, needs its value for the measurement control or needs its value to calculate the limit values)*

- Registration number (to identify the vehicle)
- Manufacturer and type of the vehicle (to identify the vehicle)
- Year of make (to calculate the limit values)
- First registration (to calculate the limit values)
- Vehicle category (not the class of vehicle) (to calculate the limit values)
- Number of passengers seat (to calculate the limit values)
- Checked field under the line (needs for the measurement control)

WARNING!

MEASURE A 4WD VEHICLE WITH A WRONG WAY CAB DAMAGE THE VEHICLE OR THE ROLLER BRAKE TESTER TOO. If the 4wd measuring mode is unknown for a vehicle, please use the deceleration measurement.

When the servo brake field is checked, it means, the vehicle must be measured with working engine, but in idle speed.

2.2.4   History

You can view test results of the cars which have already test results either have been removed from

the test lane, under [icon] icon or even under inspections.

The base screen of history shows the vehicles ever measured and theirs measurements and results.
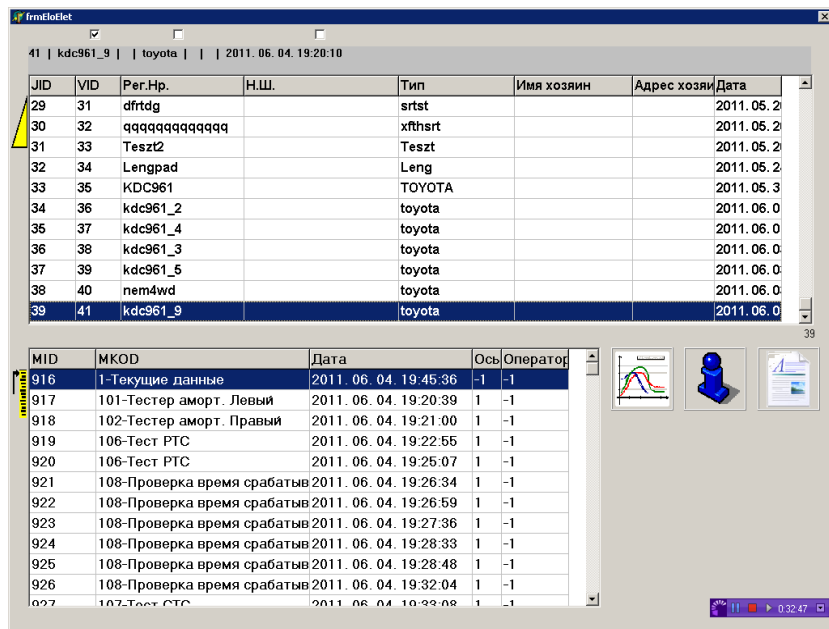
In the upper list the measured vehicles can be seen with their most important data.

The vehicles can be sorted in three ways.
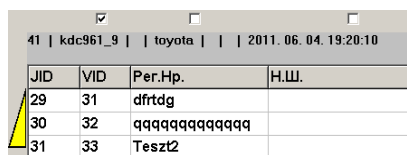
  The possibilities are shown by the three checkboxes in the uppermost part of the screen. If the customer checks one of them, the new sort will be appear. The

sorting order can be changed by clicking the left most yellow icon to generate ◤ increasing or

◣

decreasing order. The parameter to sort the list can be:

- VID: (Energoline inner identifier of the vehicle) means the order of input. This means an order of appearance or time.
- Registration number or plate number
- Chassis number

Clicking to a car in the vehicle list, the lower list will show the measurements of the selected vehicle. The active measurement will be select as the leftmost yellow icon shows.

When the first measurement ▮ is selected (this is always contains the collected relevant test results), the official form or the test results can be seen and can be reprinted clicking to the

appropriate icons 🔵 or 📄. When the last measurement ▮ is selected, the last result can be

seen clicking to the diagram icon 📊.

Clicking the diagram icon the final diagram of the measurement can be seen.
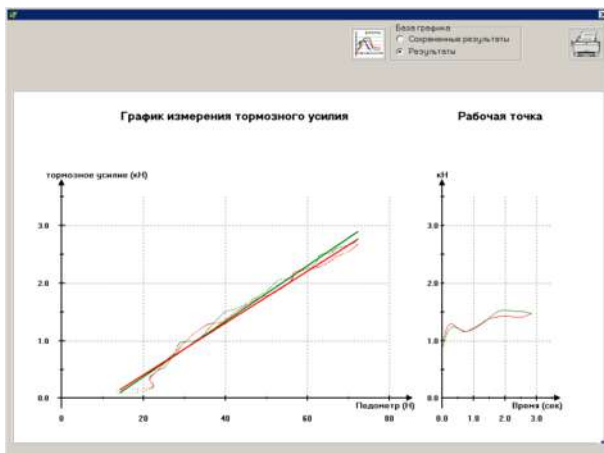
Brake measurement

The diagrams can be printed to click the print icon 🖨 at the upper right corner.

The diagram mode selection are only for service or testing the software.

2.2.5   Removal of vehicle from the test lane

You can delete the selected vehicle from the list by using 🗑 function. Test results are being kept in the program database and they are available through the history.

2.2.6 Automatic equipment selection on/off

Click the icon if you want to turn on or turn off automatic equipment selection.

- If the red cross is shown on the icon, it means that the automatic work is off. Control is done by the operator through RC.

- The automatic work regime is on if there is no red cross is presented.

If the automatic equipment selection is on, program changes automatically tested axles, sides during the test and conducts consecutively measurements. In this regime both keyboard and RC can be used, but it stops the automatic function for the actual measurement.
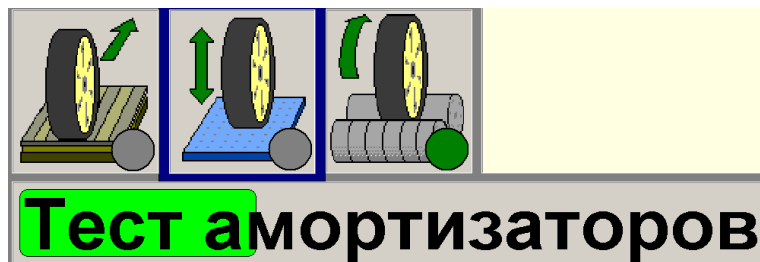
In order to avoid interfere with the user in the automatic working, program provides some seconds before it starts next test (while the light green coloured line disappear). The automatic system can be stopped by pressing "ESC" or (F2) buttons on RC. After this the work can be continued through RC.

2.2.7 Language Selection

The language can be selected with the help of icon. After selecting the language the names will change to the selected language. Some texts are read only at start-up, so it is recommended to restart the program after changing the language.

2.2.8 Service

This function is password protected and is accessible only for services of official distributor. This function has separate operating manual for trained persons of the official distributor.

2.2.9 Test results
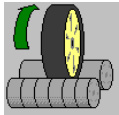
Test results appear by pressing the icon. This table contains results of all tests (toe measurement, suspension and brake test) in ENERGOTEST standard format.

2.2.10 Technical inspection protocol

By pressing this icon you will get the results of the taken measurements which are needed for technical inspection. Protocol conforms to the official technical inspection format.

3 Test of the brake system
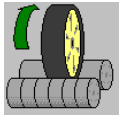
Choose icon and "test of brake system" page will appear.

3.1 Brake measurement screen

This page reflects next elements:

- Red needle shows the value of brake force of right wheel, green needle brake force of left wheel.
- Value of brake system actuators (pedal force and/or pressure of the brake chamber in a compressed air brake system) are displayed the internal arc.
- The next data are digitally displayed:

  - When the data is highlighted by blue colour: actuating force of the brake system control left side: pedal force meter, right size: brake chamber pressure.

  - When the data is highlighted by green and red colours: value of right and left brake forces
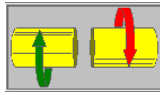
  - When the data is highlighted by black colour: value of left and right wheel load or axle load (if the brake tester has built in scales) The wheel load is shown when the roller brake taster has 2 separate roller unit, and the axle weight is shown in case of one roller unit which contains both roller set
  - The reflected value can be changed by clicking the right mouse button on the values.
- Imbalance value in the middle of the meter. The imbalance value has coloured background.
  - Green background: the imbalance must be assessed, and the assessment is passed.
  - Red background: the imbalance must be assessed, and the assessment is failed.
  - White background: the imbalance doesn't need to be assessed.

- The used pedal force meter. It can be radio controlled or wired . To change between them click double on the icon. There are no other possibilities to change the kind of pedal force meter!! In case of no used pedal force meter, these icons are missing from the brake screen.
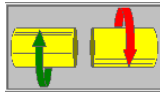
- Rollers rotating mode is 4wd mode or simple 2wd mode . To change between the modes click double on the icon.

There are NO other possibilities to change the kind of 4WD mode
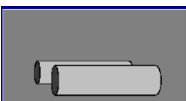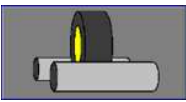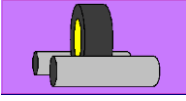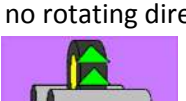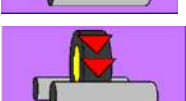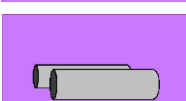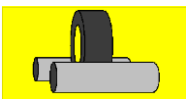
The ENERGOLINE select the 4WD mode automatically, but it can be changed by the user.

This 4WD mode cannot be changed from the keyboard or from the RC to avoid an accidentally or unintentional change of the 4WD mode.

- When the wheel is in the roller set, it can be seen in this icons (there are two icons on the screen, left side of the screen is the left wheel right side of the wheel is the right wheel).When the silhuette of the wheel is in
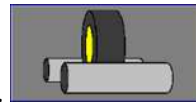
  the roller set, it means the wheel of the vehicle is in the roller set. The state of the roller set can be the next:

  - The wheels are not in the roller set.
  - The wheels are in the roller set, but no measurement has been started
  - The wheels are in the roller set and a measurement isjiust has been started, there is no rotating direction
  - The measurement is on, ahd the wheel is rotating forward.
  - The measurement is on, and the wheel is rotating backward (4WD mode)
  - The wheel is locked under measurement
  - A measurement is on, but the wheel is out from the rollers. End of the measurement.
  - The wheel is in the roller set, and the drive out procedure is on.
  - The wheel is in the roller set and the wheel alignment procedure is on.

- and buttons are showed in the middle of the page. These mean, how to start (green button or F3 function key) or stop (red button or F2 key) the brake measurement. This panel is covered sometime other panels, showing the other special functions of the roller set.
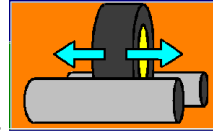
- In orange background the wheel alignment state is shown. . The wheel alignment can be started only as a SECONDARY FUNCTION of the RC. First start the secondary function of the orange button, then the gray button must be pressed in the next 3 seconds. (Otherwise the secondary function possibility is closed). In wheel alignment state the roller icons have orange background too.
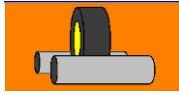
- When icon appears, it means that rollers of the brake tester are starts to rotate and the car can drive, with its driven axle, out. After starting this functions it stops automatically after 25 seconds, meanwhile the user can not start any break measurement. Of course this function can be turn off with the yellow button of RC or F4 function key from the keyboard or double click on the icon. In the drive out procedure the roller icons has yellow background.
    - How to start functions
    - start the measurement = green (F3)
    - stop the measurement = red (F2)
    - Drive Out procedure = yellow (F4)
    - Wheel Alignment procedure = Orange (F7) and then Gray (F6) after it.
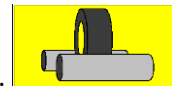
- The measured axle is shown in upper left corner: A – front axle, B – rear axle. The colour of the panel is blue and the axle can be changed by pushing blue (F8) button on the RC.

- The type of the measurement is shown in upper right corner. It can be service brake SB or parking brake PB. or ATL procedure ATL. As the colour of panel is grey, the types of measurement are switched by grey (F6) button at the RC. More measurement possibilities working with one wheel measurement.
    - SR: means the Right wheel service brake measurement
    - SL: means the left wheel service brake measurement
    - PR: means the right wheel parking brake measurement
    - PL: means the left wheel parking brake measurement.

- There is a special sign on the screen showing some automatic working of the RBT is on.
- The user get messages through the screen.
    - The black background and purple colour of letters showing that the message comes from directly from the measurement control.
    - Theblack background with lime coloured letters means, that the message comes from the automatic measurement control.

- Sometimes the message has a counting down clock showing the remaining time of the actual

 functions. The clock face is:. when the measurement control is sending wait or like this :

 when the automated process is working

3.2 Measurement process

3.2.1 Manual measurements

The manual measurement use two different measuring mode: measuring on both wheels at the same time, or measure only one wheel, but the other is inside the rollers.

The measurement names are different for every kind of measurements.

- SB: Service brake measurement for both wheel
- PB: Parking brake measurement in both wheel
- SR: means the Right wheel service brake measurement
- SL: means the left wheel service brake measurement
- PR: means the right wheel parking brake measurement
- PL: means the left wheel parking brake measurement.

The measurement steps:

- Check whether the roller unit has been sensing the wheel more than 2 seconds. If no wheel in the rollers:

- Measuring the weight of the axle (No special message, *missing in parking brake measurement*)
- Starting the rollers (Message: Starting rollers)

- Measuring the rolling resistance of the wheel(s) and the free roller and wheel speed (Message: WAIT)

- Gradually depress the pedal

o Start depress the brake pedal. (Message: BRAKE, missing in parking brake measurements)

o When the slip is higher than the preset slip parameter (8%) there is a warning message: Next: Holding pedal for 3 seconds (*missing in parking brake measurements*)

- After the 3 seconds wait , the fluctuation measurement starts and is continued for the next 3 seconds. (Message: Hold the pedal, *missing in parking brake measurements*)

- Brake force decreasing part (Message: *RELEASE, missing in parking brake measurements*)

- Maximum brake force measurement starts

o When a wheel is locked, the rollers in this side is stopped (the other side is running).

o When the other is blocked it is stopped.

o If the maximum brake forces doesn't increasing for 3 seconds, the measurement ends with a timeout.

Other messages coming in the measurement

- User can interrupt the measurement or the ATL process pressing the red button or (F2) key.

 or at thedrive out process:

- On some hardware error the ATL is interrupted:

- Drive out procedure
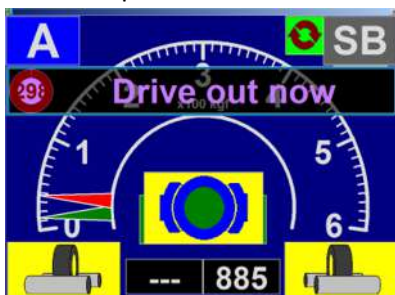
- Wheel alignment procedure

- If the user wants to exit form the brake screen by clicking with the mouse into the right upper corner exit icon of the window (not a legal exit mode)

3.2.2 ATL procedure

The ATL procedure is a special automatic process on the measurements. This process starts the manual measurement procedures.

The ATL procedure complete the manual measurement with special messages. These messages are shown in lime coloured texts, so it can be differentiated from the messages coming from the measurement control.

The ATL procedure works as:

- Check whether the vehicle between the rollers or not. If YES, wait for 2 seconds, if NO send a special message to the driver.

- When the vehicle goes is into the rollers, the wheel alignment procedure is starting

- After wheel alignment the service brake is started for the first axle.

- If the first axle has parking brake, the ATL procedure starts it
- After the measurement(s) of the first axle, the ATL procedure instruct th edriver to drive out from the rollers. If the vehicle is a first axle driven vehicle, the ATL procedure starts the drive out procedure. The driver has 5 minutes to go out from the rollers. If the time is out, the ATL procedure is interrupted with an error, so the complete process must be repeated, or the measurements can be finished in manual mode.

- When the vehicle goes out from the rollers, the ATL procedure instruct the driver to drive with the second axle into the rollers.

- When the second axle get into the rollers, the process of the first axle is repeated for the second axle

3.2.3 Interrupt the ATL and repeat one element of the ATL procedure

If something ended not legally the ATL process make a decision: Repeat the measurement or interrupt the ATL.

- Repeat of the ATL measurement:

  - Locking the wheel in the measurement.

  - Wheel goes out from the rollers

- Interruption of the ATL procedure

o Pressing the red button (F2) key

o The ATL procedure is interrupted by any hardware error.

4 Protocol

Test protocol can be created in two ways.

In ENERGOLINE software we can get a general form with all measurements data by pressing icon.

The measured values

Equipment	Measured charasteristics	Measured values		Max - Min		Evaluation	
	Emission values	Idle speed	Raised idle sp	Idle	raised idle		
	Engine speed (rpm)						
	CO [%]						
4Gas analyzer	HC [ppm]						
	CO2 [%]						
	O2 [%]						
	Lambda [-]						
Smoke meter	Free acceleration	K [-]	N[%]	K max [-]	N min[%]		
	Smoke measurement						
		Brake	Parkingbrake	B. max	PB. max	B. qual.	PB.qu.
	Max diff. Brake/handbrake 1. [%]	8		<= 30		P	
	Max diff. Brake/handbrake 2. [%]	11	22	<= 30		P	_
	Max diff. Brake/handbrake 3. [%]						
Roller brake test	Max diff. Brake/handbrake 4. [%]						
		B. L.	B. R.	B. c.	PB. L.	PB. R.	
	Brake forces at max diff. 1. [kgf]	276	253				
	Brake forces at max diff. 2. [kgf]	192	170		169	131	
	Brake forces at max diff. 3. [kgf]						
	Brake forces at max diff. 4. [kgf]						
		Left	Right	cont.			
	Variation of brake forces L/R 1. [%]	5	8				
	Variation of brake forces L/R 2. [%]	12	18				
	Variation of brake forces L/R 3. [%]						
	Variation of brake forces L/R 4. [%]						
		Left	Right		BD. max	L.qual.	R.qual.
	Brake delay L/R 1. [s]						
	Brake delay L/R 2. [s]						
	Brake delay L/R 3. [s]						
	Brake delay L/R 4. [s]						
		B. L.	B. R.	B. c.	PB. L.	PB. R.	
	Max brake force L/R 1. [kgf]	276	253				
	Max brake force L/R 2. [kgf]	192	170		169	131	
	Max brake force L/R 3. [kgf]						
	Max brake force L/R 4. [kgf]						
		BE.	Brake forces	BE.c.	BE. min		BE.qu.
	Brake efficiency	75	891		>= 58		P
	Parkingbrake efficiency	25	300		>= 16		P
	Measured mass	1194					
Suspension values	Suspension val. 1. [%]						
	Suspension val. 2. [%]						
Sideslip values	Side slip 1. [m/km]						
	Side slip 2. [m/km]						

- This document contains:
    - Name of the inspection place (garage)
    - Identifiers of the measured vehicle
    - Measured values
    - Limit values (if they exist)
    - Assessment of the measured values (if there are real limit values)
    - Starting date of the measurements
    - Place for the inspector comments and his signature.
- The document doesn't contain:
    - Special assessment based on the wheel lock (it can be found in the local official printing)
    - Special manual assessments for the brake measurement (Bind, Fluctuation, Increase/decrease) (it can be found in the local official printing)

> **In the document the wrong values are red coloured and have bold and underlined characters, so the wrong values can be seen in a black-white printer too.**

By pressing Official form ![icon] icon, we will get the protocol of the current customer, which can be also printed out. Protocol only contains the data which can be valued according to the regulations.

The header of the UK local form:

Brake Test Results

Vehicle

Reg. Num.:	**test51**
Manufacturer:	**toyota**
Model:	**corolla**
Reg. Date.:	**1998.12.31.**
Category.:	**M1**
Miles:	
Meas. date & time:	**2013.11.15. 21:11:06**

Brake Tester

Manuf.:	**ENERGOTEST Kft.**
Model:	**ERBT-4**
Ser. No.:	**2013/4417**
Hom. No.:	**UND. APP.**
Cal. exp.:	**2014.01.22.**

Standard results when everithing is good. (All results are good, and there are no used the locking criteria.) If the vehicle doesn't have third axle its fields are empty.

	Parameters by side		Service Brake			Parking Brake		
			Left	Right	Limit	Left	Right	Limit
1. Axle	Drag	[kgf]	13	19				
	Maximum brake force	[kgf]	274	305				
	Roller stop		Wheel lock	Wheel lock				
	Variation	[%]	5	2				
2. Axle	Drag	[kgf]	10	12				
	Maximum brake force	[kgf]	150	185		142	184	
	Roller stop		Wheel lock	Wheel lock		Wheel lock	Wheel lock	
	Variation	[%]	3	4				
3. Axle	Drag	[kgf]						
	Maximum brake force	[kgf]						
	Roller stop							
	Variation	[%]						

	Parameters by axle		Service Brake		Parking Brake		Manual Assess.		
			Measured	Limit	Measured	Limit	Bind	Fluct	Inc/Dec
1.Axle	Imbalance	[%]	10	<= 30			Passed	Passed	Passed
	Axle weight	[kg]	885						
2.Axle	Imbalance	[%]	18	<= 30	22		Passed	Passed	Passed
	Axle weight	[kg]	560						
3.Axle	Imbalance	[%]							
	Axle weight	[kg]							

Parameters by vehicle		Total Br. f. [kgf]	Brake eff. [%]	Limit [%]	Locking criteria
Service Brake		914	63	>= 58	
Parking Brake		325	23	>= 16	
Measured weight	[kg]	1444		**Measure mode**	ATL procedure
Overall test result		Passed			

Next: The result is passed but used the locking criteria for the parking brake efficiency.

	Parameters by side		Service Brake			Parking Brake		
			Left	Right	Limit	Left	Right	Limit
1. Axle	Drag	[kgf]	13	21				
	Maximum brake force	[kgf]	262	326				
	Roller stop		Wheel lock	Wheel lock				
	Variation	[%]	4	3				
2. Axle	Drag	[kgf]	10	12				
	Maximum brake force	[kgf]	154	179		103	115	
	Roller stop		Wheel lock	Wheel lock		Wheel lock	Wheel lock	
	Variation	[%]	4	3				
3. Axle	Drag	[kgf]						
	Maximum brake force	[kgf]						
	Roller stop							
	Variation	[%]						

	Parameters by axle		Service Brake		Parking Brake		Manual Assess.		
			Measured	Limit	Measured	Limit	Bind	Fluct	Inc/Dec
1. Axle	Imbalance	[%]	19	<= 30			Passed	Passed	Passed
	Axle weight	[kg]	886						
2. Axle	Imbalance	[%]	13	<= 30	10		Passed	Passed	Passed
	Axle weight	[kg]	561						
3. Axle	Imbalance	[%]							
	Axle weight	[kg]							

Parameters by vehicle		Total Br. f. [kgf]	Brake eff. [%]	Limit [%]	Locking criteria
Service Brake		921	64	>= 58	
Parking Brake		218	15	>= 16	Pass with lock
Measured weight	[kg]	1447		Measure mode	ATL procedure
Overall test result		Passed			

Next is a wrong measurement where the manually set values fails.

Parameters by side		Service Brake			Parking Brake		
		Left	Right	Limit	Left	Right	Limit
1. Axle	Drag [kgf]	10	14				
	Maximum brake force [kgf]	149	182				
	Roller stop	Wheel lock	Wheel lock				
	Variation [%]	6	2				
2. Axle	Drag [kgf]	10	13				
	Maximum brake force [kgf]	150	168		124	123	
	Roller stop	Wheel lock	Wheel lock		Wheel lock	Wheel lock	
	Variation [%]	4	2				
3. Axle	Drag [kgf]						
	Maximum brake force [kgf]						
	Roller stop						
	Variation [%]						

Parameters by axle		Service Brake		Parking Brake		Manual Assess.		
		Measured	Limit	Measured	Limit	Bind	Fluct	Inc/Dec
1.Axle	Imbalance [%]	17	<= 30			Failed	Passed	Passed
	Axle weight [kg]	559						
2.Axle	Imbalance [%]	10	<= 30	1		Passed	Passed	Passed
	Axle weight [kg]	559						
3.Axle	Imbalance [%]							
	Axle weight [kg]							

Parameters by vehicle		Total Br. f. [kgf]	Brake eff. [%]	Limit [%]	Locking criteria
Service Brake		649	58	>= 58	
Parking Brake		247	22	>= 16	
Measured weight [kg]		1118		Measure mode	ATL procedure
Overall test result		Failed			
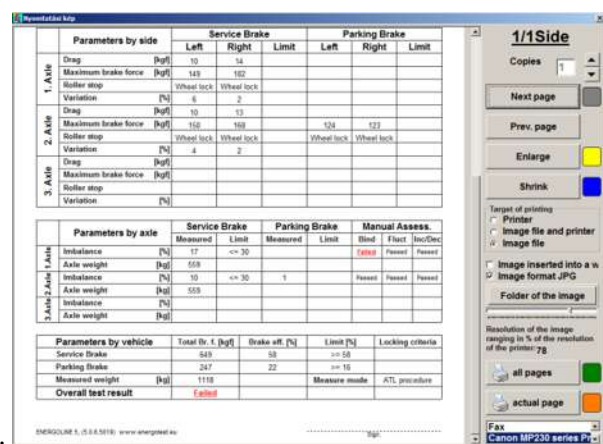
In the right side of the window you can see printing settings:

If the document contains many pages, it is possible to turn over the pages using grey (F6) button of RC.

It is possible to zoom in and out the pages. (In the manual regime using yellow (F4) and blue (F8) button.

The document can be sent for print or converted into JPG file (later JPG can be put into Word file. This requires Microsoft Word program installed on computer).

Settings of saved JPG file can be adjusted (where to save file, degree of reduction and etc.)

The whole document or exact pages can be printed out.

At the present time printer selection function is not working. Program sends document to the default printer automatically.

Mass value: This show:

- The sum of the measured axle load values.
- If axle load is not installed, it shows the sum of the suspension tester wheel load values.
- If even suspension tester is not installed (or not used) it shows the input mass value.
- When there were no input values for mass, it is empty, and the brake efficiency cannot be calculated.