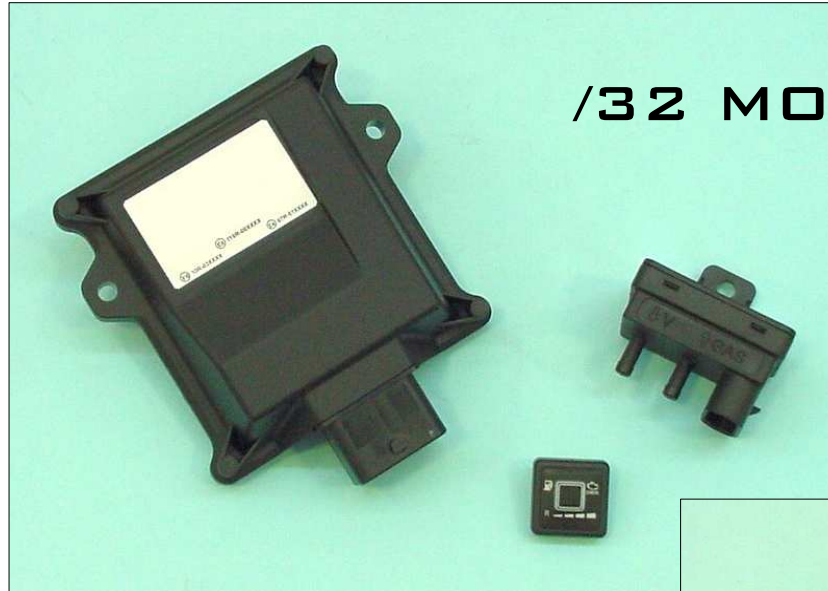
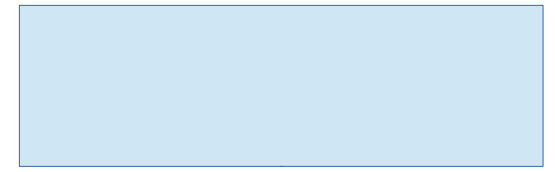
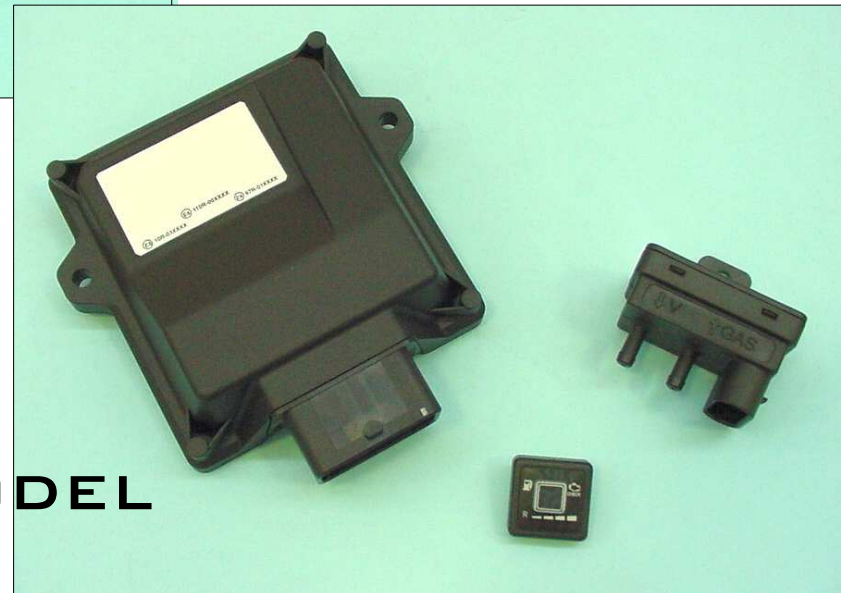


# NEUTRO



**/32 MODEL**



**/48 MODEL**

## 1- Presentation & Index

Dear Customer,

We wish to thank you for the purchase of this product.  
This Manual is related to the program you are using, or a compatible version.

We strongly recommend that you carefully go through all the pages before starting any operation or setting of the system: this will allow you to get more confidence and avoid all possible troubles and delays during your job.

For any question you may contact our Distributor's After Sales Service.  
Have a nice time with your job and our products.

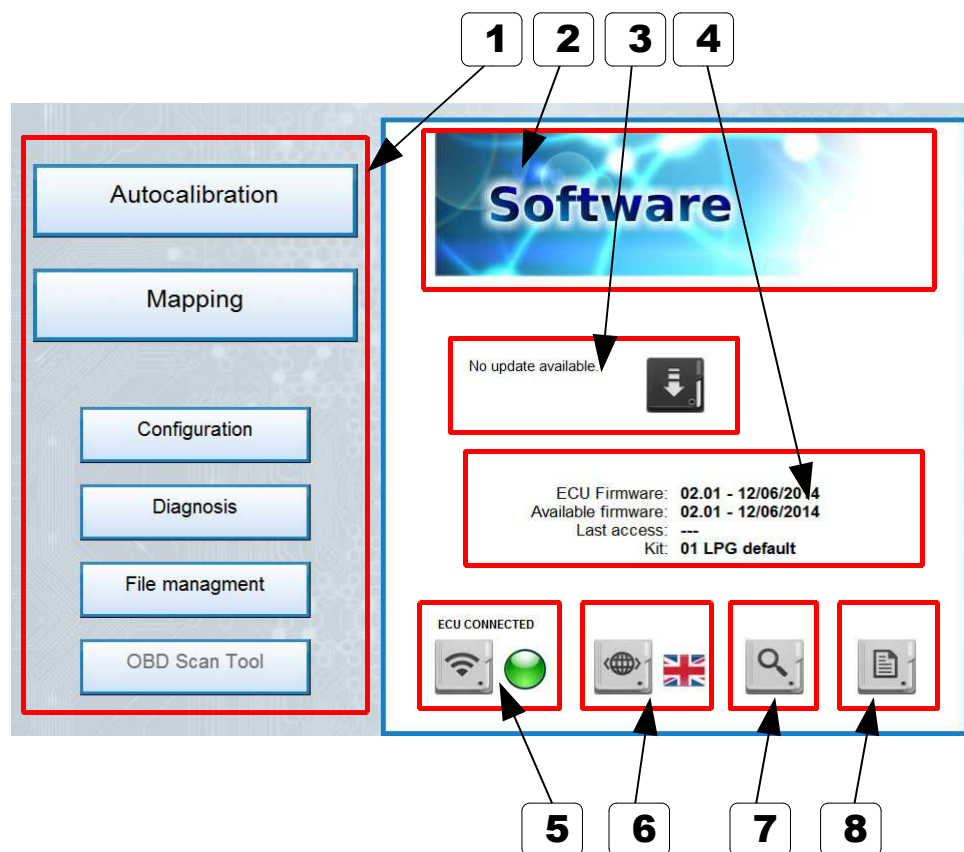
-----  
**NOTE:** All details about installation can be found in the  
**Appendix 1: INSTALLATION and COMMUNICATION**  
-----

### INDEX

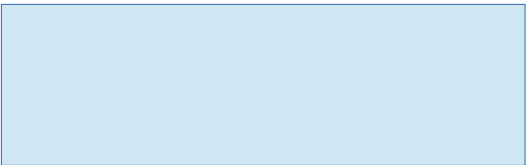
1	<b>The HOME folder</b>	
2	<b>Read the Working folder &amp; Monitor: "32" version</b>	
2.1	<b>Read the Working folder &amp; Monitor: "48" version</b>	
3	<b>Autocalibration: Main folder</b>	
3.1	Autocalibration: <b>Step by Step ...</b>	
3.2	Autocalibration: <b>Error Messages</b>	
4	<b>Mapping: Main folder</b>	
4.1	Mapping: <b>MAP Adaptivity</b>	
4.1.1..5	Mapping: <b>MAP Adaptivity explained</b>	
4.2	Mapping: <b>MAP Adaptivity - Customer</b>	
4.3	Mapping: <b>Gas/Petrol Fuel Management</b>	
4.4	Mapping: <b>Modify Carburation</b>	
4.5	Mapping: <b>OBD Adaptivity ("48" version ONLY)</b>	
4.6	Mapping: <b>OBD Adaptivity explained ("48" version ONLY)</b>	
5	<b>Configuration: Main folder</b>	
5.1	Configuration: <b>Sensors</b>	
5.2	Configuration: <b>Lambda</b>	
6	<b>Diagnosis: Errors</b>	
6.1	Diagnosis: <b>Diagnosis (Installation check)</b>	
6.2	Diagnosis: <b>Information</b>	
6.3	Diagnosis: <b>Logger</b>	
7	<b>File Management: Load</b>	
7.1	File Management: <b>Save</b>	
8	<b>OBD Scan Tool: Selection</b>	
8.1	OBD Scan Tool: <b>Value</b>	
8.2	OBD Scan Tool: <b>Freeze Frame</b>	
8.3	OBD Scan Tool: <b>Error and Test Result</b>	
8.4	OBD Scan Tool: <b>Vin</b>	

## 1- The HOME folder

The starting menu for all functions.

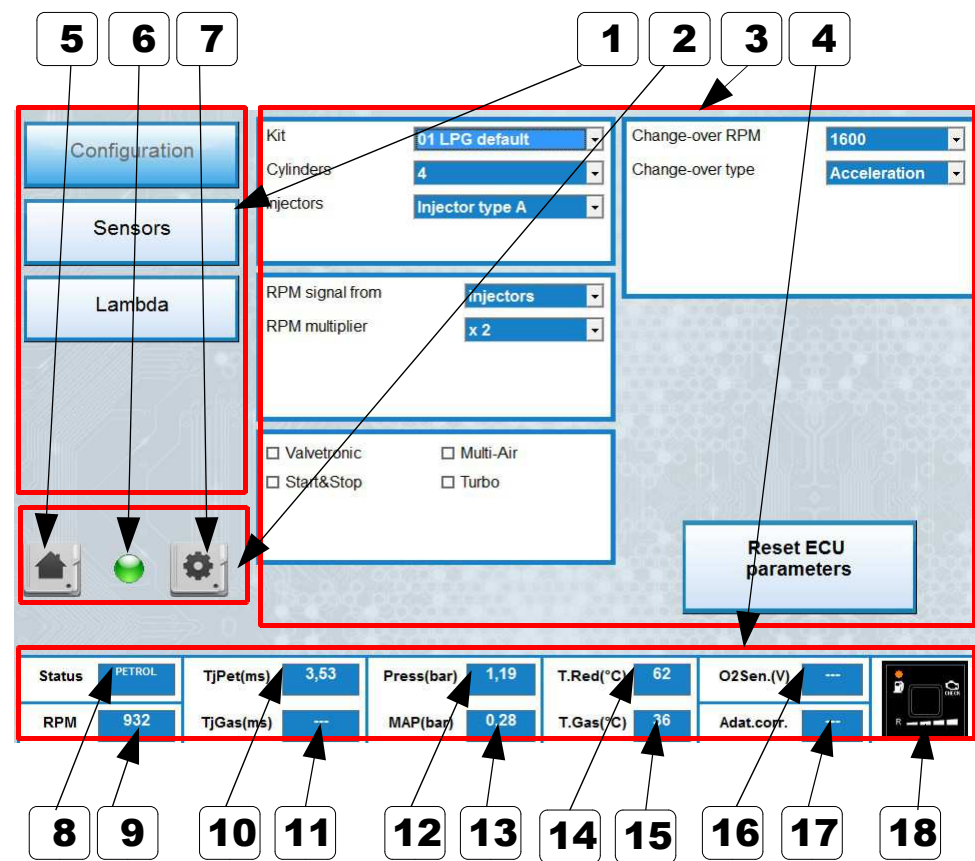


	Description	Value
1	<b>WORKING FOLDER selection buttons</b>	
2	<b>LOGO / Trademark</b>	
3	<b>UPDATE button + INFO</b> When an updated version of the SW or FW is available in the PC program, the info is shown	
4	<b>ECU Firmware data and KIT details</b> Useful when contacting After Sales Services	
5	<b>ECU connection</b> Point the button and press the right mouse click to open the combo for the COM port selection. Or just press the button for automatic search ....	<b>Green Led = OK</b> <b>Red Led = NO OK</b>
6	<b>LANGUAGE selection button.</b> Point the button and press the right mouse click to open the combo for the Language selection. Or just press the button for scrolling ....	
7	<b>Magnifying lens button</b> By clicking the button, a screen with the index of the info relevant to the connected ECU will appear.	
8	<b>DOCUMENTS</b> Press to scroll the documents available: installation diagrams, manuals, etc.	



## 2- Read the Working folder & Monitor “32” version: General description

Short review of the common details in any of the Working Folders. The screenshot below is only for sample.



THE MONITOR SECTION IS VISIBLE IN MOST SCREENS.  
THE STRUCTURE IS THE SAME IN EVERY SITUATION:  
PLS. REFER TO THIS PAGE FOR DETAILS

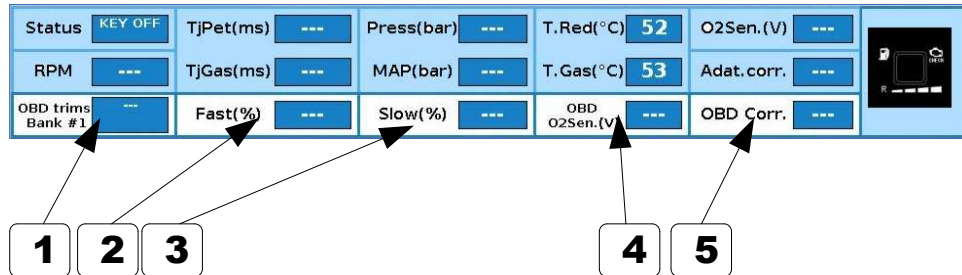
	Description	Value
1	WORKING SUB-FOLDER selection buttons, specific in any section	
2	HOME & ADVANCED selection buttons	
3	DIALOGUE area	
4	MONITOR section is shown in many pages. See below 8 to 18 for explanation	
5	HOME button: press to go back to HOME	
6	ECU Communication status	
7	ADVANCED functions button: press to enter the advanced settings for the actual folder	
8	FUEL in use	
9	RPM	
10	INJECTION TIME: Petrol	
11	INJECTION TIME: Gas	
12	REDUCER (GAS) Working Pressure	
13	MAP SENSOR (Vacuum) Pressure	
14	WATER Temperature (R	
15	GAS Temperature (Injectors)	
16	OXIGEN SENSOR (Lambda) Readout	
17	ADAPTIVITY CORRECTION values (MAP)	
18	VIRTUAL SWITCH: it is same as the real one	

## 2.1- Read the Working folder & Monitor “48” version: Changes vs. “32” version

The upper part is the same as “32” version: only the bottom line is added. The screen-shot below is only for sample.

Basically, in the “48” version, the only difference is that in any folder there is one more line of monitoring.

It is specifically dedicated to OBD connection and information updating. This powerful tuning tool is giving information at any time through this additional line.



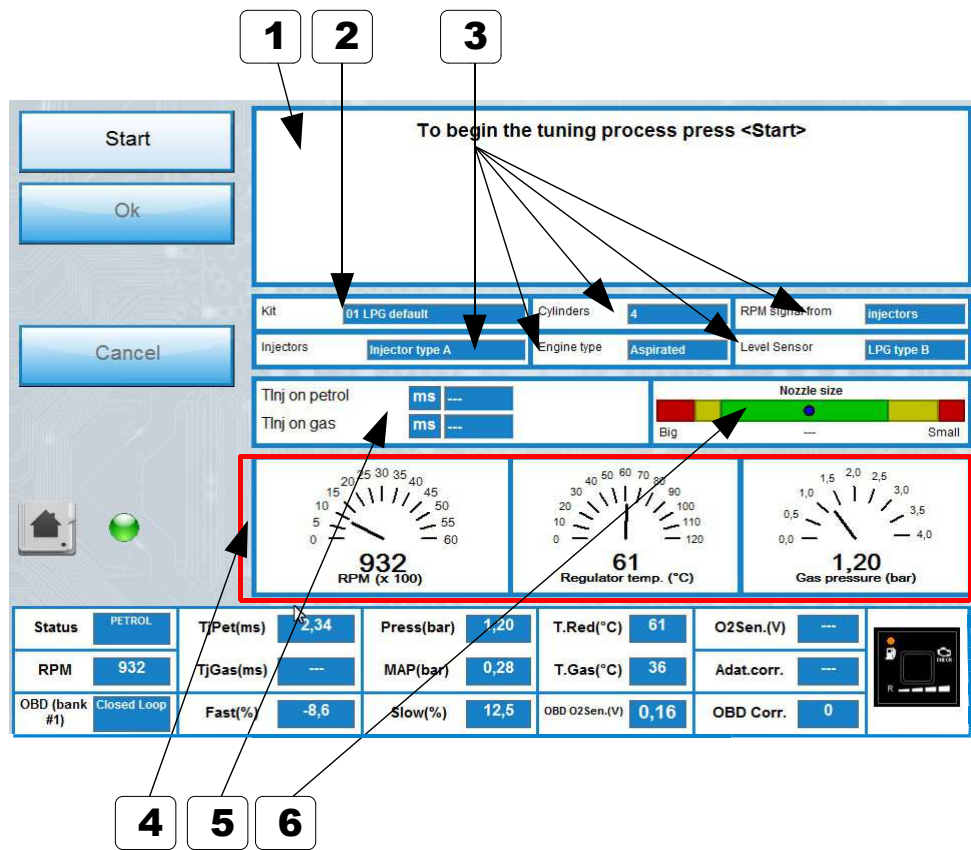
**THE MONITOR SECTION IS VISIBLE IN MOST SCREENS.**  
**THE STRUCTURE IS THE SAME IN EVERY SITUATION:**  
**PLS. REFER TO THIS PAGE FOR DETAILS**

	Description	Value
1	<b>OBD Trim bank #1</b> Shows the value of the bank #1 according the OBD	
2	<b>Fast (%)</b> Refers to OBD correction trim Fast (main O2 sensor)	
3	<b>Slow (%)</b> Refers to OBD correction trim Slow (back O2 sensor)	
4	<b>OBD O2 Sen. (V)</b> This is the value of O2 sensor (post-catalyst) through the OBD system (not same as using the wire of the gas system)	
5	<b>OBD Corr.</b> Here is shown the actual value of correction that OBD system applies according to actual carburation (being petrol of gas in use)	

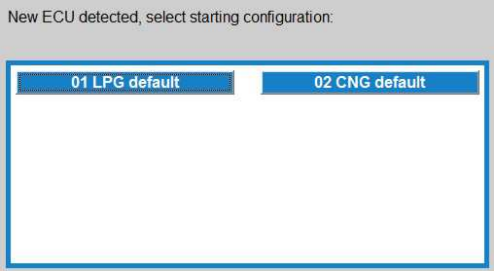
**NOTE:** all the above values are same as read by the OBD of the car.  
 So, it's possible to get an instant visualization of the changes that are made to the gas mapping/tuning and their effects on the “On Board Diagnosis” system of the vehicle.

## 3- Autocalibration: Main folder

The first (and easier) way to get a map done ... with unexpected excellent results!



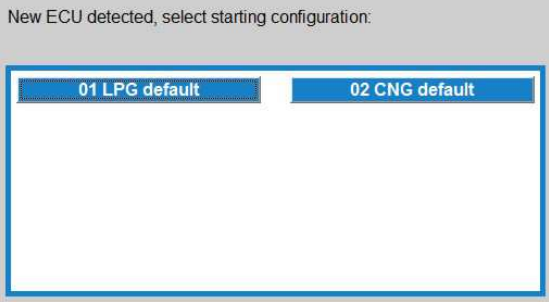

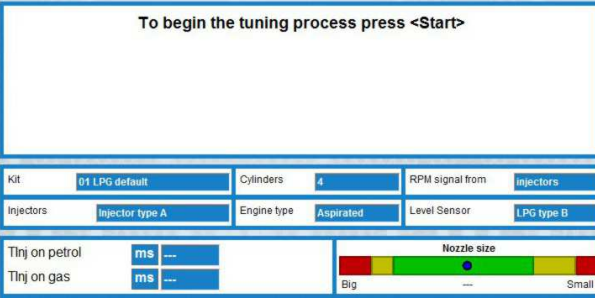
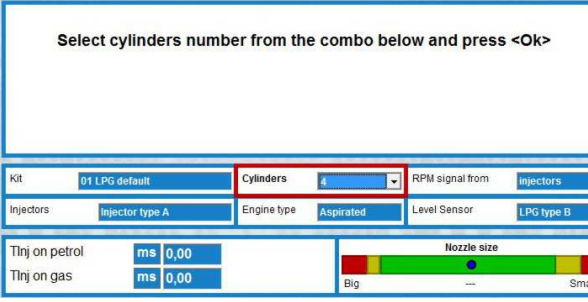
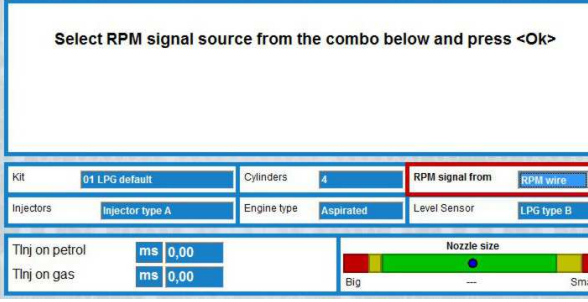
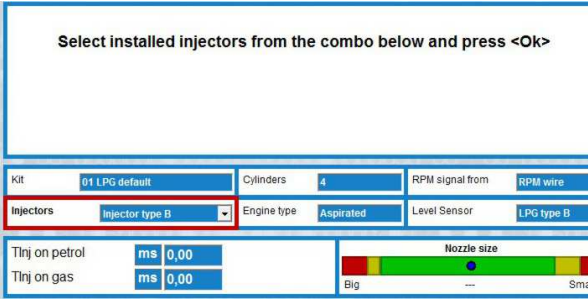
WHEN THIS PAGE IS SHOWN, FOLLOW THE STEP BY STEP  
INSTRUCTION AS SHOWN IN THE NEXT CHAPTER  
AND ON THE SCREEN ....  
IT IS POSSIBLE TO REPEAT THE PROCESS  
IT'S EASY

	Description	Value
1	<b>INSTRUCTIONS/DIALOG BOX</b> Follow the instructions in this box	
2	<b>KIT TYPE</b> In case of a <b>brand new ECU</b> , the choice is made after connection, when a screen as below is shown:  In case of an already calibrated unit, it appears: <b>"Preset already done: do you want to skip it?"</b>	
3	<b>PARAMETERS to be Confirmed/Changed</b> During the process, these parameters will be asked for confirmation or modification. See next chapter	
4	<b>ADDITIONAL MONITOR</b>	
5	<b>INJECTION TIMES DISPLAY</b> When on petrol, petrol times are shown When on gas, petrol time is shown	
6	<b>NOZZLE SIZE INDICATOR</b> At the end of the process, can give an idea about how the size is close to the correct one. There are also error messages (see next chapter)	



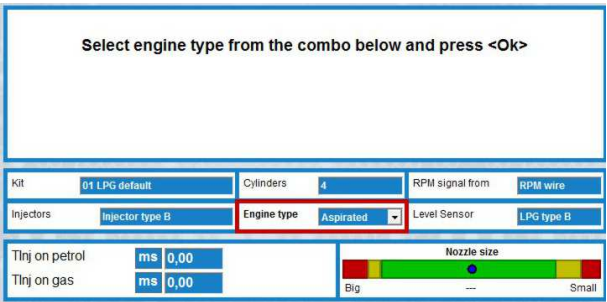
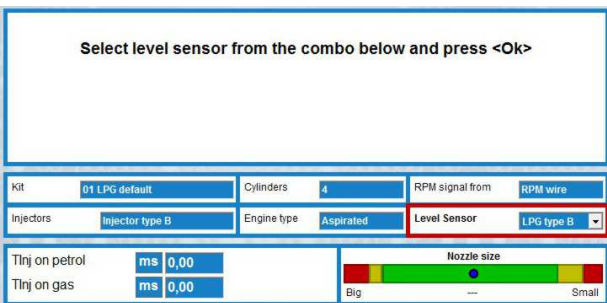
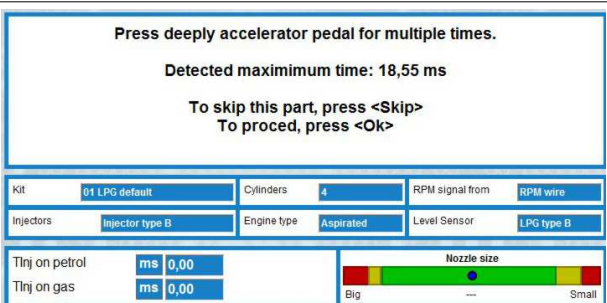
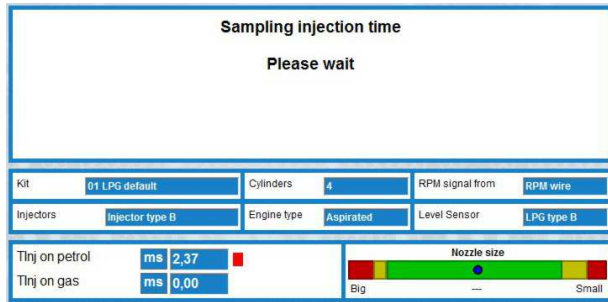
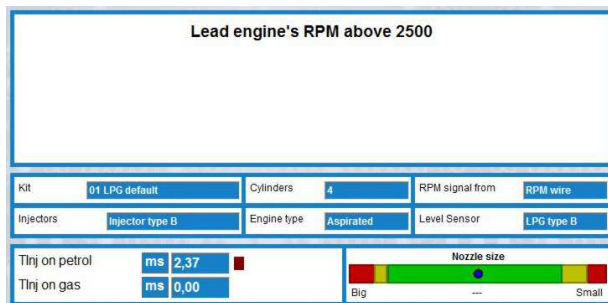
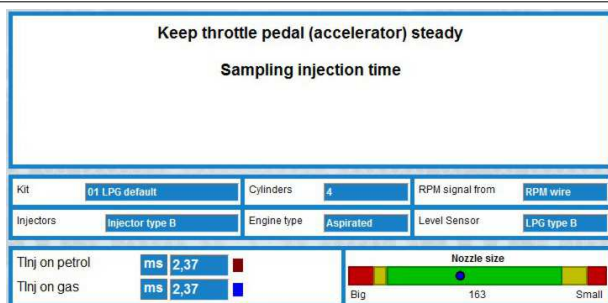
## 3.1 – Autocalibration: Step by step ... (1/4)

We follow all steps of this easy and fast tuning process which leads to almost perfect calibration

1		<p>At the first “Key ON” after installation, this is the first step when the ECU is found never calibrated before.</p> <p>Choose the right kit installed: 90% of the result depends on this choice.</p>
2		<p>In the HOME FOLDER select “Autocalibration” to enter the “Autocalibration” main folder (explained in above page)</p>
3		<p>Now, start to follow the dialog box and execute what is requested time by time.</p> <p>Engine running on petrol</p> <p>First command says: “Press START” ..</p>
4		<p>Select/confirm the cylinder number (4,3,2,1) and confirm by pressing Enter or OK</p>
5		<p>Select “RPM wire” if you have connect the RPM wire to an RPM source: select “Injectors” if you want to calculate RPM by reading petrol injectors.</p>
6		<p>Select/confirm the Injectors type (Depends on the list) and confirm by pressing Enter or OK</p>

## 3.1 – Autocalibration: Step by step ... (2/4)

We follow all steps and all questions have to be answered during the process ....

7	<p>Select engine type from the combo below and press &lt;Ok&gt;</p> 	<p>Select/confirm the engine type (Aspirated or Turbo) and confirm by pressing Enter or OK</p>
8	<p>Select level sensor from the combo below and press &lt;Ok&gt;</p> 	<p>Select the Level Sensor type (Depends on the list) and confirm by pressing Enter or OK</p>
9	<p>Press deeply accelerator pedal for multiple times.</p> <p>Detected maximum time: 18,55 ms</p> <p>To skip this part, press &lt;Skip&gt; To proceed, press &lt;Ok&gt;</p> 	<p>Press suddenly and deeply the accelerator pedal, and as the engine reaches high RPM (4500 RPM) release the pedal. Repeat for a few times (3-5). Then press OK</p>
10	<p>Sampling injection time</p> <p>Please wait</p> 	<p>Wait with the engine idling while the Tinj petrol is acquired ...</p>
11	<p>Lead engine's RPM above 2500</p> 	<p>Lead the engine above 2500, but not over 3000. Important is to keep accelerator pedal steady ... do not follow RPM fluctuation</p>
12	<p>Keep throttle pedal (accelerator) steady</p> <p>Sampling injection time</p> 	<p>Important is to keep accelerator pedal steady ... do not follow RPM fluctuation</p>



## 3.1 – Autocalibration: Step by step ... (3/4)

We follow all steps and all questions have to be answered during the process ....

13	<div>Release the engine on idle</div> <div> <div>Kit</div> <div>01 LPG default</div> <div>Cylinders</div> <div>4</div> <div>RPM signal from</div> <div>RPM wire</div> </div> <div> <div>Injectors</div> <div>Injector type B</div> <div>Engine type</div> <div>Aspirated</div> <div>Level Sensor</div> <div>LPG type B</div> </div> <div> <div>Tinj on petrol</div> <div>ms</div> <div>0,00</div> <div>Tinj on gas</div> <div>ms</div> <div>0,00</div> </div> <div> <div>Nozzle size</div> <div>Big</div> <div>163</div> <div>Small</div> </div>	Release now the accelerator pedal and leave the engine idling
14	<div>Keep engine on idle</div> <div>Sampling injection time</div> <div> <div>Kit</div> <div>01 LPG default</div> <div>Cylinders</div> <div>4</div> <div>RPM signal from</div> <div>RPM wire</div> </div> <div> <div>Injectors</div> <div>Injector type B</div> <div>Engine type</div> <div>Aspirated</div> <div>Level Sensor</div> <div>LPG type B</div> </div> <div> <div>Tinj on petrol</div> <div>ms</div> <div>2,37</div> <div>Tinj on gas</div> <div>ms</div> <div>3,98</div> </div> <div> <div>Nozzle size</div> <div>Big</div> <div>175</div> <div>Small</div> </div>	Wait with the engine idling ...
15	<div>Please wait while computing calibration map...</div> <div> <div>Kit</div> <div>01 LPG default</div> <div>Cylinders</div> <div>4</div> <div>RPM signal from</div> <div>RPM wire</div> </div> <div> <div>Injectors</div> <div>Injector type B</div> <div>Engine type</div> <div>Aspirated</div> <div>Level Sensor</div> <div>LPG type B</div> </div> <div> <div>Tinj on petrol</div> <div>ms</div> <div>2,37</div> <div>Tinj on gas</div> <div>ms</div> <div>2,37</div> </div> <div> <div>Nozzle size</div> <div>Big</div> <div>175</div> <div>Small</div> </div>	The map is being calculated. The Nozzle size bar gives an indication about the size of injector's nozzles to be suitable or not

16	<div>Select adaptivity type:</div> <div> <div>Guided (MAP)</div> <div>Customer (MAP)</div> <div>OBD</div> <div>Disabled</div> </div> <div> <div>Kit</div> <div>01 LPG default</div> <div>Cylinders</div> <div>4</div> <div>RPM signal from</div> <div>RPM wire</div> </div> <div> <div>Injectors</div> <div>Injector type B</div> <div>Engine type</div> <div>Aspirated</div> <div>Level Sensor</div> <div>LPG type B</div> </div> <div>NOTE: OBD Selection only with 48 poles ECU</div>	<p>If Disabled is the choice, <b>THE CALIBRATION IS COMPLETED.</b></p> <p>For more calibration steps, see next step</p>
----	--	---

We follow all steps and all questions have to be answered during the process ....

# 17

Accelerate slowly without loads, highlighting the highest possible number of indicators.


To proceed, press <Ok>  
To skip this part, press <Skip>

Idle

●●●●●●●●●●

4000 RPM

Kit	01 LPG default	Cylinders	4	RPM signal from	RPM wire
Injectors	injector type B	Engine type	Aspirated	Level Sensor	LPG type B

Tinj on petrol	ms	2,37		<b>Nozzle size</b> 
Tinj on gas	ms	2,37		

Switch loads ON (A/C, lights, etc.) and accelerate slowly and constantly, in order to turn the RED led to GREEN colour. As soon as a sufficient number of acquisitions is reached, the instruction in the circle comes active. Press OK and release the pedal.

**AUTOCALIBRATION with LOAD ACQUISITION IS COMPLETED**

## 3.2 – Autocalibration: Error Messages

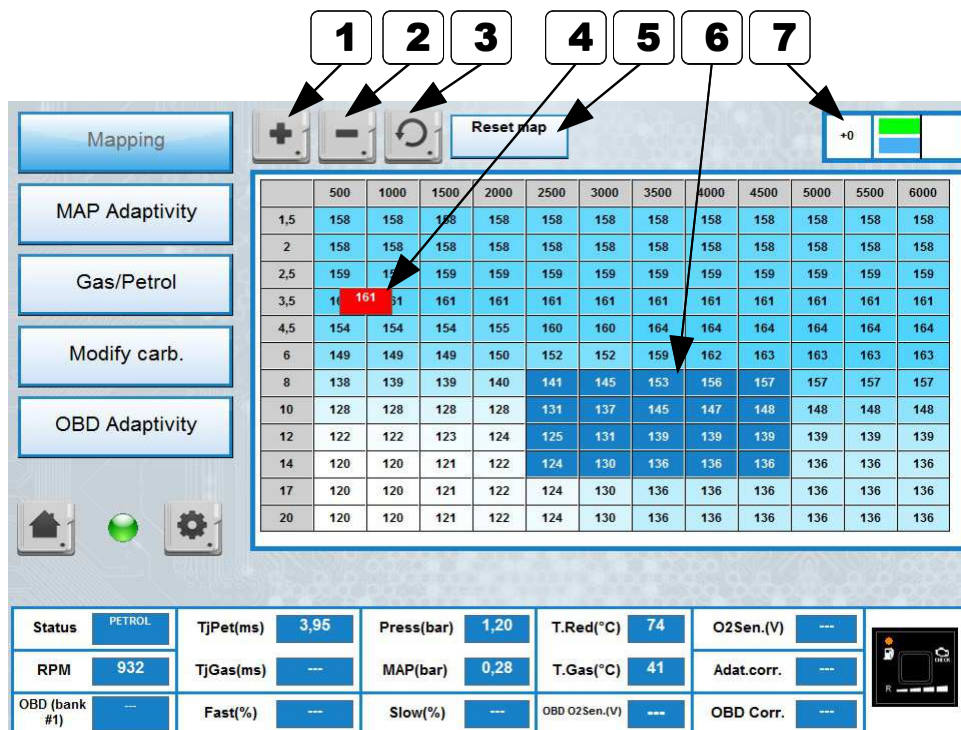
After the Autocalibration, the system could give some error messages ...

POSSIBLE ERROR MESSAGES			
<p>Warning: gas injectors could be oversized</p> <p>Calibration completed properly</p> <p>To store new calculated tuning in the ECU press &lt;Ok&gt;</p>			
Kit	01 LPG default	Cylinders	4
Injectors	injector type B	Engine type	Aspirated
Level Sensor	LPG type B		
Tinj on petrol	ms 4,01	<p>Nozzle size</p> <p>Big 50 Small</p>	
Tinj on gas	ms 2,68		
<p>Warning: gas injectors could be undersized</p> <p>Calibration completed properly</p> <p>To store new calculated tuning in the ECU press &lt;Ok&gt;</p>			
Kit	01 LPG default	Cylinders	4
Injectors	injector type B	Engine type	Aspirated
Level Sensor	LPG type B		
Tinj on petrol	ms 4,09	<p>Nozzle size</p> <p>Big 177 Small</p>	
Tinj on gas	ms 3,98		

This message is linked to the wrong size of injector's nozzles. Look at the position of the blue point in the Nozzle bar. Change the nozzles accordingly and proceed to a new Autocalibration.

## 4- Mapping: Main folder

The heart of the system: the gas map.

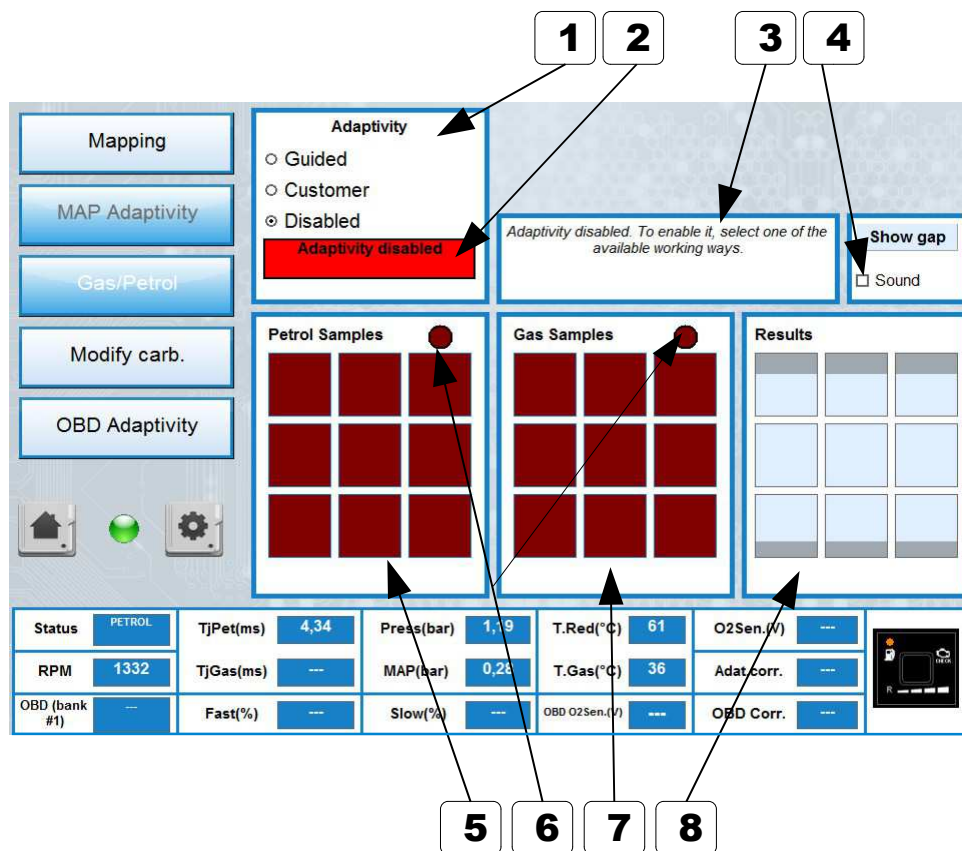


**NOTE:** - X axis shows RPM  
- Y axis shows Injection Times in milliseconds

	Description	Value
1	INCREASE VALUE	
2	DECREASE VALUE	
3	UNDO last change It is possible to go back for 1 step	
4	ACTUAL Engine Working Point	
5	RESET MAP button	
6	SELECTION of the MAP AREA where it is required to apply for an increase or decrease in correction values shown. Use the mouse to select one point or an area. The selected squares change to BLUE colour	
7	TARGET AID BAR referred to ACTUAL Working point	
<b>How it works:</b> <ul style="list-style-type: none"> <li>On Petrol, the UPPER bar is working around the centreline, the LOWER is shown but not changing.</li> <li>Switch to Gas, the UPPER bar is shown fixed in the centreline, and is the TARGET: depending on the actual gas injection time, the LOWER/BLUE bar is shorter (with a -X number) or longer (with a +Y number). Act on the buttons "+" or "-" (#1 and #2) to set the time as the TARGET (UPPER and LOWER/BLUE bars should almost match in order to have proper mixture).</li> <li><b>NOTE:</b> To get reliable informations from this "AID BAR", you should drive approximately in a specific mapping area that you want to check or fix, and try to drive as steady as possible while switching from gas to petrol and vice versa.</li> <li>If you're moving too far from your petrol target, the UPPER bar will turn from GREEN to RED: it means that the suggested number is no more reliable, and you <b>should</b> switch back to petrol and acquire the proper petrol target again.</li> </ul>		<p><b>Increase gas</b></p> <p><b>Decrease gas</b></p> <p><b>OK</b></p> <p><b>Re-acquire petrol</b></p>

## 4.1 – Mapping: MAP Adaptivity

MAP adaptivity is a way to monitor the tuning using the MAP sensor and, if enabled, it modifies the map of the tuning.



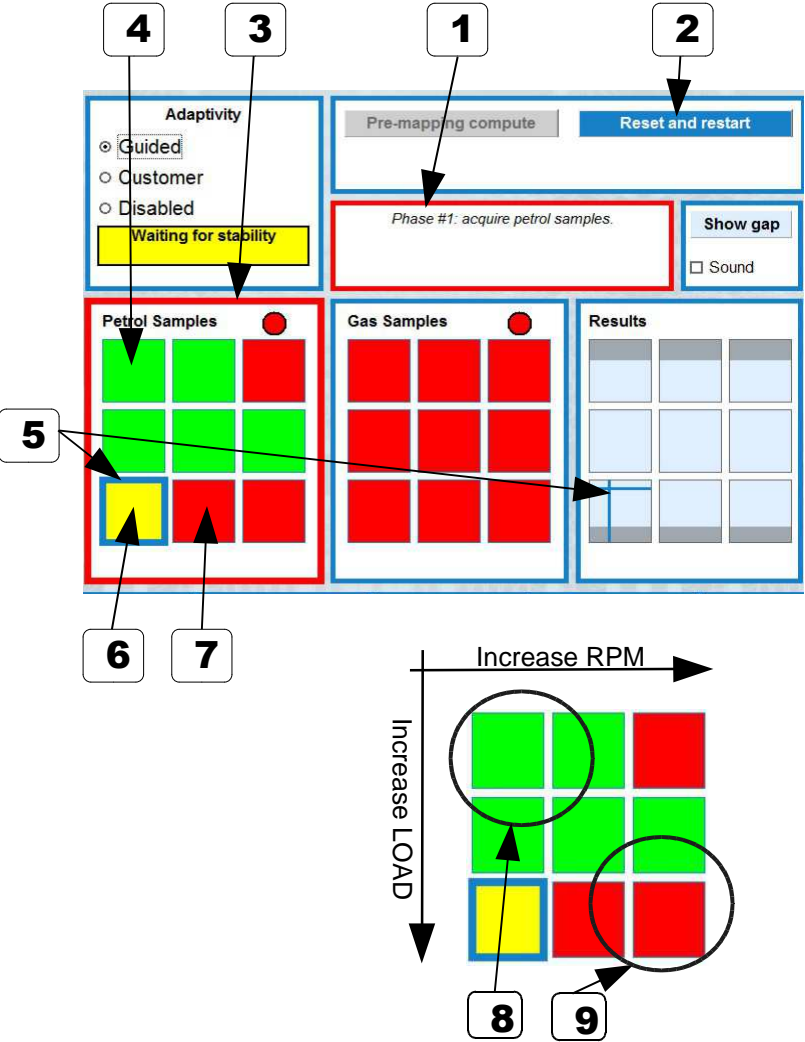
	Description	Value
1	<b>ADAPTIVITY enabling flag</b> - Guided: follow the wizard proposed by the system - Customer: follow the status of the led on the virtual switch (or the real switch) and drive the adaptivity path. - Disabled	- Disabled (default) - Guided - Customer
2	<b>ADAPTIVITY working status</b>	RED = Disabled GREEN = Enabled
3	<b>MESSAGES/INSTRUCTIONS BOX</b> Follow carefully the instructions/messages shown	
4	<b>SOUND enabling flag</b> For every valid acquisition during the process, a “bip” will be heard (the buzzer of the switch is used for the purpose)	
5	<b>PETROL SAMPLES sub-map</b> This sub-map shows a load/RPM diagram. While driving on petrol, the 9 box will turn to GREEN as soon as the number of acquisitions for each box/condition is sufficient.	
6	<b>NUMBER OF ACQUISITIONS REACHED</b> The light turns GREEN as soon as a sufficient number of valid acquisitions has been recorded. The next fuel acquisition can be started (or the result will be shown in the Results box)	RED = Not enough GREEN = Enough
7	<b>GAS SAMPLES sub-map</b> Same as above #4 but used for gas sampling.	
8	<b>RESULTS sub-map</b> As soon as enough acquisitions have been recorded, this box shows the results found.	Result is shown in form of a color scale



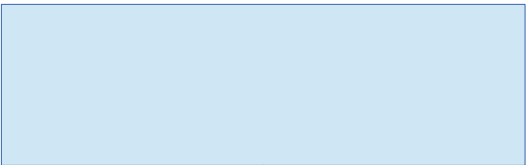


## 4.1.1 – Mapping: MAP Adaptivity Guided – Phase #1

Drive the vehicle on petrol till the completion of the “Petrol Samples” table; once all the cells turn green, manually switch over to gas.

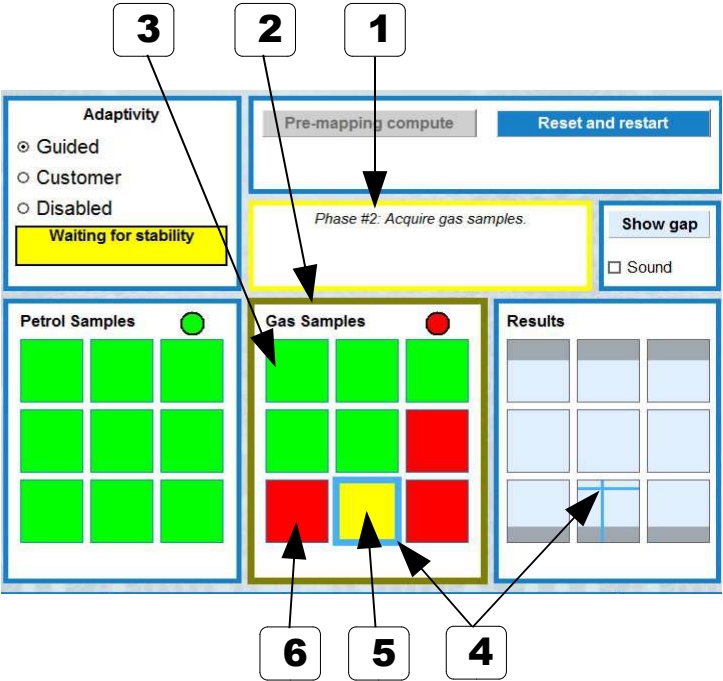


	Description	Value
1	<b>MESSAGES/INSTRUCTIONS BOX</b> Follow carefully the instructions/messages shown	
2	<b>Reset and Restart button:</b> all parameters are set to factory values, the procedure starts from scratch	
3	<b>RED edge:</b> identifies the <b>Actual working section</b> (petrol, in this sample)	
4	<b>GREEN cell:</b> sample acquired is correct	
5	<b>CURSOR position:</b> actual engine working point	
6	<b>YELLOW cell:</b> samples only partially acquired	
7	<b>RED cell:</b> sample <b>NOT</b> acquired	
8	<b>IDLE zone:</b> top left cell	
9	<b>HIGH POWER zone:</b> bottom right cell	



## 4.1.2 – Mapping: MAP Adaptivity Guided – Phase #2

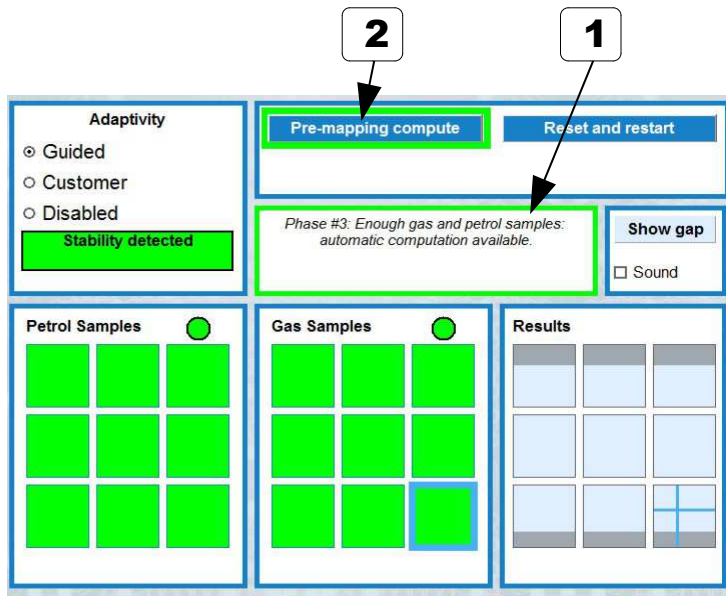
Drive the vehicle on gas till the “Gas samples” table is completed.



	Description	Value
1	<b>MESSAGES/INSTRUCTIONS BOX</b> Follow carefully the instructions/messages shown	
2	<b>GREEN edge:</b> identifies the <b>Actual working section</b> (gas, in this sample)	
3	<b>GREEN cell:</b> sample acquired is correct	
4	<b>CURSOR position:</b> actual engine working point	+
5	<b>YELLOW cell:</b> samples only partially acquired	
6	<b>RED cell:</b> sample <b>NOT</b> acquired	

## 4.1.3 – Mapping: MAP Adaptivity Guided – Phase #3

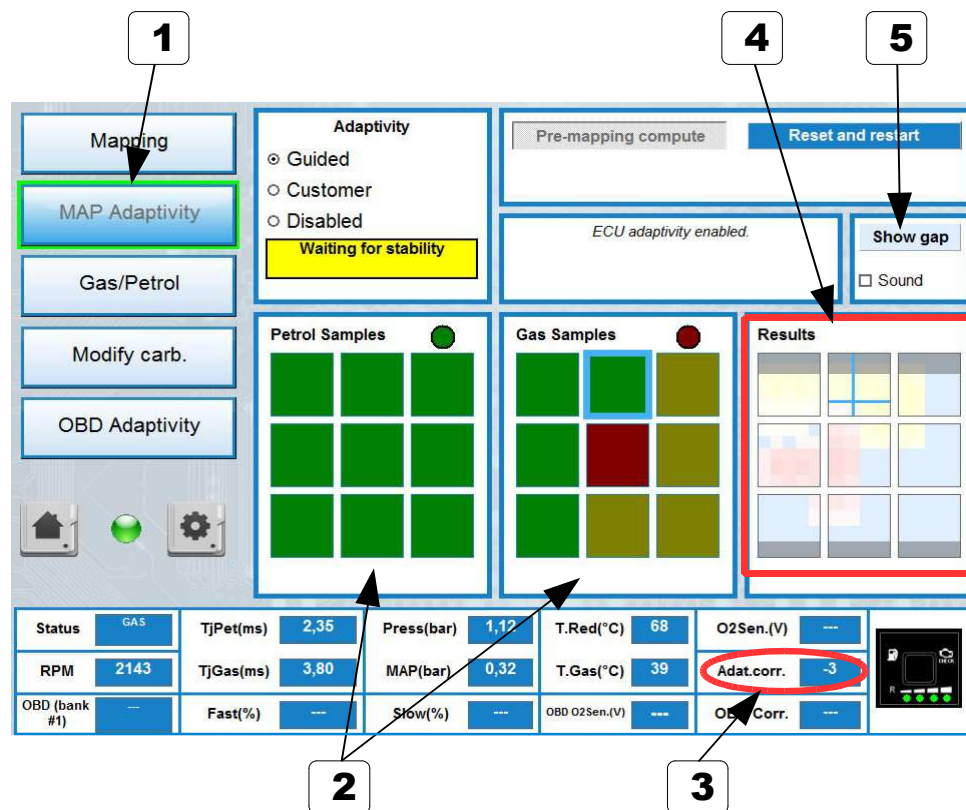
Once the map tables are completed GREEN, press the “Pre-mapping compute” button.



	Description	Value
1	<b>MESSAGES/INSTRUCTIONS BOX</b> Follow carefully the instructions/messages shown	
2	<b>Pre-mapping compute button</b> Press the “Pre-mapping compute” and the ECU will calculate the difference between the injection times acquired in the Petrol Samples and in Gas Samples. The “Result Map” is the optimized calculated map for vehicle's best working.	

## 4.1.4 – Mapping: MAP Adaptivity Guided – Phase #4

From now on, the Adaptivity is active and the ECU will continue adaptation depending on the drive style and situations.



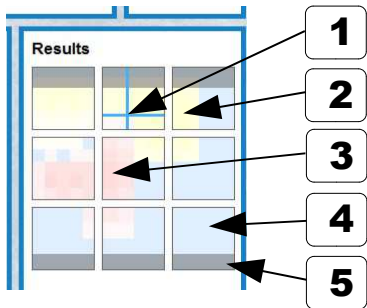
	Description	Value
1	<b>GREEN edge:</b> Adaptivity is working	
2	<b>DARK colours:</b> the mapping tables turned colours to dark colour as there is no longer the need to control them as they have been acquired	
3	<b>Adat. Corr.:</b> Adaptivity correction shows in real time the correction relevant or actual engine working point	
4	<b>Results:</b> this is the map calculated by PC	
5	<b>SHOW GAP</b> in actual engine working position NOTE: refer to Result table on the left, where the engine working position is shown If Show gap button is pressed while the car is running on gas, the indicator below will be shown. It is referred to the actual engine working position (see Note above) The indication shown is the difference between the actual injection time in working position and the "optimum" injection time as calculated in the same position. If this difference exceeds the allowed tolerance, the ECU will provide to "Adapt" the map. There is nothing that can be done manually. To see the situation in another cell move the accelerator pedal to enter a different engine working position.	



## 4.1.5 – Mapping: MAP Adaptivity Guided – Results

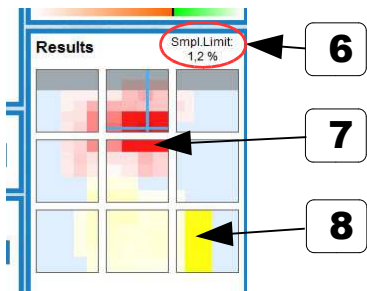
How to read the “Results Map”

**Adaptivity is within tolerance**  
Nothing to do



	Description	Value
1	<b>CURSOR position:</b> actual engine working point	
2	<b>PALE YELLOW</b> carburation is <b>slightly</b> on the rich side	
3	<b>PALE RED</b> carburation is <b>slightly</b> on the lean side	
4	<b>PALE BLUE</b> engine working area not explored or not needing correction	
5	<b>GREY</b> engine working area where adaptivity is disabled	

**Adaptivity close to the high limit**  
It is needed to do something to correct the map

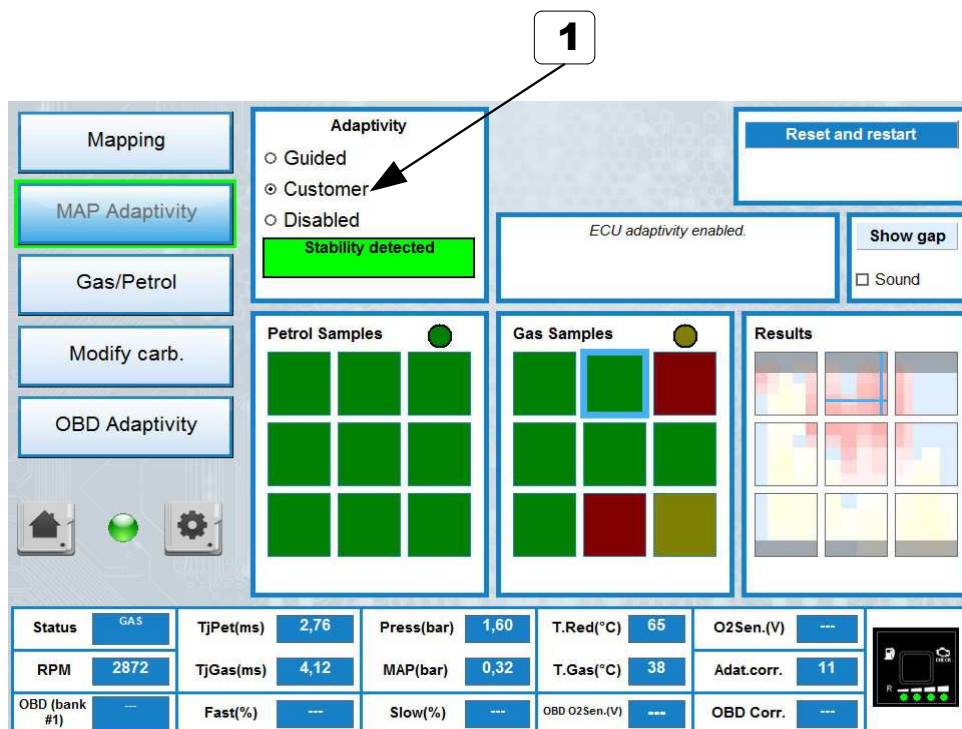


	Description	Value
6	Percentage of samples close to the high limit	
7	<b>RED</b> carburation is <b>too much</b> on the lean side	
8	<b>YELLOW</b> carburation is <b>too much</b> on the rich side	



## 4.2 – Mapping: MAP Adaptivity – Customer

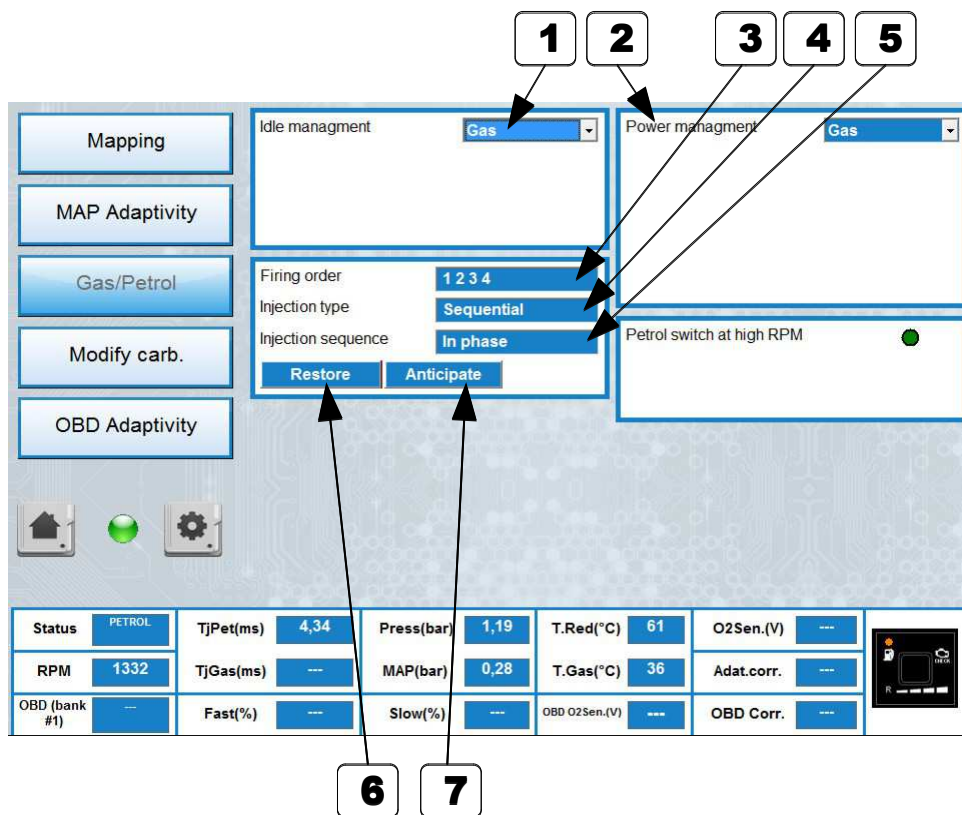
“Customer” Adaptivity



	Description	Value
1	<p><b>CUSTOMER</b></p> <p>Customer adaptivity has been developed for all those situation where it is not possible a test/calibration driving the vehicle on the road (typically too much traffic, expensive cars and so on) .</p> <ul style="list-style-type: none"> <li>• Flag the “Customer” choice and proceed as for “Guided” choice but without using the PC.</li> <li>• At start, the vehicle will be forced on petrol and it won't be possible to change-over to gas for 15-20 minutes, This is the minimum acquisition time for petrol injection time.</li> <li>• At the end of this time or, in any case, as soon as there are enough acquisitions for the map to be calculated by the ECU, it will be possible to change-over to gas. The first change-over will be advised by a beeping of the switch.</li> </ul> <p><b>Suggestions:</b></p> <ul style="list-style-type: none"> <li>• For a quick acquisition, leave the switch in “ready-to-change” position: as soon as the ECU will complete the job, it will change-over to gas immediately.</li> <li>• For a more accurate acquisition, tell the driver to keep the ECU on petrol for few days (or approx. 250-300 km.) before switching to gas.</li> </ul>	

## 4.3- Mapping: Gas/Petrol Fuel Management

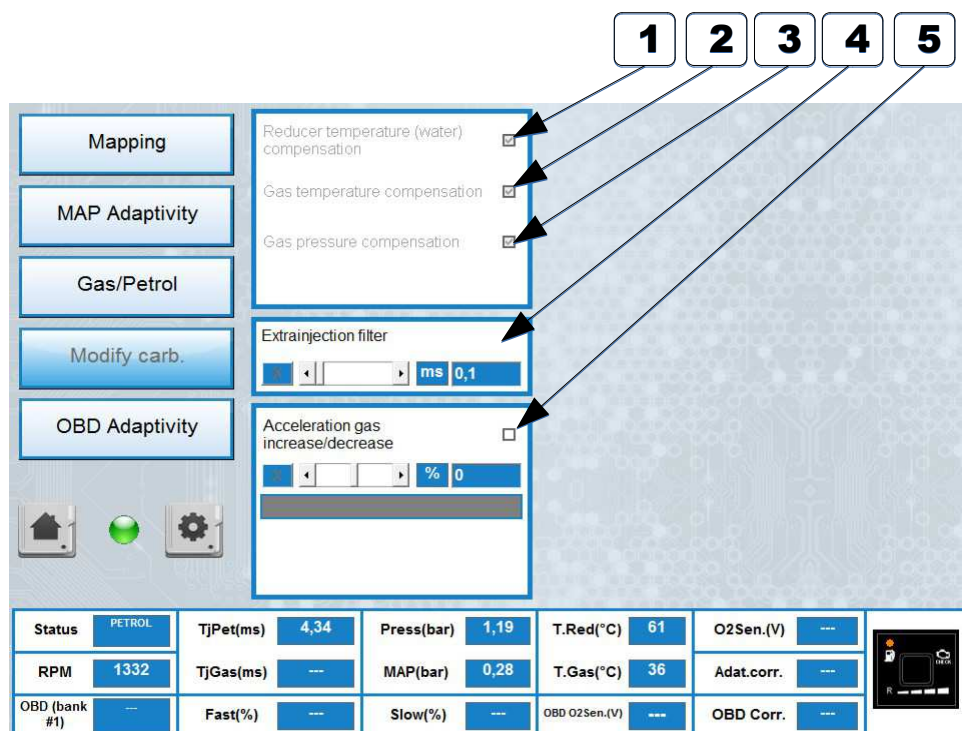
The management of fuels to increase performance or keep the check engine light off.



	Description	Value
1	<b>IDLE MANAGEMENT</b> When GAS is the choice, no more parameters RPM Wire shall be connected to enable the alternative choices	<b>Default = Gas</b> <b>Petrol steady,</b> <b>Return only</b>
2	<b>POWER MANAGEMENT</b> When GAS is the choice, no more parameters RPM Wire shall be connected to enable the alternative choices	<b>Default = Gas</b> <b>Contribution, Petrol</b>
3	<b>FIRING ORDER</b> Petrol injection sequence	<b>Display only</b>
4	<b>INJECTION TYPE</b>	<b>Display only</b>
5	<b>INJECTION SEQUENCE</b> The gas injection sequence	<b>Display only</b>
6	<b>RESTORE</b>	
7	<b>ANTICIPATE</b>	

## 4.4- Mapping: Modify carburation

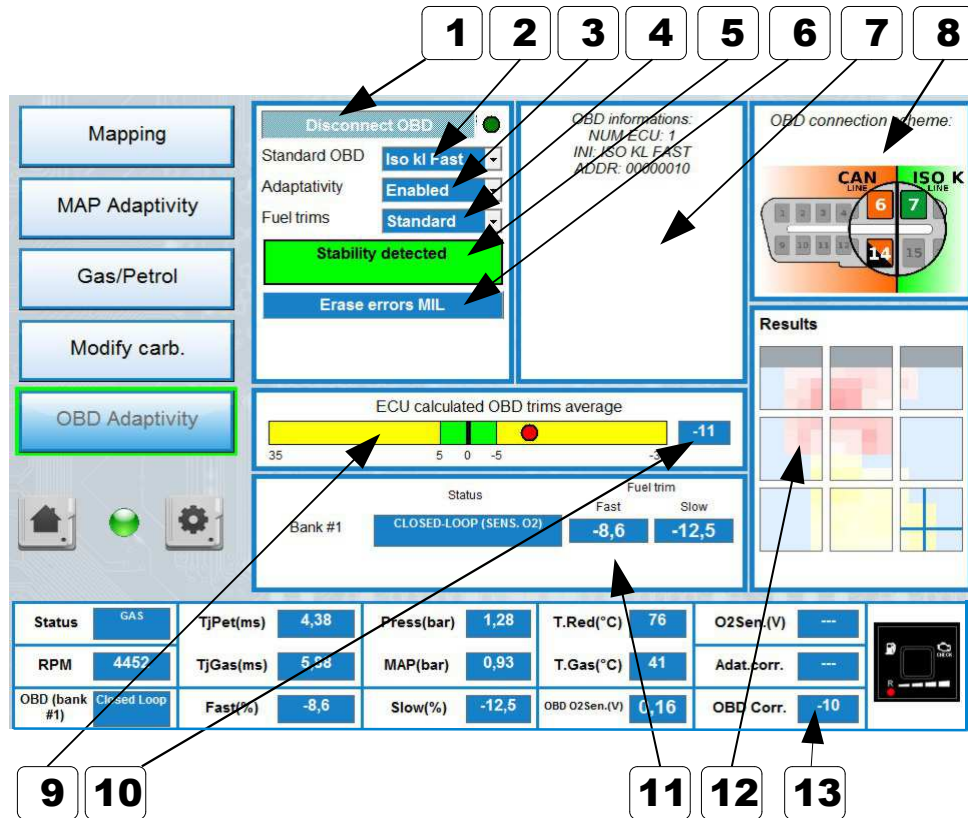
Choice of compensations, signal filtering, strategies ....



	Description	Value
1	<b>Reducer Temperature COMPENSATION</b> When flagged, there is a gas increase or decrease in injection time linked to the <b>water temperature</b> (usually measured at reducer) according to a preset table. The table is linked to the reducer type selected during calibration.	Flag
2	<b>Gas Temperature COMPENSATION</b> When flagged, there is a gas increase or decrease in injection time linked to the <b>gas temperature</b> (usually measured at the injectors rail) according to a preset table. The table is linked to the rail type selected during calibration.	Flag
3	<b>Gas Pressure COMPENSATION</b> When flagged, there is a gas increase or decrease in injection time linked to the <b>gas pressure</b> (measured by the MAP sensor) according to a preset table.	Flag
4	<b>Extrainjection filter</b> The threshold filter of the petrol injection times. Injection times under the threshold are not considered valid for gas injection.	<b>Default = 0,5</b> <b>Range = 0,1 to 2,5</b> (Values in ms) X = reset default
5	<b>Acceleration gas increase / decrease</b> This parameter is used to compensate for certain situation depending on the engine or the fuel. When an acceleration status is detected, the system increases / decreases the gas injection time according to the selected value (on a fix basis)	<b>Default = 0</b> <b>Range = -30 to +30</b> (Values in %) X = reset default

## 4.5- Mapping: OBD Adaptivity (“48” version ONLY)

The use of OBD signals to improve the adaptivity of gas ECU



### NOTE:

When the OBD Standard is unknown , it is possible to try one connection (see box #8) and push “Connect OBD”. If the standard is compatible with connection, the details will appear in box #7. Or try with another connection and do the same.

	Description	Value
1	Connect/Disconnect OBD button	
2	OBD Standard Choice (combo)	Default = Generic (List of standards)
3	Adaptivity (combo)	Default= Disabled Frozen, Enabled
4	Fuel Trims (combo)	Default = Standard Inverted, Fiat
5	Stability Detection = GREEN background Adaptivity disabled = RED background	Info box/light
6	Erase MIL errors button	Clears MIL errors
7	OBD: connection INFO	Info only
8	OBD: connection Diagram	Info only
9	ECU calculated OBD trims average (graphic) See next pages for an explanation	Red Dot shown
10	ECU calculated OBD trims average (value) Same as above but in numeric value	Numeric value shown
11	OBD Fuel Trim visualization This panel shows the actual OBD System readouts for the parameters shown.	Display only
12	Results box visualization See 4.1.5	Display only
13	OBD Corr: real time OBD adaptivity correction	Display only

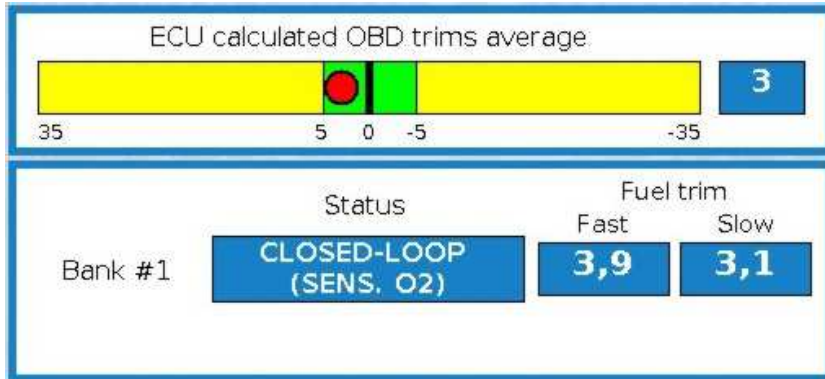
### IMPORTANT NOTE:

When Adaptivity is ENABLED, a message is shown in the Mapping Main Folder: “Adaptivity = Enabled”. It's not suggested to change the map with adaptivity enabled.

## 4.6- Mapping: OBD Adaptivity Explained (“48” version ONLY)

### How OBD Adaptivity works

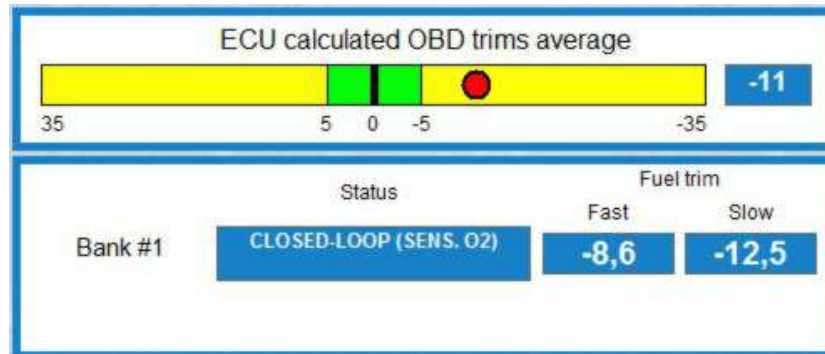
#### OBD corrections within tolerance



The “Results” map, in this condition, will NOT be changed because the carburation is within the tolerances (Thresholds).

The RED DOT indicator is within the green area.

#### OBD corrections OUT OF tolerance



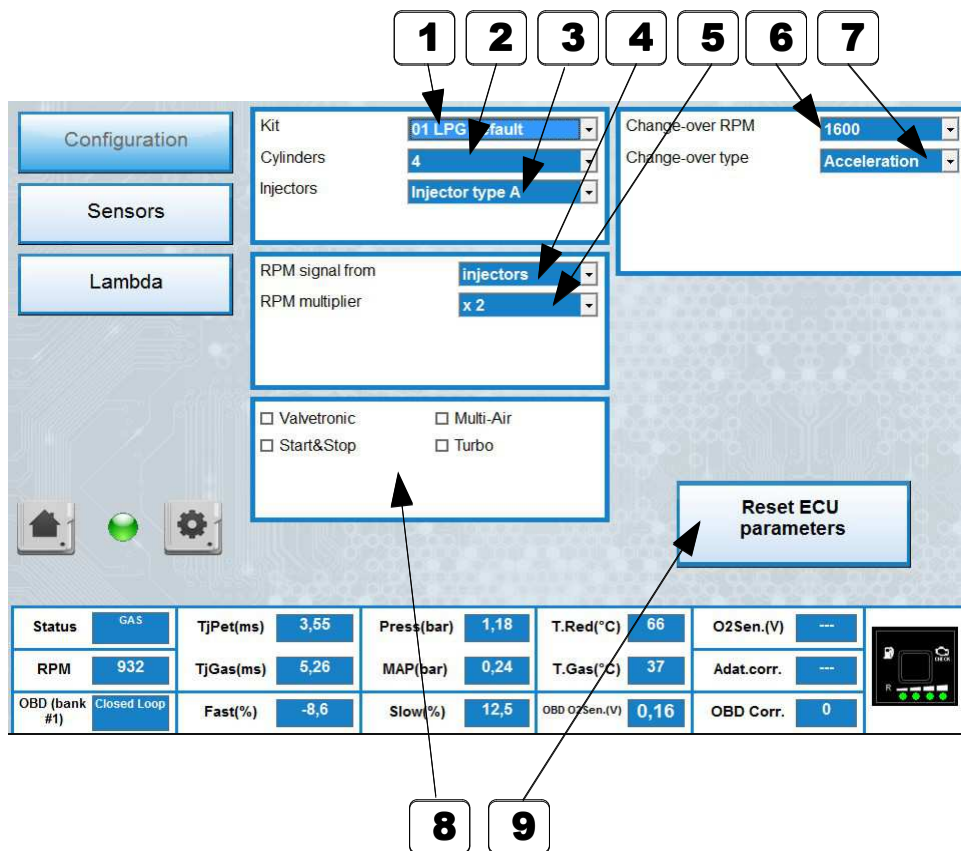
The “Results” map, in this condition, WILL BE changed because the carburation is OUT OF the tolerances (Thresholds).

The RED DOT indicator is OUT OF the green area.



## 5- Configuration: Main folder

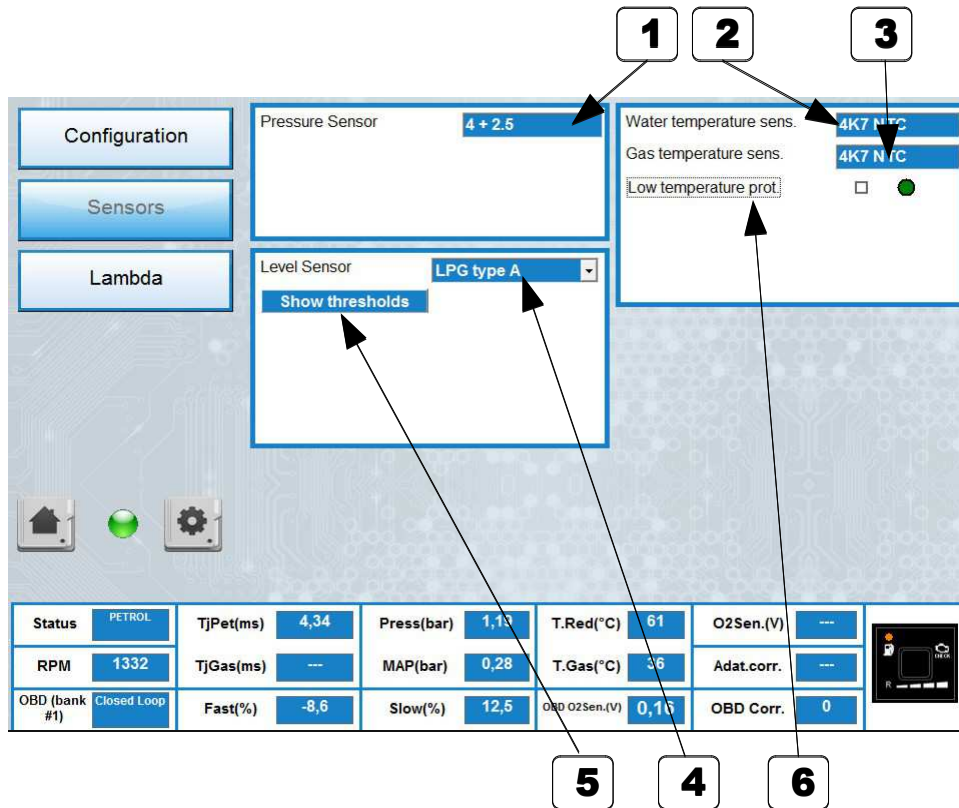
How to give instructions to the system about possible choices about the engine management and gas kit configuration



	Description	Value
1	<b>Kit type</b>	01 to xx (List)
2	<b>Cylinders number</b>	Default = 4 Range = 1 to 4
3	<b>Injector type</b> Here are listed all the possible choices. They are set according to Distributor/Manufacturer request	List upon request
4	<b>RPM signal from</b> “Injectors” selection = many functions of the board are disabled (i.e. Petrol management and more)	Default = Injectors RPM Wire
5	<b>RPM Multiplier</b> When RPM at idle is not 700/900, selection of the multiplier takes the RPM to the real value readout	Default = x2 x1
6	<b>Change-over RPM</b>	Default = 1600 Range = 0 to 2600
7	<b>Change-over type</b>	Def. = Deceleration Acceleration
8	<b>Flag selections</b> These are linked to some engine management characteristics. Flag the ones that occur on the converted vehicle	
9	<b>Reset ECU parameters</b> Push the button and all values will be restored to default ones <b>NOTE: ALL VALUES OF ECU will be set to default, even the map, not only the ones of this page</b>	

## 5.1- Configuration: Sensors

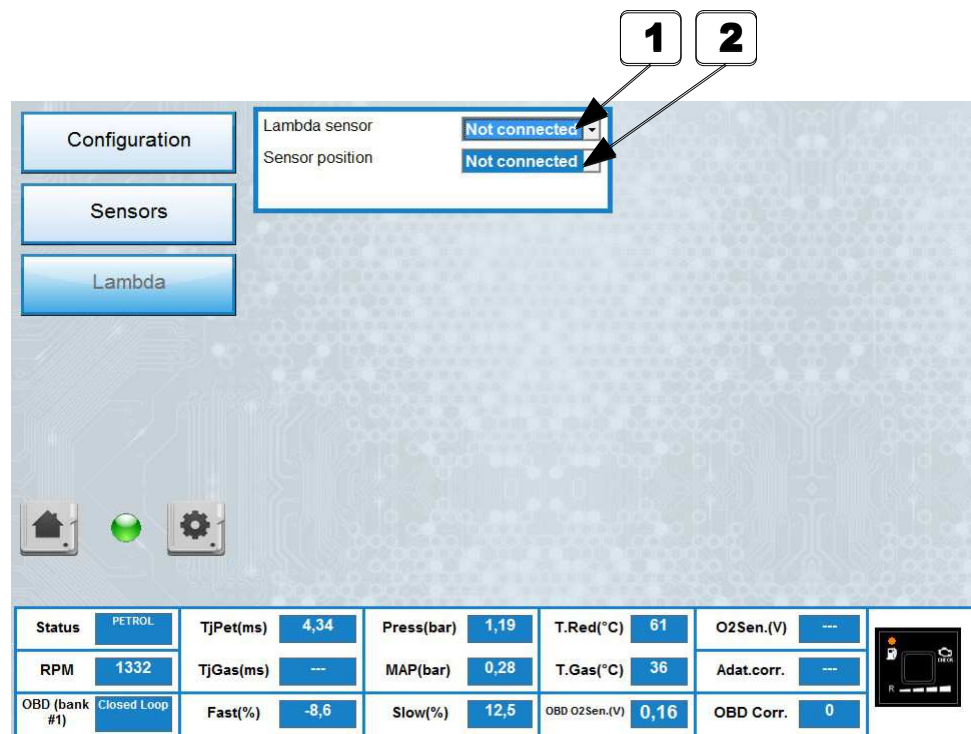
Configuration and thresholds for level sensors



	Description	Value
1	Pressure sensor	Display only
2	Water Temperature sensor	Display only
3	Gas Temperature sensor	Display only
4	<b>Level Sensor selection</b> Please select correctly the sensor in use	Default = 1050 0-90 ohm, 806, Custom, Custom (INV)
5	<b>Show thresholds</b> Push the button and the box below will be shown. Use the cursors or the arrows to modify the thresholds or Reset to set the default values.	
6	Low Temperature protection	



## 5.2- Configuration: Lambda



	Description	Value
1	Lambda sensor	Default = Not connected 0..1, 0..5 Direct, 0..5 Inverted, 0,8..1,6, UEGO, 2,5..3,5
2	Sensor position	Default = Not connected Front, Rear

## 6- Diagnosis: Errors

**1** **2** **3** **4**

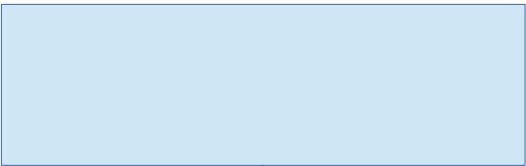
Error management				Erase errors
Cod.	Error description	Recorded	Stored	
00	Gas injector 1	---	---	
01	Gas injector 2	---	---	
02	Gas injector 3	---	---	
03	Gas injector 4	---	---	
08	Reducer pressure	---	---	
09	Intake manif. pres.	---	---	
10	Water temperature	---	---	
11	Gas temperature	---	---	
15	Supply voltage	---	---	
17	Lock-off reducer	---	---	
18	Lock-off tank	---	---	
20	Petrol injector nr.	---	---	
21	OBd Gas trim	---	---	
22	Adapt Gas trim	---	---	

Status: PETROL TJPet(ms): 4,34 Press(bar): 1,19 T.Red(°C): 61 O2Sen.(V): ---

RPM: 1332 TJGas(ms): --- MAP(bar): 0,28 T.Gas(°C): 36 Adat.corr.: ---

OBd (bank #1): Closed Loop Fast(%): -8,6 Slow(%): 12,5 OBd O2Sen.(V): 0,16 OBd Corr.: 0

	Description	Value
1	<b>ERRORS Code and Description</b>	
	00	Gas Injector 1
	01	Gas Injector 2
	02	Gas Injector 3
	03	Gas Injector 4
	08	Reducer pressure
	09	Intake manifold pressure
	10	Water temperature
	11	Gas temperature
	15	Supply voltage
	17	Lock-off reducer
	18	Lock-off tank
	20	Petrol injector number
	21	OBd Gas trim
	22	Adaptive Gas trim
2	<b>RECORDED Errors</b> Errors recorded on a Key ON - Key OFF cycle	
3	<b>STORED Errors</b> Errors saved on the ECU memory after the Key OFF	
4	<b>ERASE Errors button</b> Used to erase all Recorded and Stored errors	



6.1- Diagnosis: Diagnosis

Diagnosis information about installation.

Errors

Diagnosis

Injectors

Info

Logger

1

ECU gas inputs

2

Converted val

3

Original val

+12V Under key	V	12,61	1,88	V
Water temperature	°C	61	0,52	V
Gas temperature	°C	36	1,17	V
MAP pressure	bar	0,28	0,35	V
Gas pressure	bar	1,19	1,76	V
Fuel level	V	4,93	4,93	V
Lambda sensor	V	5,51	1,12	V

Active diagnosis

Test allowed only with vehicle running on petrol.

Switch

Evgas

Gas injectors

Status

PETROL

TjPet(ms)

4,37

Press(bar)

1,19

T.Red(°C)

61

O2Sen.(V)

---

RPM

1332

TjGas(ms)

---

MAP(bar)

0,28

T.Gas(°C)

36

Adat.corr.

---

OBD (bank #1)

Closed Loop

Fast(%)

-8,6

Slow(%)

12,5

OBD O2Sen.(V)

0,16

OBD Corr.

0

4

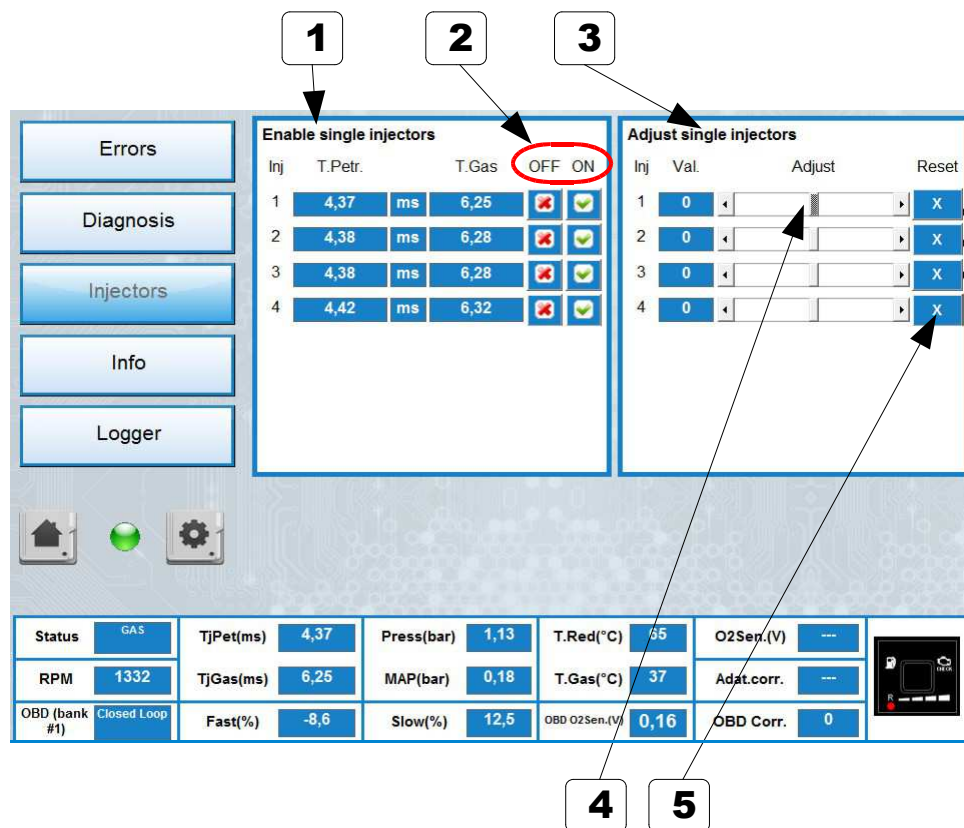
5

6

	Description	Value
1	<b>ECU GAS INPUTS</b>	Display only
2	Some basic values of the inputs for the gas ECU are shown to compare the real input “Original value” (always in Volts) to the readout “Converted values” (shown in different scale)	
3		
4	<b>ACTIVE DIAGNOSIS: Switch</b> Press and follow instructions in the window to verify switch functions.	
5	<b>ACTIVE DIAGNOSIS: Gas Lock-off (EvGas)</b> Same as 4 but for the lock-off valves.	
6	<b>ACTIVE DIAGNOSIS: Gas injector</b> Same as 4 but for the gas injectors.	

## 6.2- Diagnosis: Injectors

Diagnosis information about settings for injectors.



	Description	Value
1	<b>ENABLE SINGLE INJECTORS</b> Used to check each single gas injector after installation: verifies the correspondence between the petrol and gas injector working on the same cylinder.	
2	<b>ENABLE SINGLE INJECTORS: ON / OFF</b> Buttons/command to verify point #1	
3	<b>ADJUST SINGLE INJECTORS</b> The values of opening/closing can be modified for each single injectors (i.e. used to correct for defective injector, for different length of the hoses, etc.)	
4	<b>ADJUST INJECTORS: Commands</b> Use either the cursor or arrows to change the value. <b>NOTE: the values shown are in points referred to the main map.</b>	
5	<b>ADJUST SINGLE INJECTORS: Reset</b>	Reset to Default





## 6.3- Diagnosis: Information

Info about how long the ECU worked on gas.

Errors

Diagnosis

Injectors

Info

Logger

ECU total working time

Petrol hours0.06

Gas hours0.04

1

2

StatusGAS

TJPet(ms)4,38

Press(bar)1,13

T.Red(°C)74

O2Sen.(V)---

RPM1332

TJGas(ms)6,36

MAP(bar)0,18

T.Gas(°C)41

Adat.corr.---

OBD (bank #1)Closed Loop

Fast(%)−8,6

Slow(%)12,5

OBD O2Sen.(V)0,16

OBD Corr.0

Home

Refresh

Settings

ECU total working time

Petrol hours0.06

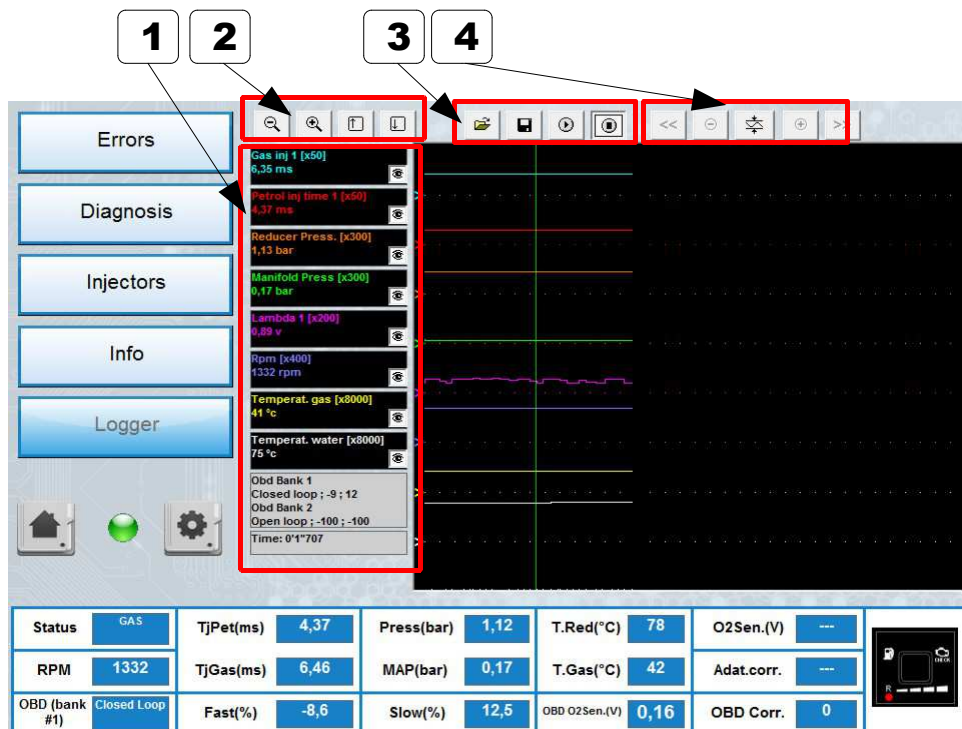
Gas hours0.04

	Description	Value
1	ECU total working time ON PETROL	Hours
2	ECU total working time ON GAS	Hours

This detail is useful to get idea for After Sales Services and Assistance.

## 6.4- Diagnosis: Logger

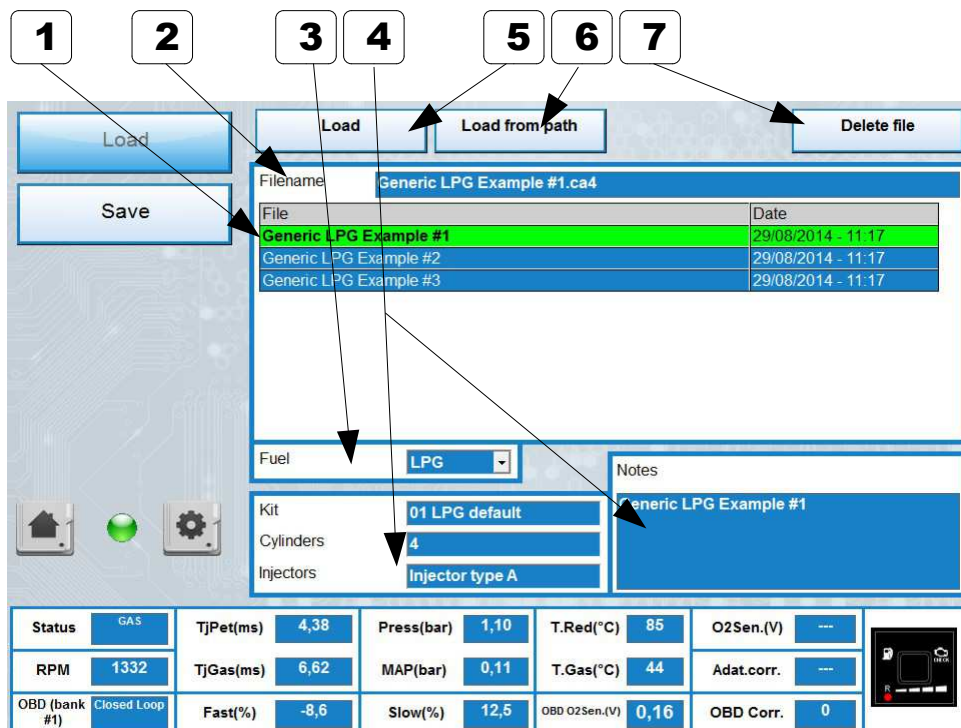
The logger shows the main working parameters of the engine. It works both off-line (as a player) and real time (show or record).



	Description
1	<b>Vehicle variables:</b> <ul style="list-style-type: none"> <li>- 8 variables are possible to be checked.</li> <li>- Use the mouse right button on the square to choose the variable</li> <li>- The Eye button is enabling or disabling the variable visualization</li> <li>- The grey label at the bottom of the column shows the elapsed time</li> </ul>
2	<b>Zoom and vertical position tools:</b> <ul style="list-style-type: none"> <li>- Lens buttons allow to change the zoom of the selected parameter (amplitude, thus Y axis).</li> <li>- The arrow buttons allow to move up and down the position of the variable, so that a table with own priority can be set.</li> </ul>
3	<b>Mode:</b> <p>These commands allow to:</p> <ul style="list-style-type: none"> <li>- Open a saved log file (Offline mode)</li> <li>- Save a .log file</li> <li>- Start / stop the recording / playing</li> </ul>
4	<b>Scroll and time base:</b> <ul style="list-style-type: none"> <li>- "+" and "-" buttons are used to change the zoom (time base, thus X axis)</li> <li>- "&gt;&gt;" and "&lt;&lt;" buttons are used to fast move forward and backward</li> <li>- The wave button is used to shrink or enlarge the time window for all channels</li> </ul>
	<p><b>NOTE:</b> the limit for the .log file is linked to your HD capacity, as the file is recorded on the HD of your PC. Of course, keep in mind that if you have to send it for assistance or consultancy, the size is important. As an average, 1 hour is approx. 8 MB.</p>

## 7- File management: Load

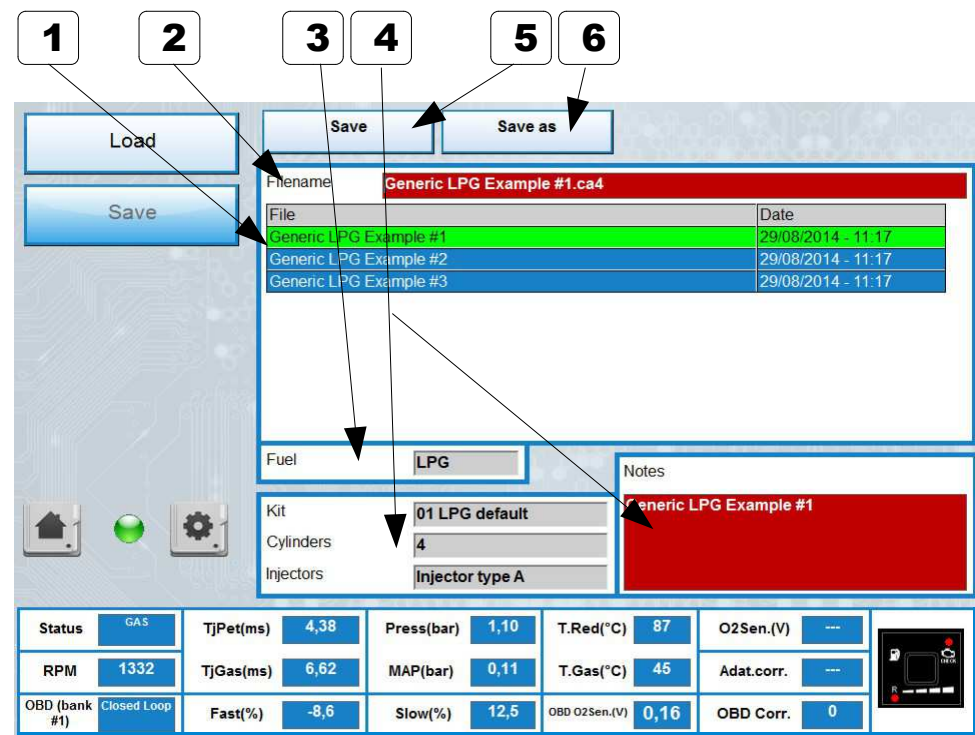
Here it's possible to find all saved configuration of the connected ECU.



	Description	Value
1	<b>FILES LIST</b>	Select the file with the mouse
2	<b>Selected file indication</b>	
3	<b>Filter for file selection</b> (usually is the type of gas, LPG or CNG)	
4	<b>Main details of file, with reference to:</b> - Kit type - Number of cylinders - Type of injectors - Notes	See "Files Management: Save" for more details
5	<b>LOAD button</b> Press to load into the gas ECU the file selected	
6	<b>LOAD FROM PATH button</b> Press to load a known file from a path in the PC	It opens "the File Manager of the PC"
7	<b>DELETE FILE button</b> Press to delete the selected file	

## 7.1- File management: Save

How to save the actual configuration of the gas ECU for future needs.



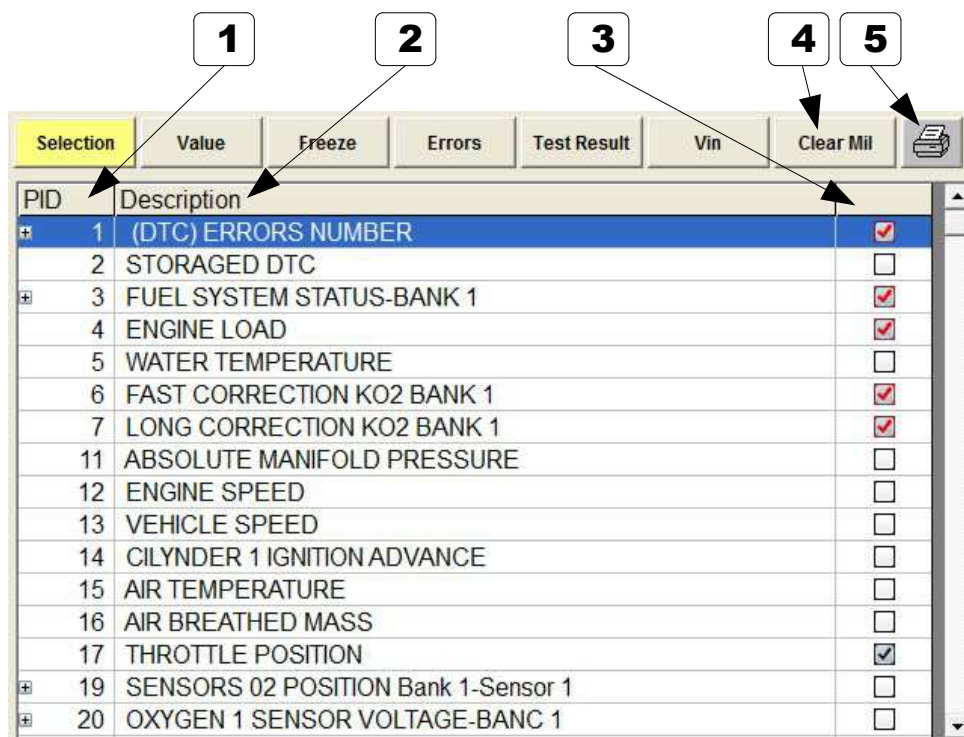
	Description	Value
1	<b>FILES LIST</b>	Select the file with the mouse
2	<b>Naming the file</b> can be filled by the installer at his own discretion	
3	<b>Filter for file selection</b> (usually is the type of gas, LPG or CNG)	
4	<b>Main details of file, with reference to:</b> <ul style="list-style-type: none"><li>- Kit type</li><li>- Number of cylinders</li><li>- Type of injectors</li><li>- Notes</li></ul> can be filled by the installer at his own discretion	See “Files Management: Save” for more details
5	<b>SAVE button</b> Press to Save a file into the default folder in the PC	
6	<b>SAVE AS button</b> Press to Save a file into a specific folder in the PC can be selected by the installer	It opens “the File Manager” of the PC

## 8- OBD Scan Tool: Selection

Available in 48 poles ECU only

In order to accede to the OBD scan tool an active OBD connection is needed (OBD adaptivity enabled/frozen)

Below is a list of the OBD services supported by the Petrol ECU. It is possible to flag/select the ones that are needed to be monitored. The ones flagged RED are always needed by the gas ECU. They cannot be removed or disabled.



	Description	Value
1	PID (Parameter ID)	
2	DESCRIPTION	
3	FLAG	
4	<b>CLEAR MIL</b> (Malfunction Indicator Lamp) Press this button and an error erasing command will be sent to the OBD ECU	
5	<b>PRINT</b> Press the button to print the current page	

## 8.1- OBD Scan Tool: Value

The list below shows the selected parameters only from previous page. The values shown are read in real time via OBD.

1

2

3

Selection	Value	Freeze	Errors	Test Result	Vin	Clear Mil	
PID	Description						
1	(DTC) ERRORS NUMBER				3		
3	FUEL SYSTEM STATUS-BANK 1				CLOSED LOOP/SENS		
4	ENGINE LOAD				51,4 %		
6	FAST CORRECTION KO2 BANK 1				-8,6 %		
7	LONG CORRECTION KO2 BANK 1				12,5 %		
17	THROTTLE POSITION				11,8 %		
21	OXYGEN 2 SENSOR VOLTAGE-BANC 1				0,165 V		

	Description	Value
1	PID	
2	DESCRIPTION	
3	VALUE in real time	



## 8.2- OBD Scan Tool: Freeze Frame

This page shows the “freeze frame”: this is the condition of the vehicle when an error, memorized in the petrol ECU, happened.

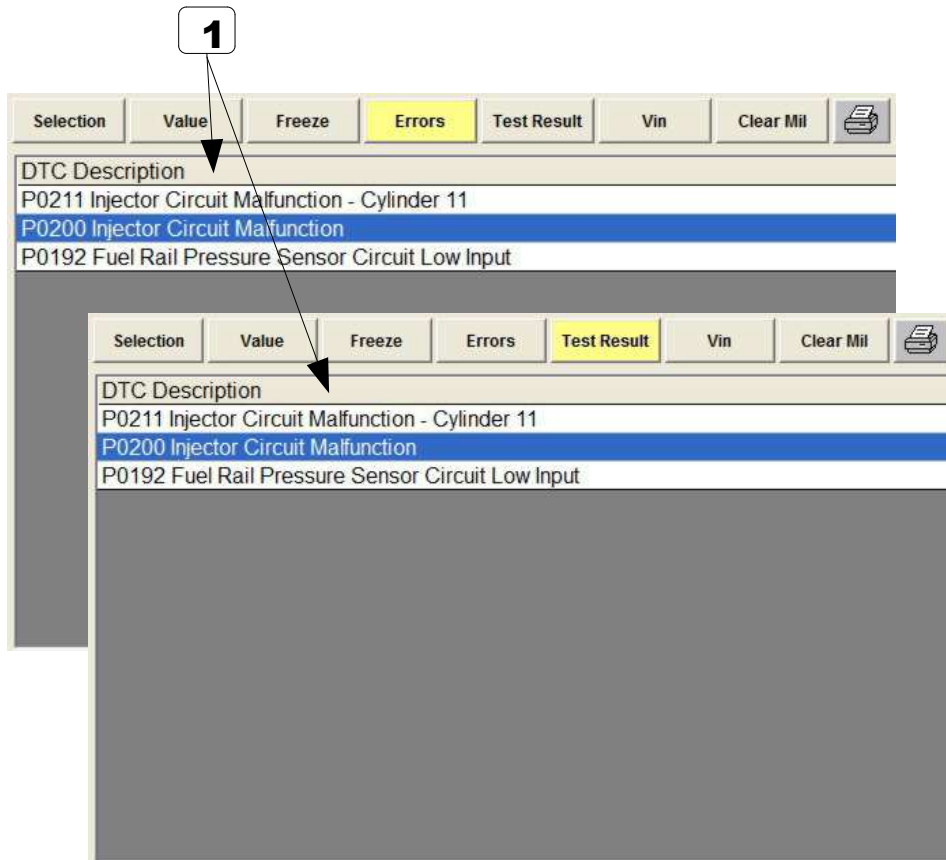
Selection	Value	Freeze	Errors	Test Result	Vin	Clear Mil	
PID	Description						
1	(DTC) ERRORS NUMBER	126					
1	MIL LAMP STATUS	ON					
1	MISFIRE MONITORING	SUPPORTED					
1	FUEL SYSTEM MONITORING	SUPPORTED					
1	COMPREHENSIVE COMPONENT MONITORING	SUPPORTED					
1	RESULT MISFIRE	NOT COMPLETE					
1	RESULT FUEL SYSTEM	NOT COMPLETE					
1	RESULT COMPREHENSIVE COMPONENT	COMPLETE OR NOT A					
1	CATALYST MONITORING	NOT SUPPORTED					
1	HEATED CATALYST MONITORING	NOT SUPPORTED					
1	EVAPORATIVE SYSTEM MONITORING	NOT SUPPORTED					
1	SECONDARY AIR SYSTEM MONITORING	SUPPORTED					
1	A/C SYSTEM REFRIGERANT MONITORING	SUPPORTED					
1	O2 SENSOR MONITORING	SUPPORTED					
1	O2 SENS HEATER MONITORING	NOT SUPPORTED					
1	EGR SYSTEM MONITORING	SUPPORTED					

	Description	Value
1	PID	
2	DESCRIPTION	
3	STATUS	

## 8.3- OBD Scan Tool: Errors and Test result

In these two pages there are the lists of

- Errors: the permanent errors (DTC) memorized in the ECU (which caused the MIL to come on)
- Test result: the latent errors, which happened in the actual live key contact cycle, not memorized yet (they did not caused the MIL lamp to come on yet).

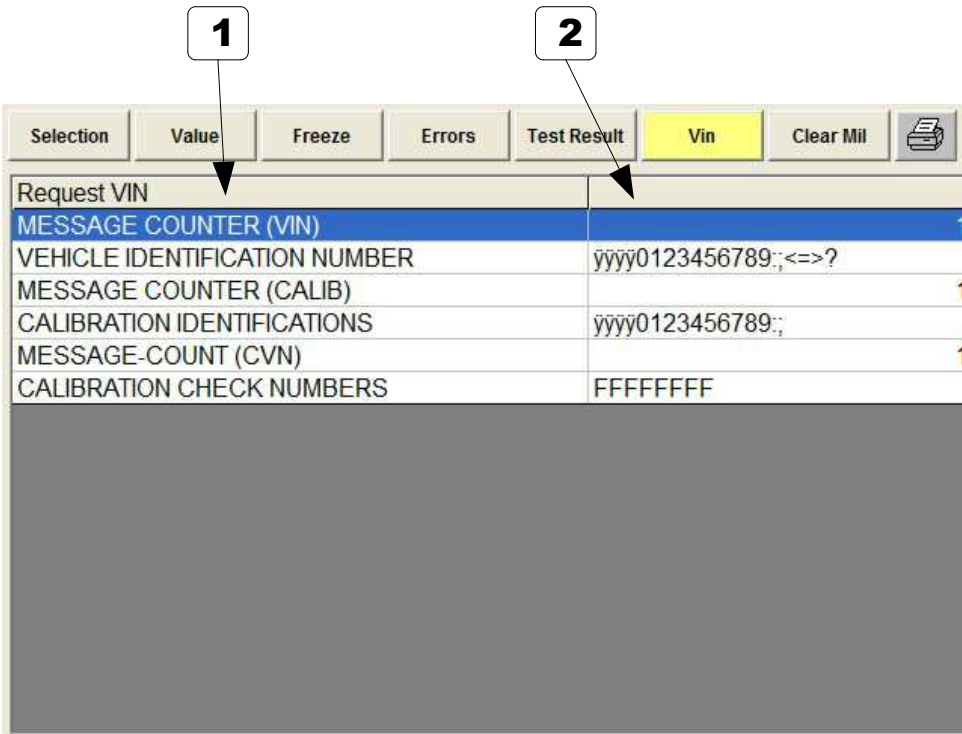


	Description	Value
1	ERROR DESCRIPTION	

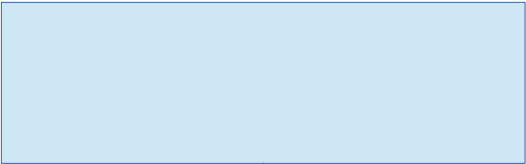


## 8.4- OBD Scan Tool: VIN

This is the place where the VIN (Vehicle identification numbecarr) can be found and is memorized.



	Description	Value
1	Request VIN	
2	VALUE	



99- Sample page

Short description

	Description	Value
1		
2		
3		
4		
5		

# NEUTRO

NOTE

