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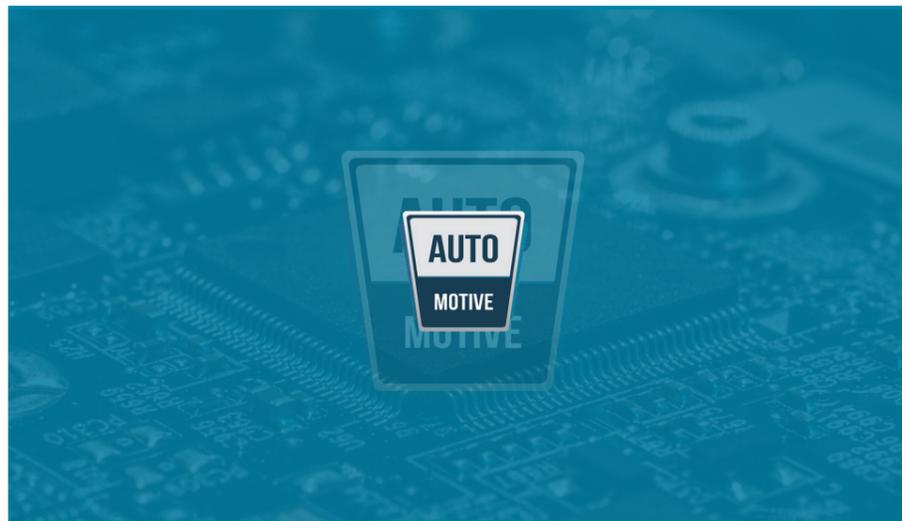
DESCRIPTION OF THE FUNCTION **IN ZENIT ECU**



01 ”

EFFICIENT PROCESSOR WITH AN AUTOMOTIVE CERTIFICATE

Zenit controllers have a certified, 32-bit, Dutch processor, which has gained worldwide recognition of the car industry. The certificate proves the highest quality and is awarded to companies producing automotive components. It was created by the International Automotive Task Force (IATF), which includes car companies such as the BMW Group, Daimler, Fiat, General Motors, and Volkswagen as well as industry organizations. Obtaining the certificate is possible only after meeting rigorous standards during a dedicated audit of the certification unit indicated by IATF. What does the possession of the certificate guarantee? Meeting the most rigorous standards of the largest automotive concerns and ensuring that the processor used in Zenit controllers will work perfectly in every car and will be compatible with vehicle installations. The processor is manufactured by NXP.



02 ”

EMULATOR BASED ON SEMICONDUCTORS

Emulators based on semiconductors express the professional approach of the Zenit installation manufacturer, who is developing along with the market. Emulator based on semiconductors consists of electronic components that are very fast and at the same time guarantee long and trouble-free work. What's more, unlike transmitters that have been used in controllers so far, emulators based on semiconductor do not wear out mechanically. Thanks to their speed, they allow to perform functions that were not possible on the transmitter emulators: secondary petrol injection or quick switching to petrol.

03 ”

OPERATION OF ENGINES WITH SEMI-SEQUENTIAL INJECTION AND FULL GROUP

This function gives the possibility to control operation systems by petrol injection, which were once used in petrol engines. The operation of these systems is based on a different method of gas delivery than it is done in the most popular systems of multi-point petrol injection. Semi-sequential systems are the ones in which two injectors open simultaneously. The full group is a system in which all petrol injectors open simultaneously.

04”

BUILT-IN OBD MODULE

Controllers in the OBD version are an ideal solution to facilitate the work of the installer. They are used in cars produced in Europe after 2000 (in most cases). The OBD (On Board Diagnostic) module provides an insight into engine performance parameters - mainly of the current fuel mixture. What's more - it provides access to extensive engine diagnostics. Zenit controllers in the OBD version allow efficient gas regulation. In addition, for Valvetronic engines, the OBD control is much faster and more accurate than the classic regulation after injection times. Another advantage of using controller in the OBD version is the possibility of using the automatic correction, i.e. the function in which the gas controller takes care of the composition of the mixture. This is because it reads data from the car's computer. The OBD module allows reading and potential deleting of the errors in the vehicle's computer. For the installer, it is a great convenience and time saving for the regulation of the installation - he uses one device in a multifunctional way, instead of two separate ones. The measurable benefit of using the OBD module for a driver is an application of the perfect mixture for the engine.

THE BENEFITS OF USING ZENIT CONTROLLER IN THE OBD VERSION:

-  insight into current engine operating parameters
-  access to extensive engine diagnostics
-  automatic correction
-  reading (if necessary also deleting) of the errors from the vehicle's computer
-  comfortable assembly of the installation
-  time saving of the installer
-  a mixture that is perfectly matched to the engine's operation
-  2 in 1 use of only one device instead of two separate ones - controller unit and OBD scanner in one!

05”

BUILT-IN FUEL LEVEL EMULATOR

The controller with built-in fuel level emulator is the most advanced platform available in the Zenit installation. It has a built-in OBD module – so it is an extension of the functionality of the Black Box platform and additionally has a built-in emulator. It is available for a whole range of engines: 3, 4, 5, 6, 8 cylinders. When choosing Zenit controller with emulator, the installer simplifies to the maximum the assembling stage of the LPG & CNG gas installation and its subsequent calibration. The installers and drivers know perfectly well the situations in which the fuel level pointer drops despite running on gas. This state is undesirable by the driver of the car, but it can be changed by using an emulator. The emulator restores the actual fuel level after restarting the engine. Incorporating it into Zenit controller eliminates the need to purchase and install an external emulator (additional device). The emulator built into the control unit is simply and quickly configurable from the software level. The wiring loom of the controller is equipped with additional emulator cables, which can be routed in an easy way with the electric wires.

BENEFITS OF USING CONTROLLER WITH A BUILT-IN EMULATOR:

-  convenient and maximally simplified method of installation
-  installation time minimized
-  calibration simplified to a minimum
-  driver's satisfaction resulting from the correct indication of the fuel level
-  3in1! using only 1 device instead of 3 separate ones: control unit, OBD scanner and emulator in one!

06”

CONFIGURATION OF THE INJECTION SEQUENCE

There is already a very important feature available in the Zenit Black Box software, which was suggested by the installers themselves at the design stage of the new premium brand. The function in the program is called 'configuration of the injection sequence' or 'configuration of the injectors'. From the level of the program it is possible to assign gas injectors to petrol ones. In addition, a special algorithm, analyzing the ignition order of a particular engine, can change the standard 1:1 setting to 'accelerated', causing that gas reaches the engine earlier. In some cases, this functionality allows to improve the efficiency of the engine - for example with very long hoses between the injectors and the suction collector. What's more - it enables a comfortable and convenient repair of any mistakes made by the installer, which could have occurred when connecting the gas controller emulation (while connecting the electrical system). Repair is possible from the software position. This is of great importance especially in those vehicles where the installation under the hood is not very visible and difficult to access. Time saving resulting from the possibility of using the cylinder change assignment function and the acceleration of the sequence in the Zenit Black Box program is highly and positively evaluated by the installers.



07”

CONTROL OF EXTERNAL DEVICES

The function of external devices control allows to easy control of the units which operation and connection must be synchronized with the operation of the LPG & CNG gas installation. An example is the connection and control of an external petrol injectors emulator or a fuel pressure and fuel level emulator. In CNG installations, however, this function is used to control the variator.

08”

CIRCUITS OF SOLENOID VALVES

This functionality allows for accurate diagnostics of solenoid valves and allows for the control of external devices. Two circuits allow to manage each solenoid valve separately. It also gives the possibility to close the rear solenoid valve and carry out a scentless and safe exchange of gas filters.

09

INPUTS OF LAMBDA SENSOR SIGNAL

Lambda sensor is a small size sensor, which is located in the vehicle's exhaust manifold. It fulfills an important function - it measures the level of oxygen in the exhaust - but at the same time poses problems for the owners of petrol cars. The input of the lambda sensor signal makes it possible to connect and read the signal in the Zenit software. The function is used primarily in cars without OBD. For cars with an on-board computer, we recommend installing the controller in the OBD version and obtaining the lambda sensor operating parameters without mechanical interference in the vehicle's electrical system.

10

PRESSURE AND GAS TEMPERATURE SENSOR INTEGRATED IN THE FLOW

Integration of pressure, vacuum and temperature sensor in one framework and their assembly in the flow, guarantee the comfort of the installer's work. The gas temperature reading from the sensor located in the flow allows to obtain quickly very accurate values - in contrast to the sensors tightened to the injection board.

The use of integrated sensors in the flow also positively influences the aesthetic of the LPG & CNG gas installation under the vehicle hood - the assembly is possible in a much more tidy way, because the number of pressure and vacuum electrical connections is reduced to a minimum.

11

COOPERATION WITH THE USB INTERFACE

The standard in the automotive LPG & CNG gas installations is the possibility of cooperation between the control unit and the USB interface. Thanks to this cooperation, the connection with the gas controller is at all possible. Each of Zenit controllers works with the USB interface.

12

COOPERATION WITH THE RS232 INTERFACE

The RS232 interface is the older type of interface used for communication between the computer and external devices, in this case with the gas controller.

Each Zenit controller works with the USB interface, and the selected ones have the option of cooperating with the RS232 interface.

The installers who work on older computers and laptops most often use communication via the RS232 interface.

13"

COOPERATION WITH THE BLUETOOTH INTERFACE

Cooperation with the bluetooth interface means primarily the comfort and convenience of wireless work – installers appreciate this solution because they avoid unwinding and winding the cable connecting the computer with the gas controller. In addition, bluetooth communication is resistant to electrical interference which can be caused by some heavily worn out engines.

14"

PROTECTION AGAINST DAMAGE WHEN THE UPDATE IS INTERRUPTED

Zenit controllers with protection against damage when the update is interrupted, are equipped with a special permanent internal memory. The function protects the controller in any unforeseen situation that may disturb the update process. Most often the update is interrupted as a result of discharging the laptop battery or as a result of inadequate contact. Thanks to this important protection, the controller will come back to the update download on the next attempt of an effective connection.

15"

OPERATION OF LPG AND CNG GAS

Almost 100% of Zenit controllers are adapted to work with LPG & CNG fuels. Models: Zenit Compact, Zenit Black Box, Zenit Blue Box, Zenit Pro, Zenit Diesel are able to properly dose, and thus cooperate with both LPG and CNG. Only the Direct model is dedicated to power supply strategies based solely on LPG.

16"

AUTOMATIC ADJUSTMENT OF THE MODEL

The possibility of automatic adjustment of the multiplier model means, first of all, saving time of the installer. Zenit program collects the map and thanks to this function the program itself corrects the points of the map. The installer only observes the effect of its operation in a simple and trouble-free way. The only action he takes is to confirm the collected map, which is limited to one click.

17”

CONSTANT SWITCHING OF THE SELECTED CYLINDERS TO PETROL

It is highly advanced function available in 'Box' controllers. It permits for permanent switching of any engine cylinders to petrol. With the use of this function, the installer's diagnosis of the possible faults is simplified to a minimum. These benefits are possible thanks to the semiconductor emulator and properly designed program.

From the driver's point of view, the use of the controller with an option of permanently switching of the selected cylinders to petrol is also very important. It allows to enjoy the economics of driving on gas even in a service situation. Situation that best illustrates the economic possibilities of the function is the need to replace the injector. The workshop takes off the exhausted injector, and the processing of the new injector order is possible within a few days. Until the assembly of a new gas injector is done, instead of forcing the driver to drive on petrol, it is enough to switch only one cylinder to work on petrol (from the software position). This feature has a colossal meaning for both the installer and the driver.



18”

CORRECTION OF THE MIXTURE AFTER CAR ENGINE REVOLUTIONS

Each Zenit controller has the option of adjusting the mixture after engine revolutions as a standard. With this function, you can set the mixture at idle speed. In addition, it is possible to make an additional adjustment of the installation, which can not be carried out on the model (depending on the load). The function is necessary to regulate the LPG & CNG gas installation.

19”

COMPENSATION ON THE TEMPERATURE OF THE REDUCER AND GAS

After starting the vehicle, along with heating of the engine, the temperature of the gas also increases, and thus the composition of the mixture changes. The possibility to compensate on the temperature of the reducer and gas allows Zenit controller to react to this change. Thanks to this function, the computer is able to dose gas properly, despite extremely low or extremely high temperatures that affect the installation and its components. Immediately after switching to gas installation, after a long stop, when the engine is still unheated and the gas has a low temperature and high density - switched on compensation prevents from too rich mixture. When the gas temperature rises, it becomes less and less dense. This may result in excessive depletion of the mixture. After activating the compensation function, at high gas temperatures, the controller enriches the mixture so that the installation works properly.

20

COMPENSATION ON GAS PRESSURE

The possibility of using the compensation function on gas pressure is a guarantee of stable injection time and a stable mixture. This function prevents from mixture changes at gas pressure fluctuations that occur to a lesser or greater extent.

21

COMPENSATION ON ACCELERATION

The function of compensation on acceleration allows to change the composition of the given mixture. It is used when the car needs to change the composition of the mixture during acceleration.



22

COMPENSATION ON SUPPLY VOLTAGE

In order to maintain the efficiency and economy of the gas installation, it is important that before the assembly, the car is technically fully functional. In particular, the electrical system works properly. The compensation function on the supply voltage is a very important function from the point of view of both the installer and the driver. It allows Zenit controller to respond adequately to voltage changes that occur during work of the car's electrical system. Changes in voltage can affect the gas portion that the control unit (Zenit controller) doses on gas injectors. This is very important because it provides the right composition of the mixture despite voltage fluctuation.

23

AUTOCALIBRATION

The option of using the autocalibration function is appreciated by every gas installation engineer. Autocalibration concerns pre-adjusting of the gas installation settings - adjusts its parameters to a specific car. All you need to do is provide basic information about the engine model and installed system components. On their basis, Zenit controller checks the gas pressure set on the reducer. Then, it switches the gas injectors sequentially by comparing the petrol times, thanks to which it is able to set the multiplier properly. The auto-adaptation function automatically suggests whether the appropriate nozzles and gas injectors have been selected and checks the basic signals. The auto-adaptation procedure is carried out at idle speed and on a fully warmed engine.

24”

AUTO-ADAPTATION AFTER PETROL INJECTION TIMES

Self-adaptation is a function of automatic ‘learning’ of the gas controller. Thanks to it, while driving on gas on the regular basis, the mixture is controlled and Zenit controller makes sure that its composition is optimal.

Self-adaptation after injection times is one of 2 possible forms of self-adaptation. It concerns collecting various injection times in the program while driving on petrol. The Zenit gas controller saves the accumulated times in the appropriate tab and then, after switching to gas supply, compares them to the times when the car works on gas. It skillfully modifies the gas injection times by comparing them to the petrol injection times. On this basis, it modifies the gas dose. Thanks to the auto-adaptation function, without the need of manual adjustment of the model, the installer has a ready fixed gas dose in the controller, and a ready-made (regulated) car.



25”

SELF-ADAPTATION AFTER OBD

Self-adaptation after OBD is one of two possible forms of self-adaptation. Self-adaptation after OBD has a significant advantage over the petrol / gas map mode, because it does not require collecting the base petrol map by the installer. After completing the initial adjustment of the car and switching on the self-adaptation in the OBD mode, you can immediately drive on gas. The OBD self-adaptation mode only requires a connection to the OBD system. The Zenit OBD control unit reads the engine operation parameters up-to-date, such as: fuel system status, short-term corrections, long-term corrections. Based on the registered parameters, it builds a map and controls properly selected dose of gas.

26”

ENGINE REVOLUTIONS READING WITHOUT CONNECTING THE RPM CABLE

The function of engine revolutions reading without the need to connect the RPM cable significantly simplifies the work of the installer - it saves time. Instead of hooking up the RPM cable under the hood, Zenit controller automatically calculates the actual revolutions based on readings from the petrol injectors. The function will be especially useful in the cars, where reading from traditional sources (coil, camshaft) is impossible or difficult, and in the cars with lower engine power and simple construction. The use of the ‘engine revolutions reading function without the need to connect the RPM cable’ prevents the simultaneous use of the ‘power strategy’ function.

27”

ADJUSTABLE SENSIVITY OF ENGINE REVOLUTIONS SIGNAL

The assembly experience shows that different cars may need settings of different sensitivity of engine revolutions reading. The correct setting of these parameters is necessary for the proper functioning of the gas system in the vehicle. The function of revolutions signal sensitivity adjustment is necessary for correct revs reading when the RPM cable is connected. The function allows to check which sensitivity is appropriate for a given car – i.e. at what setting the revolutions reading is stable. The obtained stable value should be saved in the program.

28”

ENGINE REVOLUTIONS READING FROM THE CAMSHAFT SENSOR

The function gives the possibility to read the engine revolutions from the camshaft sensor when the reading from the coil is impossible. Reading in this mode requires connecting a revolutions reading cable to the camshaft sensor. The functionality of revolutions reading from the camshaft sensor is an additional option - for use in unusual situations.

29”

OPERATION OF TURBOCHARGED ENGINES

The option of installing LPG & CNG autogas systems in the cars with turbines is a standard on the market of automotive gas installations. All Zenit controllers are adapted to work in turbocharged cars. Installation and calibration is carried out in a standard manner and Zenit controllers perfectly choose the dosage strategy regardless of the power of the car.

30”

AUTOMATIC HEATING UP OF THE INJECTORS

For every driver using a gas installation, it is very important to switch from petrol to gas supply smoothly. It is possible thanks to automatic heating up of the gas injectors. The program of Zenit controller opens and closes the gas injectors even when the car is still working on petrol. Such preparation guarantees a smooth change of power supply. Drivers will particularly appreciate this feature at low ambient temperatures.

31

SECONDARY INJECTIONS FILTER

This feature is a standard available in all Zenit controllers.

Using the secondary injections filter allows the gas controller to ignore the undesired strategies of the petrol computer. An undesirable strategy in this case is carrying out short injections between right injections. Even though it is found in some cars, it negatively affects the gas system regulation. That's why Zenit controller has a ready solution - it gives the option of using the filter. Thanks to it, we "deactivate" the gas controller for short injections, and the gas installation has ensured correct operation and economical gas dosage.

32

SWITCHING TO ACCELERATION / DECELERATION

This function is useful in situations in which power supply switching is noticeable despite correct installation and adjustment. It works in a simple way according to the following rules. Activating the function 'switching during acceleration', switches the installation to gas supply at increasing engine revolutions (above the value specified in the program). Activating the function 'switching when decelerating' switches the installation to gas supply at falling engine revolutions (below the value specified in the program).

33

SEQUENTIAL SWITCHING TO GAS / RETURN TO PETROL

This function means that Zenit program can switch single cylinders one by one to the gas supply, at the same time switching off the petrol injection on a given cylinder. Sequential petrol return means that it switches individual cylinders to petrol supply, at the same time switching off the gas injection on a given cylinder.

34

OVERLAPPING OF FUELS DURING SWITCHING

First of all, 'overlapping of fuels during switching' function helps the installer to set up the gas installation correctly. Secondly, it is very important for the driver himself. Its use makes switching between petrol and gas supply completely unnoticeable.

When switching a single cylinder to gas, as a result of technical limitations, there is always a minimum delay in the dose application. The longer the hoses between the gas injectors and the collector are, the longer the delay is. As a result, the switched cylinder works without fuel for a fraction of a second. A symptom of this may (or may not) be engine shaking when switching power supply. All you need to do is use the functionality of the Zenit installation and switch on 'overlapping of fuels during switching'. It guarantees application of the petrol dose to the switched cylinder - switching will occur in 100% fluent and unnoticeable way.

35

A QUICK START ON GAS

This function makes it possible to quickly start the car on gas, if only the engine of the car is warmed up. The gas controller does not wait for fulfilling the switching conditions - such as temperature or delay time. So if you set a quick start on gas function and give the temperature, then after starting the engine as soon as possible, the automatic switching to gas supply takes place. All drivers appreciate this functionality. It works especially while driving around the city, when the engine is often started and stopped. The quick start on gas increases driving savings and results in a quick return on investment of the installation.

36

ADJUSTMENT OF THE LIGHT BRIGHTNESS SWITCH

In the age of technology development, we are accustomed to the fact that many solutions are personalized directly to the user. Zenit installation meets these expectations. The only element of the gas installation that the user sees every day is the gas switch. On selected models of Zenit installation, it is possible to adjust the light brightness. Just hold the switch for a few seconds to adjust the light brightness to your preferences.

37

CONTROL OF THE GAS PRESSURE

The function of the gas pressure control allows to reduce the gas pressure in the system through intelligent dosing. Each installer met the phenomenon of excessive increase of the gas pressure (commonly called "pumping" of the reducer). It occurs when the reducer is damaged or it is determined by its construction. An increase in gas pressure may negatively affect the installation's adjustment process. The solution is to use the gas pressure control function available in Zenit controllers.

38

OPERATION OF FULL OPENING OF PETROL INJECTORS

The function is very important for the installer. Thanks to it, he gains a ready solution for the cars in which petrol injectors are always open in specific situations. This phenomenon is referred to so-called looping of petrol injectors. Zenit controller detects this situation and skillfully controls gas injectors to ensure the proper operation of the LPG & CNG gas system. Looping is often found in the cars that have undergone chiptuning.

39”

OPERATION OF VALVETRONIC, VALVEMATIC, MULTIAIR, START & STOP TECHNOLOGY

Zenit is a technologically advanced gas installation that works perfectly with technologies available in the latest vehicles. Valvetronic, Valvematic, Multiair and start & stop technologies are fully supported by Zenit controllers and perfectly interpret their work.

The Valvetronic technology defines engines that have a constant vacuum. No changes in the vacuum, Zenit perceives in this case as a standard, and being in autocalibration mode skilfully prepares the shape of the model line, corresponding to the Valvetronic technology. Multiair technology defines engines equipped with a variable valve opening time system. Zenit program skilfully interprets the lack of variable vacuum and overpressure - appearing in the versions of cars with turbines.

Zenit controllers are fully programmed to match the gas supply strategy with the strategy of vehicle technology operation. Installation adjustment in Valvetronic, Valvematic and Multiair vehicles is carried out in a standard way. It is comfortable for the installer and saves his time. The start & stop function works similarly to the 'quick start' function - it allows to start the vehicle on gas supply. The cooperation of start & stop technology with Zenit 'quick start' technology gives very tangible financial benefits to the driver.



40”

ADJUSTING THE GAS MIXTURE DURING FULL OPENING

The function of gas mixture regulation during full opening applies to cars in which petrol injectors are always open in specific situations. The installer is able to set the gas dose himself to ensure correct operation of the installation. The function is most often used in the cars that have undergone chiptuning.

41”

SWITCHING TO PETROL AT SPECIFIED RPM/INJECTION TIMES/LOAD

There are situations in which the engine can not work on gas supply in a specific revolutions range or at specific loads. Then, it is helpful to switch to petrol - at given revolutions or injection times, or load. The use of this function means that the installation will continue working in the car. Often the reasons for the impossibility of switching to gas or operating at idle are modifications carried out in the vehicle or a high level of engine exploitation.

42”

SMOOTH SECONDARY PETROL INJECTIONS WHEN WORKING ON GAS

The function consists in applying an additional (possible) dose of petrol in any selected engine revolutions, despite working on gas. It is used to provide engine protection and to replace lubrication and provide an additional dose of fuel. Operation of this function is possible thanks to the use of a semiconductor emulator, which is located in Zenit controller. Using this function greatly simplifies the calibration stage. For cars with a turbocharged engine, just click the 'turbo' button, and if a secondary petrol injection is to be used as a lubrication, just click 'lubrication'.

43”

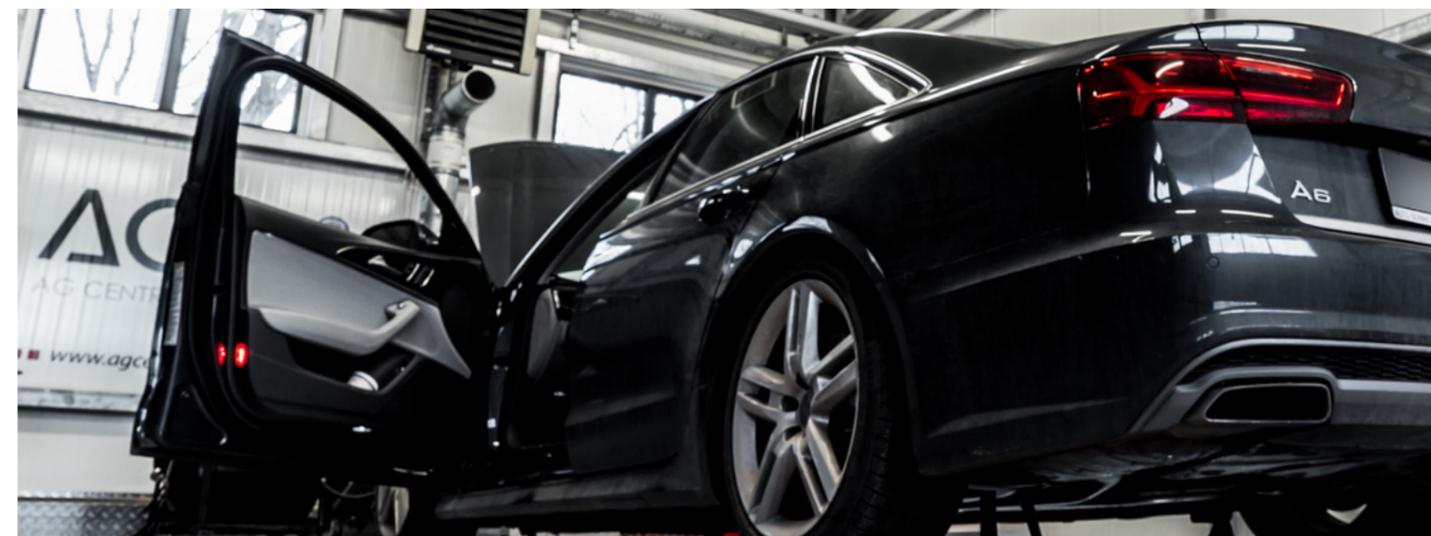
MAZDA DEPLETION

Mazda depletion function is dedicated to Mazda vehicles. The purpose of its application is to efficiently calibrate the installation and reduce the installer's working time. Thanks to it, Zenit program helps to draw the gas map accordingly.

44”

'COLD VAG'

This is very important function ensuring the correct operation of the gas installation. It works especially in the cars from the Volkswagen group, in which during the heating up of the engine or during acceleration, very long petrol injection times appear. Switching the power supply to gas can result in difficulties with getting out of low revolutions or noticeable lack of power. The reason for this situation is too rich gas mixture, and the situation returns to normal when the engine reaches the correct operating temperature. The solution is a feature available in all Zenit controllers of the premium category - the cold VAG function. After its activation, when very long petrol injection times appear, the gas controller does not convert them in the classic way, but skillfully limits the gas dose so as to prevent too rich mixture. This solution is appreciated by both installers who have a ready solution in the program and by drivers who are provided with comfortable and economical use of Zenit installation.



45

AUTOMATIC PROTOCOL DETECTION AT OBD CONNECTION

The function of the automatic protocol detection at the OBD connection is a great time saving solution for the installer. The installer in accordance with the diagram of operation is connected to the OBD beam, and Zenit controller automatically detects in which protocol it should be communicated with the car.

46

OPERATION OF REVERSE CORRECTIONS

The 'reverse correction' function allows the gas controller to correctly interpret fuel corrections (selected petrol cars) and then to use the acquired knowledge to the OBD module.

47

OBD PARAMETERS PREVIEW

point 4.

48

AUTOMATIC ERRORS RESET IN THE ENGINE CONTROLLER

Zenit controllers have an automatic error reset function in the engine controller. This gives the installer the possibility of current reaction to the appearing error. In some cars, the mixture control system is very sensitive and despite its correct selection, when working on gas, the petrol controller can display 'check engine'. Each time 'check engine' message occurs, it must be verified. If the reason for the error is not dangerous, it is technically possible to delete it from the Zenit controller software stage. Each time, the cause should be checked carefully in order to assess correctly the cause of the error.

49

RESET FOR SELECTED ERROR CODES

In some cars, systems of regulating the mixture are extremely sensitive, which may result in errors - always the same. The function of deleting selected error codes is helpful to an experienced installer who can safely assess and classify the message 'check engine'. It is enough to enter specific error codes to Zenit program - if they occur, they will be automatically deleted.

50

RECORDER OF INSTALLATION OPERATION PARAMETERS

The function of recording parameters of the gas installation operation helps the installer to assess the behavior of the installation and its individual components, as well as perform a test of its operation. The installer has a full possibility of traceability and recording (graphically and numerically) of the engine operation parameters and the gas installation itself. The function is useful when diagnosing possible faults.

51

ADVANCED DIAGNOSTICS

Each of Zenit controllers has unique functions that give an insight of the overall operation of the gas system in the vehicle. Depending on the product category and controller model, the installer has the ability to continuously monitor the operating parameters of the gas installation.

52

FROZEN FRAME

A very important feature of Zenit program, which allows to analyze errors of installation operation. When a specific error occurs, Zenit controller registers and displays all the possible parameters that prevailed in the installation when the error occurred. This gives the opportunity to assess whether any of the installation parameters affected the appearance of the error. This function shortens the time of the installer which he devotes to looking for the cause of the situation. Thanks to it, the analysis is much simpler and faster, and the time needed for introducing modifications in the software is reduced to a minimum.

53”

SOLENOID TEST

The 'solenoid test' function consists in turning on and off the gas solenoid valves in order to verify their correct operation. Thanks to it you can also graphically check the status of solenoid valves in Zenit program. You can see there how much electricity the electrovalve uses and whether it is within the norm. In addition, the function of the solenoid test can also be successfully used to carry out a scentless and safe exchange of the gas filters. For this purpose, it is enough to close the rear solenoid when the engine is running on gas, wait for the car's engine to stop and replace the filters safely. The Zenit solenoid test function is appreciated by the installers in every possible application.

54”

BUZZER TEST

Having installed gas system in the car, it is important that its operation is tested in every dimension. The element that is hard to verify at the workshop, is the sound of the buzzer, which allows to assess whether its assembly took place correctly. However, in selected models of Zenit controllers, the 'buzzer test' function is available. It allows to activate the sound of the switch to check the correctness of the buzzer. This function has been developed on the base of the needs reported by the installers. So it is the answer to real needs appearing in the daily work of the installer of LPG & CNG automotive gas installations.

55”

GAS INJECTORS EFFICIENCY TEST

The technologically advanced function of the premium category Zenit controllers allows to test the efficiency of gas injectors. Thanks to it, the installer has the possibility to assess the condition of gas injectors – to what extent they are worn out, whether one of them is more or less exploited or damaged by external influences, etc. Installers are aware of the great importance of knowledge about the condition and quality of the injectors from the perspective of the correct operation of the gas installation. Faults in the operation of the injectors results in the possibility of ignition failure or uneven operation of the engine caused by uneven gas dosing.

Thanks to this function, the installer saves time - instead of verifying himself which injector fails in the entire system, Zenit program runs the gas injectors test with only one click. The function is invaluable in the diagnosis of the situation and highly appreciated by the installers.



56”

WORKING TIME COUNTERS

The function of time counters in Zenit controllers tells how much time the car was operating on gas and how much time on petrol. The function is very important for the installer, because it is information when the installation was mounted and it estimates when the last check-up was performed. It is also needed to use the function “Service reminder” and to use the credit function.

57”

TEST OF CORRECT CONNECTION OF PETROL INJECTORS

Performing many tasks at the same time it is easy to temporarily lose attention and overlook something while assembling the gas installation. Especially when connecting electrically the gas controller to the petrol injectors. Most often after the work, the installer realizes that the installation does not work properly and he looks for the reason of this situation. And the reason could appear at almost every stage of the assembly. The error search begins - it is always time-consuming and not obvious. But situation can be solved in a very simple, comfortable and time-saving way. Zenit controllers of the Box line have a dedicated, built-in functionality of the platform, which automatically communicates a possible error of the correctness of the petrol injectors connection. The controller checks whether the installer did not make a mistake during the electrical connection to the petrol injector. If it detects a possible wrong electrical connection, it shows a message on the program screen in the ‘diagnostics’ tab. Mistakes happen to everyone, and ultimately the most important thing is their quick diagnosis and repair. It is very easy with Zenit.

58”

SERVICE REMINDER

In times when we have many duties and busy schedules, it's easy to forget about important dates on the calendar. Zenit installation provides dedicated and convenient functionality, reminding about the service. Properly programmed Zenit controller reminds the driver when he needs to check the gas system. The installer only sets the service reminder function. He programs the activation of the reminder after a specified distance. The controller communicates the reminder to the driver with a triple sound and the ‘check’ diode lighting on the gas installation switching button. The exact way of configuration the reminder function is described in the manual.

59”

‘CREDIT’ FUNCTION

The ‘credit’ function, appreciated by all installers, contributes to the correct use of Zenit installations, in accordance with the warranty card. The purpose of using the credit function is to protect the work of the installer and to ensure proper operation of the Zenit installation. The credit function makes it possible to block further operation on the gas installation if the driver has not done a warranty check. After driving the distance programmed by the installer in Zenit controller and skipping the warranty check at the same time, the car will not go on gas.

60

PASSWORD LOCK

The password lock function fully protects the installer's ownership of creativity in reference to the gas system settings. By using this function, the installer blocks Zenit controller from interference into software by unauthorized persons. If a person attempting to connect with Zenit controller does not know the password, he or she will connect to the control unit, but only after resetting the controller to the factory settings. This means that the process of tuning / setting up the gas system in the vehicle should be done from the very beginning. Password protection of the controller is needed when starting the 'credit' function.

63

CALL REGISTRATION

The possibility of registering calls guarantees the installer an insight into all connections with Zenit controller. The installer sees which computers and when connected to the gas central unit. Thanks to this, he knows whether someone else introduces modifications to the gas installation settings. On this basis, he decides whether to maintain or not a warranty of the Zenit gas installation.

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AUTOMATIC SOFTWARE UPDATE

Always up-to-date software is the basis for the work of every autogas installation engineer. Selected Zenit controllers of the premium category have the functionality of automatically updating the program installed on the computer, which is used to connect to the gas controller. In order to use the function, it is necessary to connect the computer to the Internet. Zenit program informs the installer whether software updates are available and asks whether to download them. Using this functionality of Zenit program always guarantees the most advanced solutions. The latest functions and updates improving the work of the installer are available automatically.

Every day, in our Research and Development Center, Zenit installations are developed by the team of experienced technicians. As a result, we meet the expectations of the customers from all over the world, and hundreds of thousands of cars in more than 50 countries are equipped with Zenit installations.

