LPG/CNG

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USER MANUAL
OF A CAR WITH GAS INJECTION SYSTEM

NEVO-SKY NEVO DIEGO

wer. 02.12.2022

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1 LPG SYSTEM

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THANK YOU!

Thank you for choosing our product. The highest quality system has been installed in your car. Its reliable use requires compliance with the rules which we briefly outline in this study.

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1 LPG SYSTEM

PRACTICAL ADVICES

FILLING THE TANK

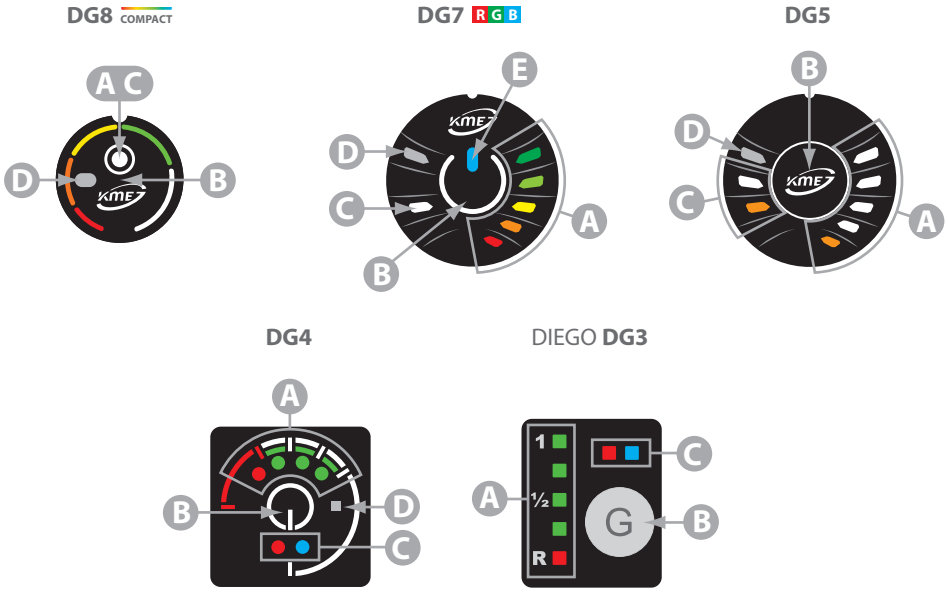
- filling the tank must be carried out on autogas stations
- filling the tank is signalized by characteristic sound of the operating system which protects the tank from its excessive filling

OPERATION OF THE CONTROL PANEL

ELECTRONICS: NEVO-SKY / NEVO / DIEGO

CONTROL PANEL

We control the LPG installation using one of the available control panels: **DG8 Compact, DG7 RGB, DG5, DG4** [for NEVO-SKY and NEVO family systems] or **DIEGO G3** [for DIEGO family systems].



A	LED indicator of actual gas level in the tank
B	switch for fuel type selection
C	status LEDs (working state indication)
D	light level sensor
E	backlight LED

The panel is used for communication between the controller (NEVO-SKY, NEVO or DIEGO G3) and the gas computer, performing the following tasks:

1. **FUEL TYPE SELECTION** – pressing button [B] causes the transition from one fuel to another (petrol - gas - petrol)
2. **WORKING STATE INDICATION** [C]
3. **GAS LEVEL INDICATION** [A]

STARTING THE ENGINE

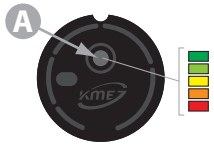
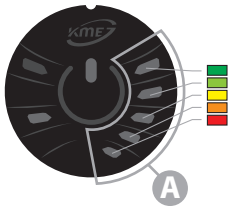
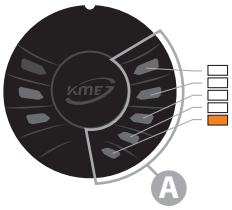
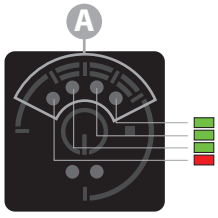
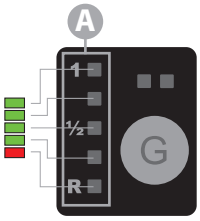
Vehicle equipped with NEVO-SKY / NEVO / DIEGO system normally starts on gasoline. Switching to gas fuel supply occurs automatically after obtaining the relevant parameters, selected during the calibration of the system, such as:

- coolant / reducer temperature
- engine speed (RPM) for switching
- he delay time of switching petrol/gas

INDICATION OF THE CURRENT LEVEL OF GAS FUEL IN THE TANK

Gas level indication can be read on tank indicator or inside the car on control panel.

Number of illuminated LEDs of gas level display [A] indicates the degree of filling the gas tank [according to the table below]. There is only one LED on the DG8 panel which indicates the fill level of the tank by changing the color.

GAS VOLUME IN THE TANK	NUMBER AND COLORS OF ILLUMINATING LEDS ON THE CONTROL PANEL [A]				
	 DG8 COMPACT	 DG7 RGB	 DG5	 DG4	 DIEGO DG3
5/5		*			
4/5		*			
3/5		*			
2/5		*		falshing OR	
1/5		*			

* for the factory setting

SYMPTOMS OF GAS DEPLETION IN THE TANK

Gas depletion is signalled by switching on petrol (with signalling) or significant drop of power while driving. This is a clear signal that the system must be switched to petrol.

WARNING! Avoid driving on petrol reserve. Never empty the tank completely.

LIGHT LEVEL SENSOR

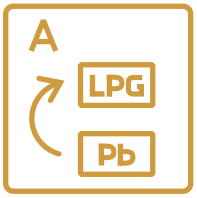
Depending on the ambient light controller automatically adjusts the brightness of the panel (configurable option in the program). The sensor is available in panels: DG8 Compact, DG7 RGB, DG5 and DG4.

CONTROL PANEL

DG8 COMPACT

WORK ON PETROL

LED is not shining



WAITING
WORK ON PETROL WITH AUTOMATIC RETURN TO GAS

LED is flashing, optionally signaling the temperature to be switched or the gas level in the tank

WORK ON GAS

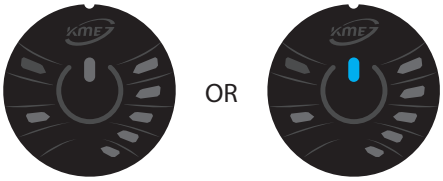
LED is shining, showing gas level, depending on the degree of filling the gas tank [see table - page 4]

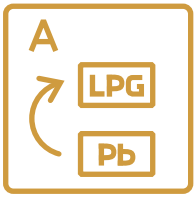
CONTROL PANEL

DG7 RGB

WORK ON PETROL

backlight LED is shining or not *





WAITING
WORK ON PETROL WITH AUTOMATIC RETURN TO GAS

one status LED is flashing * and backlight LED is shining or not * and optionally gas level LEDs are flashing, signaling the temperature to be switched — from 1 to 5 diodes LED [1 - low temperature, 5 - achieved switching temperature] — or the gas level in the tank

WORK ON GAS

one status LED is shining * and backlight LED is shining or not * and gas level LEDs are on, depending on the degree of filling the gas tank [see table - page 4]

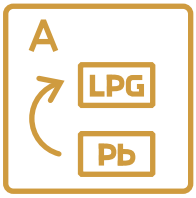
* colors and way of signaling are configurable from the program level

CONTROL PANEL

DG5

WORK ON PETROL

gas system is completely shut down, the panel is completely blank - **NO LED IS FLASHING**

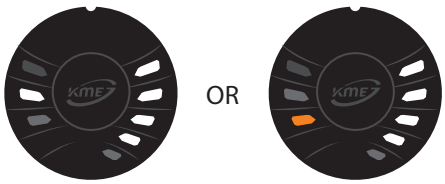


WAITING
WORK ON PETROL WITH AUTOMATIC RETURN TO GAS

one status LED is flashing and gas level LEDs are flashing, optionally signaling the temperature to be switched — from 1 to 5 diodes LED [1 - low temperature, 5 - achieved switching temperature] — or the gas level in the tank

WORK ON GAS

one status LED is shining * and gas level LEDs are on,
depending on the degree of filling the gas tank [see table - page 4]



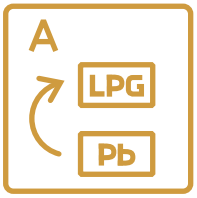
* colors and way of signaling are configurable from the program level

CONTROL PANEL

DG4

WORK ON PETROL

gas system is completely shut down, the panel is completely blank - **NO LED IS FLASHING**



WAITING
WORK ON PETROL WITH AUTOMATIC RETURN TO GAS

one status LED is flashing and flashing gas level LED indicator, indicates reducer heating progress
- from 1 to 4 diodes LEDs [1 - low temperature, 4 - achieved switching temperature]

OR

WORK ON GAS

one status LED is shining * and gas level LEDs are on,
depending on the degree of filling the gas tank [see table - page 4]

OR

* colors and way of signaling are configurable from the program level

AUTOMATIC CALIBRATION OF GAS LEVEL INDICATOR *

This process allows to automatically configure the full range of gas level indication on the control panel. It is necessary to select the proper type of gas level indicator before calibration. Automatic calibration should be performed during refuelling of empty gas tank. The whole procedure is as follows:

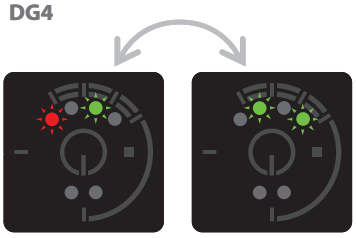
GAS LEVEL LEDS FLASH ALTERNATELY

DG8 COMPACT

DG7 RGB

DG5

DG4



1. Turn the ignition on (the autogas tank must be empty).
2. Switch system to petrol (no LED is lit on the panel).
3. Turn the ignition off.
4. Turn the ignition on (the engine must be off).
5. Press the button on the control panel and hold for approx. 20 seconds (or 15 seconds**). After approx. 10 seconds gas ECU switches valves and indicates working on gas (longer sound tone).
6. After another approx. 10 (or 5**) seconds after the gas valve opening (with the button still pressed) the panel will start signaling the calibration mode of the gas level indicator - gas level diodes blinking alternately (as shown in the pictures on the left).
7. Wait approx. 5 seconds until a stable, minimum gas level is noted (tank empty).
8. Switch off the ignition.
9. Fill up the tank completely.
10. Switch on the ignition.
11. Wait approx. 5 seconds until the panel stops signaling the indicator calibration mode.
12. Calibration complete.

* only controlers from NEVO-SKY and NEVO family from version 4.0D

** controlers from NEVO family to version 4.0H

WARNING! It is possible to exit from the automatic calibration gas level indicator by pushing the button again (the LED on the panel will go off and the system goes on petrol).

WARNING! If panel indicates wrong fuel level after calibration it could mean that it was made improperly – repeat the process before next refueling.

ACOUSTIC SIGNALIZATION

In addition to the light signals which are displayed on the control panel, the gas system also indicates individual events using acoustic signals:

- Each press of fuel changing button is indicated by a sound signal.

- In case of running out of gas in tank or gas pressure decrease, the system will automatically return from the gas supply to petrol and the driver will hear a "beep" sound – turned off by pressing the button on the panel once (system remains in standby mode – alternately flashing two LEDs – blue and red). In that state, after refuelling the car on gas station, the system automatically switches to gas supply. Another push of the button on the panel will permanently switch from gas supply to gasoline – in this state each engine start generates three "beep" sounds to remind that the system remained in operational mode on gasoline (it is possible to disable this feature using the software for gas ECU) and the system will not automatically switch to gas.

- Control panel may also indicate the fact that the car has reached the distance from the last inspection (configurable from the program) and another visit in the workshop is required. This information is generated immediately after switching system to gas (once for each engine start) in the form of the 10 short sounds at intervals of 0.5 seconds.

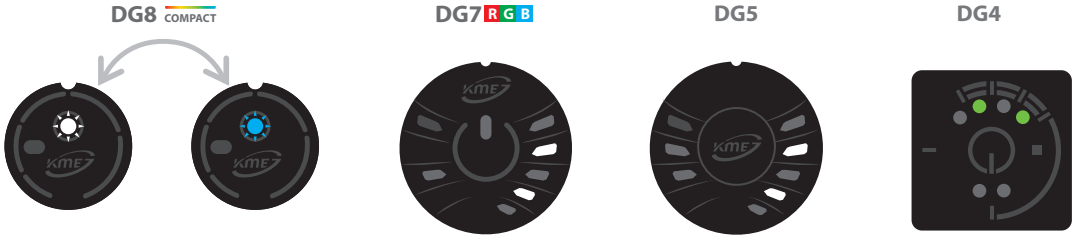
GAS SYSTEM SIGNALING

The Diego G3 / NEVO / NEVO-SKY sequential gas injection system has a self-monitoring function that allows you to detect malfunctions in the gas installation. All errors are remembered in the controller and the most important ones can be signaled on the control panel. Errors are signaled by alternating flashing of the status LEDs (in DG8 the indicator LED changes color) together with an acoustic signal. In the NEVO / NEVO-SKY system, errors are additionally displayed on the gas level indicator diodes in the tank (if this option is activated in the software). The most common cause of the error signaling is the lack of gas in the tank. Canceling this alarm requires pressing the mode change button or it will be silenced automatically after about 5 seconds (default setting).

If after refueling with gas, the gas system does not switch to gas, contact a workshop to diagnose the system.

GAS CONTROLLER SLEEP MODE [ONLY NEVO-SKY]

The gas controller enters the sleep mode when the ignition signal disappears and the controller is connected to the PC software or when some functions require operation after the engine is turned off, e.g. the EPP emulator. The state of sleep is signaled by the panel by lighting of the respective LEDs indicating the gas level. In the case of the DG8 panel, this mode is signaled by alternating white and blue colors. The illustrations below show what the panel looks like in this mode.

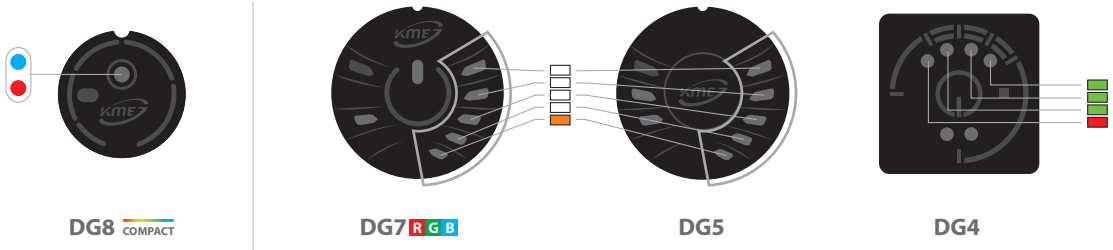


GAS CONTROLLER SOFTWARE UPDATE MODE

The start of the firmware update is signaled by a single, short beep. The status of the gas controller software update is indicated by the panel by turning on 4 gas level LEDs in turn, while in the DG8 panel the LED's color changes in the following order: red -> orange -> yellow -> green. When the fourth LED is on or the color is green (for DG8 panel), the cycle will start all over again. After the update is completed, the gas level diodes will turn off.

ERRORS FLASHING CODES [NEVO-SKY / NEVO only]

For **DG8 Compact** control panel, all errors are signaled with alternating blue and red color changes.



NEVO error codes list (code, description, flashing code):

DG7 RGB DG5	DG4	DESCRIPTION	CODE
		Petrol injector no signal cyl 1..8	**E001 - E008**
		Gas injector malfunction cyl 1..8	**E009 - E016**
		Reducer temperature sensor short	**E017**
		Reducer temperature sensor open	**E018**
		Gas temperature sensor short	**E019**
		Gas temperature sensor open	**E020**
		Gas valves – circle short	**E021**
		Gas valves - circle open	**E022**
		Empty gas tank (low gas pressure)	**E023**
		Inefficient reducer heating circle (reducer too cold <15 °C)	**E024**
		Petrol injectors merged (lack of information about mixture).	**E025**
		Gas injectors merged (lack of possibility of gas mixture correction).	**E026**

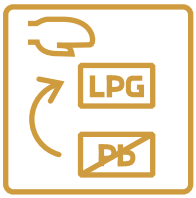
ADDITIONAL CONTROL PANEL MESSAGES [NEVO-SKY / NEVO ONLY]

While waiting for the switching, the gas level diodes can display the time to switch to gas or the gas level in the tank (only for the NEVO-SKY family). A selection of these functions is available in the software. It is not possible to select two functions at the same time.

In order to display the time until switching to gas, the diodes that light up in sequence inform about the warm-up status of the engine (reducer). All flashing level diodes mean that the car has reached the switching temperature. In the case of the DG8 panel, reaching the switching temperature is signaled by white flashing of the diode.

To display the gas level in the tank, the LEDs will blink and show the current fuel level in the gas tank (as described in section 2.1).

In the DG8 panel, setting the Flashing color of the status will cause the diode to flash blue.



EMERGENCY START ON GAS

In case of petrol fuel system failure installed NEVO-SKY / NEVO / DIEGO G3 system allows you to start the engine directly on the gas.

In order to start the engine on emergency mode you should:

1. Turn the ignition on.

2. Switch system to petrol (panel is completely blank – no diodes light on).

3. Turn the ignition off.

4. Turn the ignition on (the engine cannot work).

5. Press and hold button on the Control panel for about 10 seconds until you hear a long beep (status LED lights constant light – at this moment the system goes into operation on gas and the gas ECU open the valves).

6. Release the button on Control panel and immediately start the engine (without reversing the ignition key in the ignition off position.)

7. WARNING! Too long holding button on the panel will start the automatic gas level indicator calibration procedure (only NEVO-SKY and NEVO). It is possible to exit from this mode by pressing the button again (the LED on the panel will go off and the system goes on petrol).

After emergency start (directly on the gas) before you start driving, wait for the temperature of the engine to raise to about 50 ^{0}C to ensure sufficient heating of the reducer. Otherwise, the reducer may freeze, which may damage the gas system components and even the engine.

NOTE!	The reducer/environment temperature must be greater than 0 ^{0}C, otherwise due to safety reasons it is impossible to start the vehicle on gas fuel. Therefore, this feature should be used only in exceptional circumstances! Frequent use of this mode more than 50 times will block the possibility of an emergency engine start directly on the gas fuel. It will also determine the need the workshop in order to unlock the ECU function.

NOTE!	Emergency start on gas may be disabled when 12V "after the ignition" signal disappears during the procedure.

NOTE!	During emergency starting on the gas cannot operate some functions of the controller (e.g. switching mechanisms).

NOTE!	Function is not supported for NEVO-SKY DIRECT.