USER MANUAL

OPERATION AND USE OF CAR WITH
Diego G3 / NEVO
SEQUENTIAL GAS INJECTION SYSTEM

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1. STARTING THE ENGINE

Vehicle equipped with Diego G3 / NEVO 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,
- the delay time of switching petrol → gas,
- engine speed (RPM) set for switching.

2. CONTROL PANEL

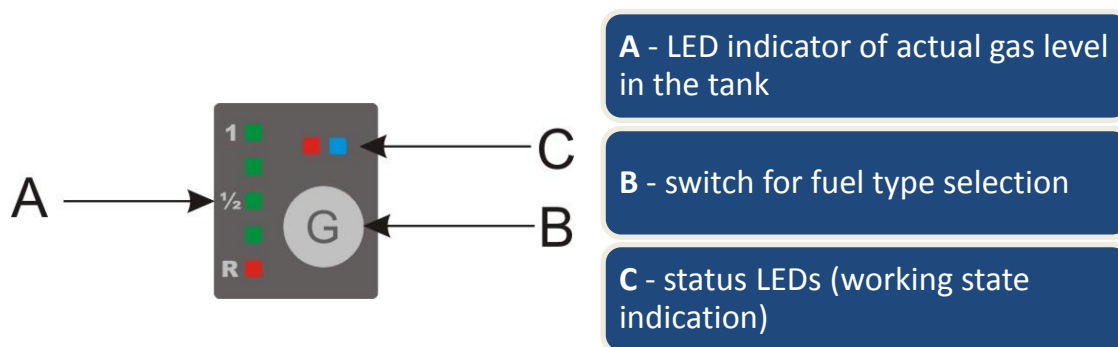Driver uses control panel to communicate with Diego G3 (Fig. 2.1) / NEVO (Fig. 2.2) gas ECU.

A - LED indicator of actual gas level in the tank

B - switch for fuel type selection

C - status LEDs (working state indication)

Fig. 2.1 Diego G3 control panel.

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B - switch for fuel type selection

C - status LEDs (working state indication)
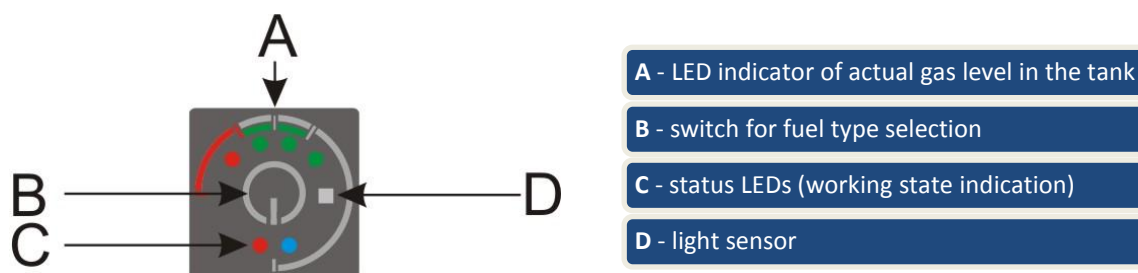
D - light sensor

Fig. 2.2 NEVO control panel.

Panel implements following tasks:

1. **Fuel type select** – pressing button (**B**) causes the transition from one fuel to another (petrol - gas - petrol)

2. **Working state indication** (**C**).

Work on petrol – gas system is completely shut down, the panel is completely blank - no lights are flashing.

Work on petrol with automatic switching to gas – flashing blue or red status LED. System waits for switching parameters (software configurable).

Work on gas – permanently illuminated blue or red status LED (selectable during the calibration of the system).

2.1   Indication of the current level of gas fuel in the tank (A)

Number of illuminated LEDs of gas level display indicates the degree of filling of gas tank:

Diego G3	NEVO	
4 green LEDs	3 green LEDs	Full tank
3 green LEDs	2 green LEDs	$^4/_5$ of tank capacity
2 green LEDs	1 green LED	$^3/_5$ of tank capacity
1 green LED	flashing red LED (or 1 green + 1 red LED in older versions)	$^2/_5$ of tank capacity

Only red LED illumination indicates the status of the reserve - the minimum amount of gas (about 20% of tank volume).

2.2   Light sensor (NEVO only) (Fig. 2.2) (D)

Depending on the ambient light controller automatically adjusts the brightness of the panel (configurable option in the program).

2.3   Gas system signaling

Sequential gas injection system Diego G3 / NEVO has the function of self-control, allowing to detect malfunctions of the gas installation. All errors are stored in the ECU, and most of them are indicated on the control panel. Errors are indicated by alternate flashing of the red and blue LEDs with an acoustic signal. In NEVO system errors are additionally indicated by flashing the gas level LEDs (only when this option is activated). The most common cause of the error signal is no gas in the tank. Deleting this alarm require pressing the fuel type select button.

2.3.1 Errors flashing codes (NEVO only)

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

Code	Description	Red	Green	Green	Green
E001-E008	Petrol injector no signal cyl 1..8.	🔴	🟢	⚪	⚪
E009-E016	Gas injector malfunction cyl 1..8.	🔴	⚪	🟢	⚪
E017	Tred sensor short.	⚪	🟢	🟢	⚪
E018	Tred sensor open.	🔴	🟢	🟢	⚪
E019	Tgas sensor short.	⚪	🟢	⚪	🟢
E020	Tgas sensor open.	🔴	🟢	⚪	🟢
E021	Valve short.	⚪	⚪	🟢	🟢
E022	Valve open.	🔴	⚪	🟢	🟢
E023	Low gas pressure.	🔴	⚪	⚪	⚪
E024	Reducer too cold.	⚪	⚪	⚪	🟢
E025	Petrol injectors merged.	⚪	🟢	⚪	⚪
E026	Gas injectors merged.	⚪	⚪	🟢	⚪
E027	Gas temperature too high.	N/A			
E028	Control panel malfunction.	N/A			
E029	Sensor unit malfunction.	N/A			
E030	High ECU temperature.	N/A			
E031	Low ECU voltage.	N/A			

2.3.2 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:

a) Each fuel type change button press is indicated by an sound signal.

b) If you run out of gas in the tank or the gas pressure in the gas injectors drops system will automatic return from the gas supply to petrol and the driver will hear a beep - 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 refueling the car on gas station system automatically switches to gas supply. Another push of the button on the panel will switch from gas supply to gasoline permanently – in this state each engine start generates three beeps to remind that the system remained in operation on gasoline (it is possible to disable this feature using the software for gas ECU) and the system will not switch to gas.

c) Gas ECU 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 the gas (once for each engine start) in the form of the 10 short sounds at intervals of 0.5 seconds.

2.4   Additional control panel messages in NEVO system

In a state of waiting for switching parameters, system may inform on level indicating LEDs about time left to gas switching. Sequentially illuminate LEDs indicate the status of warm up the engine (the regulator). All level LEDs pulsing mean that the car reached the switching temperature.

2.5   Emergency start on gas

In case of petrol fuel system failure installed Diego G3 / NEVO system allows you to start the engine directly on the gas. Procedure is as follows:

1. Turn the ignition on.
2. Switch system to petrol.
3. Turn the ignition off.
4. Turn the ignition on.
5. Press and hold button on the Control panel for about 10 seconds. State diode is blinking and buzzer is beeping. After that time the gas ECU opens the valves and the state diode on Control panel is constantly on (buzzer stops beeping).
6. Start the engine.

After emergency start (directly on the gas) before you start driving, wait for the temperature of the engine to raise to about 50 °C to ensure sufficient heating of the reducer.

WARNING! The reducer / environment temperature should not be less than 0 °C, as this may cause difficulties in getting the vehicle to run on the gas, as well as generate a safety hazard. 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 functions. In the case of incorrect 12 V "after the ignition" signal connection the function may be disabled.

2.6   Automatic gas level indicator calibration (NEVO only)

This process allows you to automatically configure the full range of gas level indication on the panel driver. Prior to calibration, it is necessary to select the right type of gas level sensor.

Automatic calibration should be performed during the refueling of empty gas tank. The whole procedure is as follows:

1. Turn the ignition on.
2. Switch system to petrol.
3. Turn the ignition on.
4. Turn the ignition off.
5. Press the button on the control panel, and hold for about 15 seconds. After about 10 seconds the ECU switches the valves and indicates working on gas (the same situation as in the case of emergency start on gas). After about 5 seconds after the gas valve opening (the button is still pressed) panel will indicate the calibration mode of the gas level indicator – gas level LEDs flash alternately.

6. Turn the ignition off.
7. Fuel the gas tank.
8. Turn the ignition on.
9. Wait until the panel stops indicating the calibration mode.

Calibration finished.

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