1. Role, purpose

1.1 The electrical disk shaped heaters are destined for diesel filter heating during pre-starting and cruise operating regime.
1.2 The heaters are destined for heating metal fuel filters of vehicles running on standard European diesel fuel types (DIN-EN 590 and DIN 51606), as well as other types of diesel fuel.
The role of the PD-200 series heaters is to assure the filter's fuel flow at the optimal level by reducing diesel fuel viscosity and dissolution the paraffin plugs formed inside of the fuel at the low temperatures.
1.3 The heater is mounted between the original cover of the filter and its body and connected to the electrical circuit of the vehicle.
The switch is placed in the driver's cabin. There are manual and the timer-control versions available.
1.4 The heaters have a standard threading to fit the opening of the engine on one side and the threading M16x1,5 mm to fit the metal body of the filter of 70mm (filter diameter 78 - 85mm) on the other side. Thus, these heaters can be used with any diesel engines having the mentioned threading sizes and the electrical circuits of 12V for PD-201 and 24V for PD-202.

2. Completeness

(please check the completeness for missing or broken parts and, if any, notify your dealer)

Heater (1)	1 pc.
Wiring kit (2)	1pc.
Timer control unit (3)	1 pc.
Adaptor	1 pc.
Threaded connecting pipe	1 pc.
Fitting spacer	1 pc.
User manual	1 pc.
Package box	1 pc.

(1) – Type and completeness of the heater is mentioned on the package.
(2) – Wire kit for manual control version: switcher, relay, LED indicator, fuse 20A, Wires: N1 red or blue S=0,75 mm², N2 red S=0,75 mm², N3 black S=0,75 mm², N4 and N5 reds S=1,5 mm², N6 thick black s=1,5mm
Thermal insulation of wires is +125 °C.
(3) - Wire kit for timer control version: Control unit, button switcher with LED indicator, fuse 20A, Wires: N1 blue S=0,75 mm², N2 yellow S=0,75 mm², N3 black S=0,75 mm², N4 and N5 reds S=1,5 mm², N6 black S=1,5 mm², N7 red S=0,75 mm². Thermal insulation of wires is +125 °C.

3. Technical parameters

Index name	PD-201	PD-202
Required size of a filter's threading in order to fit this heater, mm	70	
Diameter of the filler (external x internal), mm	72 x 6,2	
Diameter of the central threaded opening of the heater, mm	16 x 1,5	
Power voltage of the direct current, V	12	24
Nominal power rating, W, (average) - pre-starting regime - cruise regime	 110 150	 120 300
Maximal temperature of the heating surface, °C	130	
Ambient operating temperature, °C (°F)	from - 40 (-40) till +45 (113)	
Working regimes	pre-starting regime of 3-10 min from the battery and cruise regime from vehicle's alternator	

4. Safety mesures

4.1 The installation of PD-200 series heater should be done according to the general safety rules of automobile electronic equipment installation and this user manual.
4.2 Only the personnel that had trained and studied its construction and safety rules shall be admitted to the installation of this device.
4.3 During the installation it is vital to make sure about the thermal compliance of wires to the ambient operating temperature, the correct core diameter of wires, to provide reliable cable strapping on each clamp, to insulate the device form the short circuit and overloading.

4.4 To ensure the safety measures it is PROHIBITED
- to use the device in engines running on petrol or on mixture of diesel and petrol.

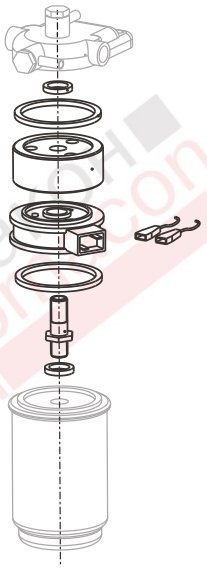
- PROHIBITED to use the device to heat anything else which is not mentioned in the present user manual;
- PROHIBITED to repair or inspect the device while it is connected to a live electrical circuit or an alternator of a working engine;
- PROHIBITED to activate the device while there is no fuel in the fuel filter, or if the fuel line contains air bubbles;
- PROHIBITED to activate the device on air or without proper installation into the fuel system of an engine.
- PROHIBITED to use this heater with plastic filters

4.5 During the instalation or de-instalation it is important to comply to the safety mesure related to the diesel fuel spills, ensuring the maximal occupational hygiene.

5. Installation procedure

5.1 ATTENTION ! Installation should be executed either at the special service centers or maintenance facilities that can provide skilled personnel in the domain of electronic equipment installation for cars and trucks.

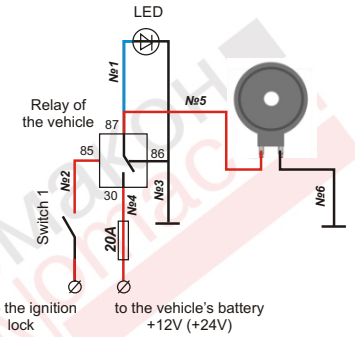
5.2 The heater is mounted between the original cover of the filter and its body and connected to the electrical circuit of the vehicle (pic N°1).
5.3 With vehicles using 24V electrical grid it is possible to use two 12V heaters connected sequentially. At the same time the 24V wire kit is needed for that configuration.
5.4 The electrical connections are done according to the pictures N°3 and N°4.



Pic N°1

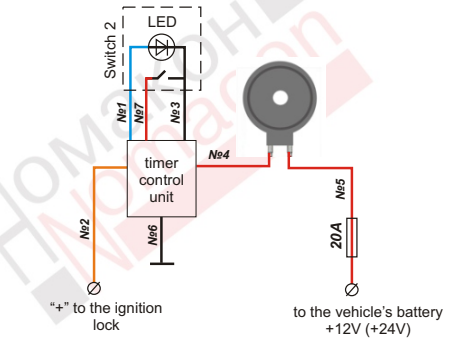
5.5 **In case of manual control version (picture N°2)**
- the blue wire N°1 going from the relay's clamp 87 is connected to the positive clamp of the LED indicator. The negative clamp of the LED indicator is connected to the mass through the clamp 86 of the relay.
- the red wire N°2 (relay power switch) from the clamp 85 of the relay is connected through the switcher 1 to the positive clamp of the ignition lock.
- using red power-lead cables N°4 and N°5 connect the heater through the relay's clamps 87 and 30 and fuse 20A to the positive clamp of the vehicle's battery.
- the black wire N°6 is connected on the frame of the vehicle.
- the LED indicator and the switch 1 is mounted in the driver's cabin.

Pic N°2
(manual control)



5.6 **In case of timer control version (picture N°3)**
- the switch 2 with integral LED indicator is connected to the timer control unit with three wires according to the following colors:
- the blue wire N°1 goes to the positive clamp of LED indicator,
- the red wire N°7 goes to the positive clamp of the switch,
– the black wire N°3 goes to the negative clamp of the switch;
- the yellow wire N°2 (timer unit switch) goes to the ignition
- using red power-lead cables N°4 and N°5 connect the heater to the timer control unit and through the fuse 20A to the positive clamp of the vehicle's battery.
- the black wire N°6 is connected on the frame of the vehicle.
- the switch 2 with integral LED indicator is mounted in the driver's cabin.

Pic N°3
(timer control)



6. Function guideline

6.1 In case of manual control version the device is activated by pushing the switch 1 while the ignition lock is on. The heater activation is shown by continues light of the LED indicator in the driver's cabin.
6.2 In case of timer-control version the device is activated by pushing the switch 2 while the ignition key is on.
Then the heater activation is shown by blinking light of the LED indicator incorporated into the switch 2 in the driver's cabin. The manual desactivation is also possible by pushing once the switch 2 while it is blinking or by switching off the ignition key.
6.3 Depending on the operating temperature from +5°C to -40°C the heating time might last be between 3 and 10 minutes.

ATTENTION !
It is forbidden to switch on the heater for more than 10 minutes if the engine is not yet started in order to avoid premature overdischarge of the battery and the local overheating of the body of the filter.

6.4 If needed the heater can be left in the switched-on position permanently while the engine is running and fuel flow in the filter is present. In case of using the timer control unit the permanent switched-on position is achieved by pressing the Switcher 2 for minimum 3 seconds until the LED indicator is permanently on. Leaving the permanent switched-on mode is done by pressing the Switcher 2 button again or by switching off the ignition key.
6.5 After 3 to 5 cycles of heating it is recommended to tighten up the heater and the filter.
6.6 During the use of the heater it is recommended to inspect the tightening regularly. The efficiency and long lasting life of the heater depends directly of the fact that all elements are properly are tightened. It is recommended as well to check the electrical connections.
6.7 The body of the heater is sealed and is not designed to be opened and repaired if malfunctioned.
6.8 If malfunction occurs during the warranty time the device can be replaced through the local dealer, on the condition of complying with warranty terms.

7. Storage, disposal

7.1 When stored or transported to the installation facilities the heater must be properly packed in the package provided by the manufacturer or dealer.
7.2 The PD-200 heaters do not contain any substances that are harmful in any way to the environment or to a human body.

8. The content of precious and non-ferrous metals

8.1 Precious metals: not present
8.2 Non-ferrous metals: aluminium – 20 g, tin – 1,5 g.

9. Warranty

9.1 The manufacturer guarantees the adequacy of the PD-200 series heaters to the description in the present reference documentation if complied with the conditions of storage, transport, installation and usage

9.2 Storage period – 2 years from the manucacturing date

9.3 Usage warranty – 18 months from the date of purchase or from the date of manufacture if the purchase date is not known.

9.4 During the warranty period the consumer has a right to replace the malfunctioned heater by sending back all pieces of it to the local dealer with the copy of the purchase invoice.
Postage costs are not refunded to the consumer.
(It is recommended to include a short description in English language concerning the circumstances of the malfunction).
The local dealer in its turn will send the new heater to the consumer.
9.5 Warranty claim will be refused if:
- the malfunctioned device is not sent or delivered to the local dealer;
- the malfunctioned device is sent without a proof of purchase such as purchase invoice;
- the device is sent with some of its pieces missing (no cables or adapter)
- the device has mechanical damage or scratches that do not normally occur during its usage. For example after a road accident;
- any indications of non-compliance with the conditions of storage, transport, installation and exploitation are the reasons for the warranty claim refusal;

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ELECTRICAL DISK SHAPED HEATERS for diesel fuel filters NOMACON™ PD-200 series

☐ **Timer-control**
☐ **Manual-control**

☐ **PD-201 (12V)**
☐ **PD-202 (24V)**

USER MANUAL