

WATER PURIFICATION SYSTEM ON
THE BASIS OF THE NANOFILTRATION

GEYSER NANOTECH



MANUAL

for installation and operation of a
HOUSEHOLD FILTER



MODIFICATIONS

- GEYSER-NANOTECH
- GEYSER-NANOTECH P



Thank you for choosing Geysler water filter!

Our developments and technologies allow providing with the water perfect quality in your house.

All functionality capabilities, an also a method of installation of the water purification system Geysler are described in this manual. Please read it carefully and retain for future reference.

The water purifier set includes all parts required for using immediately after the installation.

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GEYSER TECHNOLOGIES

Safety – the system is checked for durability with the pressure of 25 atm.

Efficiency – removal of all objectionable admixtures.

Ecological compatibility – all elements of the system are certified for contact with the drinkable water.

Utility – preservation of the water natural mineral composition.

COMPARISON OF THE DEGREE OF PURIFICATION OF THE NANOFILTRATION AND REVERSE-OSMOTIC MEMBRANES

Purification type	Microorganisms	Iron, heavy metals	Reduction in hardness
Nanofiltration NF (Geysler-Nanotech)	+	+	75-80%
Reversed osmosis RO (Geysler-Prestige)	+	+	95-98%

Data in the table show that the water additional mineralization is not required after the nanofiltration purification.

Advantages of the nanofiltration:

- reduction in the hardness, preservation of the mineral composition
- the reagentless disinfection of the water
- reduction of the drain flux twofold
- environmentally-friendly preservation method

PURPOSE

Geysler-Nanotech filter is used for the deep purification of the tap water by the reverse osmosis from mechanical admixtures, chloride and organic compounds, carbonic acids, bacteria and viruses. The system decreases the water hardness, removes foreign flavour, smell and color.

FILTERING MATERIALS AND CARTRIDGES

The treatment unit consisting of 3 cartridges for increase of the nanofiltration membrane operating life:

- The polypropylene cartridge with the porosity of 5 μm removes suspended solids and fine insoluble impurities. The cartridge volume is up to 7,000 l.
- The cartridge of BAF series contains a multicomponent media on the basis of sorbents and ion-exchange materials, which removes organic impurities and chloride, decreases a content of iron and heavy metals that significantly increases the membrane life. The life is up to 12,000 l.
- The cartridge of CBC series contains the high quality activated coconut carbon (Thailand) processed in accordance with the carbon-block technology for the removal from the water of the residual chlorine and organochloride admixtures. The life is up to 7,000 l.

The nanofiltration membrane performs the main purification from dissolved impurities, heavy metals, microorganisms and reduces a content of hardness salts. The life is up to 3,500 l.

The post carbon cartridge for water conditioning. The life is up to 6,000 l.

REQUIREMENTS TO THE SOURCE WATER

ATTENTION! The reverse osmosis system performance directly depends on a pressure in a water conduit. If a pressure in your water conduit is less than 3 atm., that it is necessary to complement the reverse osmosis system with the booster pump.

The water pressure at the inlet of the system with a pump, atm.	2-8
The water pressure at the inlet of the system without a pump, atm.	3-8
pH	3-11
Water temperature, °C	+4...+40
Mineralization, mg/l	no more than 1,500
Summary concentration of chlorides, mg/l	no more than 1,200
Turbidity, mg/l	no more than 1
Hardness, mg-equ/l	no more than 7
Iron (Fe ²⁺), mg/l	no more than 0.3
Iron (Fe ³⁺), mg/l	no more than 0.3
Manganese (Mn), mg/l	no more than 0.1
Nitrates, mg/l	no more than 45
Permanganate oxygen consumed, mg O ₂ /l	no more than 10
Total microbial number, CFU/ml	no more than 1,000
Coli-index	1

Higher values of indicators require the additional preliminary purification.

TECHNICAL CHARACTERISTICS

ATTENTION! If characteristics of the source water do not comply with the specified requirements, that the operating life of the membrane and replaceable filtering modules can be smaller than the operating life stated in this manual.

The storage tank volume (water volume in the storage tank is up to 70%* of its volume), l	8; 12; 16
Excessive air pressure in the storage tank, atm.	0.4-0.5
Performance (depends on the water pressure and temperature, see appendix 1), l/day	up to 200
Temperature of the purified water, °C	+4...+40
Dimensions (without the storage tank), mm	470*380*420

* at a pressure in the water main of 5 atm.

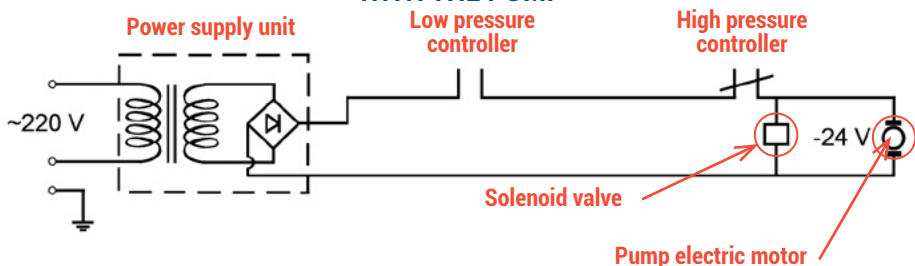
ADJUSTMENT TEMPERATURE COEFFICIENT*

TEMPERATURE	5	10	20	30	40
ADJUSTMENT COEFFICIENT	2,16	1,702	1,205	0,974	0,771

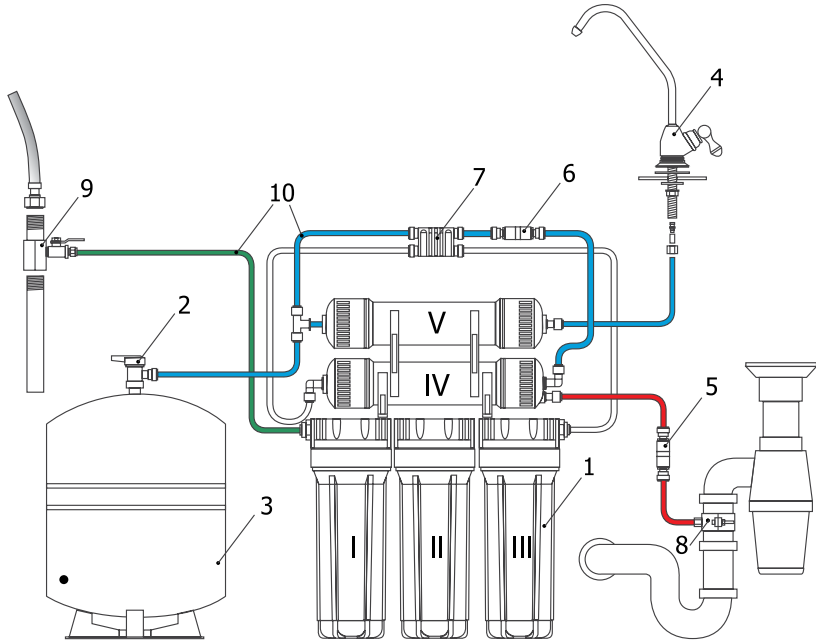
The membrane actual performance = the membrane performance stated in the table of technical characteristics/the adjustment coefficient

* According to the data of the manufacturer of membranes Vontron Membrane Technology Co., Ltd.

ELECTRICAL SCHEME OF THE REVERSE OSMOSIS SYSTEM FOR MODELS WITH THE PUMP



CONNECTION DIAGRAMS AND A SCOPE OF DELIVERY OF GEYSER-NANOTECH

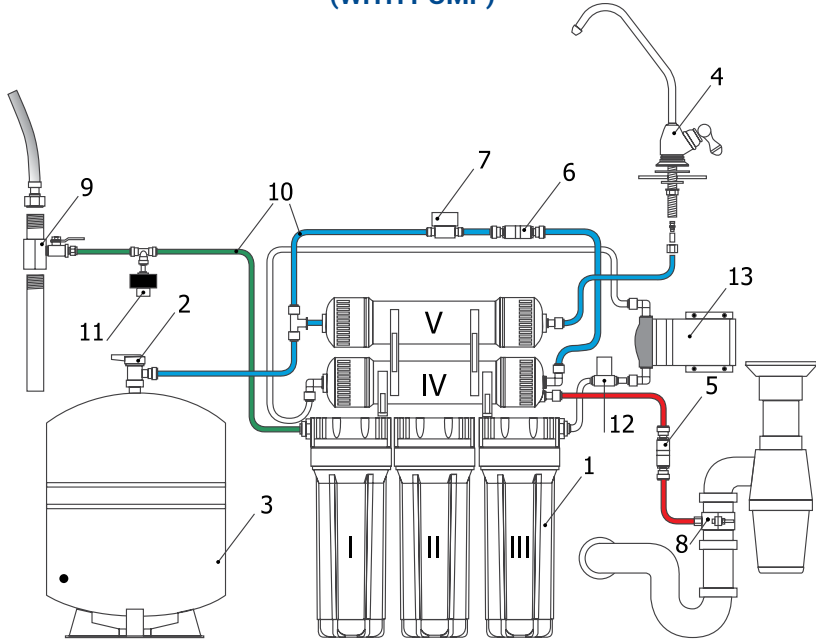


- | | | |
|-----|---|--------|
| 1. | Cases with filter elements | 1 set |
| | I – a case of the mechanical filter | |
| | II – a case of the cartridge of BAF series | |
| | III – a case of the carbon filter | |
| | IV – a case of the nanomembrane | |
| | V – a case of the carbon post-filter | |
| 2. | A gate of the storage tank..... | 1 unit |
| 3. | Storage tank** | 1 unit |
| 4. | Tap of clean water | 1 set |
| 5. | Drain flux limiter | 1 unit |
| 6. | Reverse-flow valve..... | 1 unit |
| 7. | Automatic water switch | 1 unit |
| 8. | Drain strap | 1 set |
| 9. | Tee (adapter) with the water feed tap | 1 set |
| 10. | Pipe 1/4" | 1 set. |

* The manufacturer reserves the right make small improvements of the system design and configuration without their reflection in this manual.

** Variants of the configuration with the storage capacity of 8; 12; 16 liters are available.

CONNECTION DIAGRAMS AND A SCOPE OF DELIVERY OF GEYSER-NANOTECH P (WITH PUMP)



1.	Cases with filter elements	1 set
	I – a case of the mechanical filter	
	II – a case of the cartridge of BAF series	
	III – a case of the carbon filter	
	IV – a case of the nanomembrane	
	V – a case of the carbon post-filter	
2.	A gate of the storage tank	1 unit
3.	Storage tank**	1 unit
4.	Tap of clean water.....	1 set
5.	Drain flux limiter.....	1 unit
6.	Reverse-flow valve.....	1 unit
7.	High pressure controller	1 unit
8.	Drain strap.....	1 set
9.	Tee (adapter) with the water feed tap.....	1 set
10.	Pipe 1/4"	1 set
11.	Low pressure controller	1 unit
12.	Solenoid valve	1 unit
13.	Pump	1 unit.

* The manufacturer reserves the right make small improvements of the system structure and configuration without their reflection in this manual.

** Variants of the configuration with the storage capacity of 8; 12; 16 liters are available.

CONNECTION

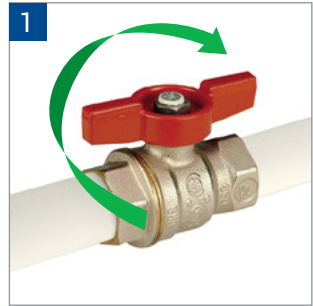
RECOMMENDATIONS FOR CONNECTION AND OPERATION

- the connection is carried out only by the qualified specialist or the manufacturer's representative;
- strictly follow the manual in case of individual connection;
- all filter cases were tested for sealness and hydraulic impact, that is why there is on water inside cases of the filter;
- it is not recommended to disassemble factory connections without the need.

PREPARATION TO THE CONNECTION

1. Shut off the cold water feed to the connection point (Fig. 1) and discharge a pressure by opening the mixer.
2. Make sure that the filter flasks are reliably tightened*. Tighten them, if necessary..

- * *Periodically check a reliability of the filter flasks tightness and tighten them, if necessary.
Attention! A position of the vertical label, which is placed strictly align the filter front center, does not guarantee the connection leakproofness. A position of the label can be changed during tightening of the flask screwed connection.*



SYSTEM INSTALLATION

We recommend carry out the system installation with specialists or install it strictly in accordance with the manual.

It is not recommended to disassemble factory connections – the system is supplied in the assembled condition and is tested for sealness with the high pressure.

Remove the filter from its packing box. Remove transport plugs (!).

Install the bracket with cases (and cartridges) at a vantage place at a height of no less than 15 cm from cases bottom to the floor.

The system and storage tank should be installed at a distance of no less than 1 meter from heaters.

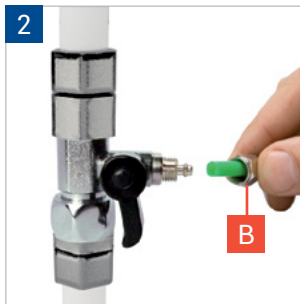
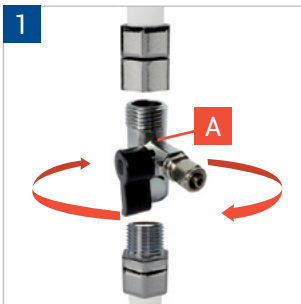


Connection to the water conduit

The system is connected to the COLD water main line.

Make sure that the water feed to the connection point is shut off!

1. Install the tee-adapter (A) on the cold water main line and seal joints (Fig. 1).



2. Insert a plastic tube into a nut (C) (Fig. 2). Insert the pipe into the ball tap fitting against stop and tightly screw a nut (Fig. 3).

A loose end of this tube is connected to the filter input or to the low pressure controller tee (for models with the pump) (Fig. 4).

The storage tank assembly

Remove the tank from the package. Install the tank on the support in such position, in which the tank is more stable.

Screw a gate of the storage tank on the threaded fitting (Fig. 5).

Use the FUM tape for sealing connections.

Put a cap nut on the blue tube, insert a plastic grommet into the tube against stop and screw a nut on the storage tank gate fitting.

Insert a loose end of the tube to the carbon post-filter tee against stop.



Drain strap installation

It is recommended to install a strap on the drain line 40 mm in diameter after the syphon.

Drill a hole 7 mm in diameter at the place, where you plan to install the strap. If the drain line is positioned horizontally, drill a hole on the pipe top part so that to avoid the waste water penetration to the filter.

Remove a protecting film from the sealing gasket.



Glue the gasket (D) from the strap inner side aligning simultaneously a hole in the gasket and a hole in the strap fitting (Fig. 1).

Lock the strap (E) firmly on the drain line using screws aligning simultaneously holes of the fitting and the drain line (Fig. 2). It is required to tighten fixing screws uniformly (without misalignment) so that both parts of the strap are placed in parallel.

Insert the red tube from the drain flux limiter (item 5, see the Connection diagram) into the drilled hole for a length of 7-10 mm through the strap (E) (Fig. 3).

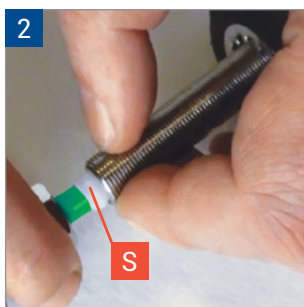
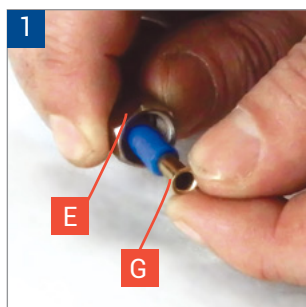
Connection of the tap of clean water

Drill a hole 12 mm in diameter in the washer.

Assemble the tap in the following order:

1. Faucet
2. Cuvette
3. Rubber gasket
4. Plastic washer
5. Metal washer
6. engraving washer

Fix the faucet on the sink. In the nut (E) pull up blue (Fig. 1). The piston (G) insert the inside tube until it stops. Slip into the end of the tube resistant plastic ring (S) (Fig. 2). Screw on the threaded stem of the valve nut (Fig. 3).



SYSTEM FLUSH

Turn off the storage tank tap, open the tap of clean water and water feed tap. Water will begin to drop from the tap of clean water in 3-5 minutes. Leave the tap of clean water opened for 10 minutes, then close it and open the tank tap for several hours. A pressure will be generated in the tank.

ATTENTION! Do not drink the water obtained during the first tank filling. Open the tank with clean water after the tank filling, drain the WHOLE tank and refill it as described above. This will take several hours depending on a pressure in the supply main. After this the water can be drunk. The system flush is required:

- after long (2 weeks) interruptions of usage;
- after maintenance (for example, replacement of cartridges)

SYSTEM MAINTENANCE

Replacement of cartridges of I, II, III stage

Turn the water off at the input and in the storage tank. Open the tank with clean water to release a pressure in the system. Remove the case flask using a wrench (I, II, III stages) and replace the corresponding cartridge. It is recommended to grease a sealing ring with the silicone lubricant or petroleum jelly before reinstallation (do not confuse with a sealing agent!). Install the flask into position and tighten with a wrench. Check the system for the sealness.

Before using flash the preliminary purification system. For this purpose detach the tube from the membrane case and intercept the flow of water. Wait for the effluent water to be clean and assemble the filter in the inverse order.

Membrane replacement

The membrane is delivered vacuum-sealed for its preservation during transportation and storage. Before installation remove the package, shut off a tap of the tank and the water feed tap, open the tap of clean water and detach tubes of the VI case connection (1). Withdraw the old membrane (2). Install the new membrane and grease seals with the food grade silicone or petroleum jelly (3). Screw the membrane case cap. Use only recommended membranes for the replacement.



Replacement of the carbon post-filter

Detach tubes from the case (fig..1), replace the post-filter with the new one, connect tubes.

Note. Do not confuse the water input and output on the post-filter. The water flow direction is indicated by the arrow on the post-filter case.

It is recommended to shut off the source water feed, disconnect the system from the power supply and drain the purified water from the storage tank in case of a long (more than 1 week) interruption of the system usage.

LIST OF POSSIBLE FAILURES AND METHODS OF THEIR ELIMINATION

POTENTIAL FAILURE	REASONS	ELIMINATION METHOD	NOTE
The white water flows from the tap of clean water	There is the air in the system	The air will gradually be out of the system	This situation is considered normal during the new system commissioning or the replacement of filtering modules
The water does not flow from the tap or flows very slowly	The system has just started to operate	Wait for 4-6 hours	The tank filling can be from 4 hours depending on the water temperature and the pressure in the main.
	The carbon post-filter has exhausted its resource	Replace the post-filter	Contact the customer service
	There is no the excessive air pressure in the storage tank	Pressurize the membrane tank to 0.5 atm.	Contact the customer service
The water does not inflow to the storage tank or inflows slowly. Noise, knock of the pump	Low pressure in the supply main (less than 3 atm.)	Install the facility increasing a pressure	The water intake speed to the storage tank (after the membrane) should be 75-100 ml/min
	The resource of replaceable elements of the water preliminary purification is used up	Replace	Cartridges can be quickly clogged due to a large-scale waste dumping to the water conduit or because the water is constantly flows through them, i. e. a drain flux is not shut
	The reverse-osmosis membrane resource is used up	Replace	The membrane can be clogged sufficiently quickly, if it operates on the hard water
	The automatic switch is malfunctioning	Replace	Contact the customer service
	Obstructions in pipes	Check and eliminate	
	The storage tank gate is closed	Open	
	The tap at the filter input is closed	Open	
	The pump is malfunctioning	Replace	A pressure behind the working pump should not be more than 7 atm.
	The reverse-flow valve is malfunctioning	Replace	Contact the customer service
	The high pressure controller is malfunctioning	Replace	Contact the customer service
	There is no contact in electrical connections	Check electrical connections	
Water leak	Fittings are not tightened	Tighten connections	

There is too little water outflowing from the storage tank	The system has just started to operate		The tank filling can be from 4 hours to 6 hours depending on the water temperature and the pressure in the main
	The excessive pressure is low in the storage tank	Increase the pressure	The normal pressure in the empty tank should be 0.4-0.5 atm.
The storage tank is full, but the water flows to the drainage	The pressure in the supply main is reduced, and, as a consequence, the automatic switch does not operate	Install the facility increasing a pressure	The automatic switch steadily operates at the pressure of more than 2.5 atm.
	The automatic switch is malfunctioning	Replace	The automatic switch cannot operate due to a production defect
Water has taste or foul smell	Water stagnation in the filter or the storage tank for a long time	Wash the system with water and refill the tank	
	The carbon post-filter has exhausted its resource	Replace	
	Remainder of a preservative agent in the storage tank	Drain water from the tank and refill it	
The drain flux is not shut after filling of the storage capacity	The pressure in the supply main is reduced, and, as a consequence, the automatic switch does not operate	Install the pressure increase unit	The automatic switch steadily operates at the pressure of more than 2.5 atm.
	The automatic switch is malfunctioning	Replace	The automatic switch cannot operate due to a production defect

ADDITIONS

- The automatic switch shuts the source water supply to the osmosis at the maximum filling of the storage tank that prevents water permanent drain to the drainage.
- The low pressure controller is used for disconnecting the reverse osmosis system at a drop in pressure in the water conduit.
- The high pressure controller is used for disconnecting the reverse osmosis system at the storage tank filling with the purified water.
- The drain flux limiter maintains the required pressure on the reverse-osmosis membrane by limiting the wasted water outflow to the drainage.

STORAGE AND TRANSPORTATION CONDITIONS

The transportation of filters is acceptable in any closed transportation vehicles (except for unheated sections of planes) in accordance with cargo transportation rules applicable for this transport type. Filters are stored packed, at a distance of not less than 1 m from heaters at the temperature of no lower than 5°C. The exposure to direct sunlight, oversprays, deleterious and odorous substances is not allowed.

Protect the system from impacts, falls and freezing of the water.

Flush the system before the commencement of operation, after the replacement of replaceable components and during long (2 weeks) interruptions of usage.

During the filtration process all cartridges should be situated at their places, and tubes should not be bent.

WARRANTY LIABILITIES

The warranty period of the filter operation is years from the sale date. In the lack of the sale date and a stamp of the trading organization the warranty period shall commence at the date of the filter manufacture. The warranty does not apply to cartridges. Their service life is specified on page 3. In case of detection of manufacturing defects cartridges are replaced only after the expertise carried out by the customer service's representatives.

The manufacturer declines any liability for the filter's work and possible consequences in cases, if:

- the filter and its components have mechanical damages;
- requirements of this manual were not observed during connection and operation;
- cartridges are worn out;
- the filter was used for purposes other than intended (for purification of subversive liquids).

The filter's service life is 10 years.

The maintenance and post-warranty repair are carried out by the manufacturer or its destination representatives.

The customer service guarantees the free-of-charge troubleshooting in connections and attachments of the filter occurred due to the fault of the manufacturer's representative during works for the filter installation within 6 months..

QUESTIONS CONCERNING THE WARRANTY MAINTENANCE SHOULD BE REFERRED TO:

WARRANTY CARD

Issuing date

The trading organization shall fill

Sale date _____

Stamp of a store _____

AQUACHIEF

The water-purification system for country houses

- **UNIQUE SOLUTION:**
Removal of iron and hardness salts (scale) by one filtering media of Ecotar.
- **IT IS FAVORABLE AND SIMPLY TO USE:**
Expensive reagents are not required for the media recovery. The regeneration is carried out using table salt. Drain waters are harmless for septic tanks.
- **SPACE SAVING IN A HOUSE:**
Geysер Aquachief occupies 2 times less space, than systems operating at usual filling loadings.
- **INDIVIDUAL APPROACH:**
The variety of Ecotar media allows easily adjusting of Geysер Aquachief for water purification in every region.

More on the website www.geizer.com



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