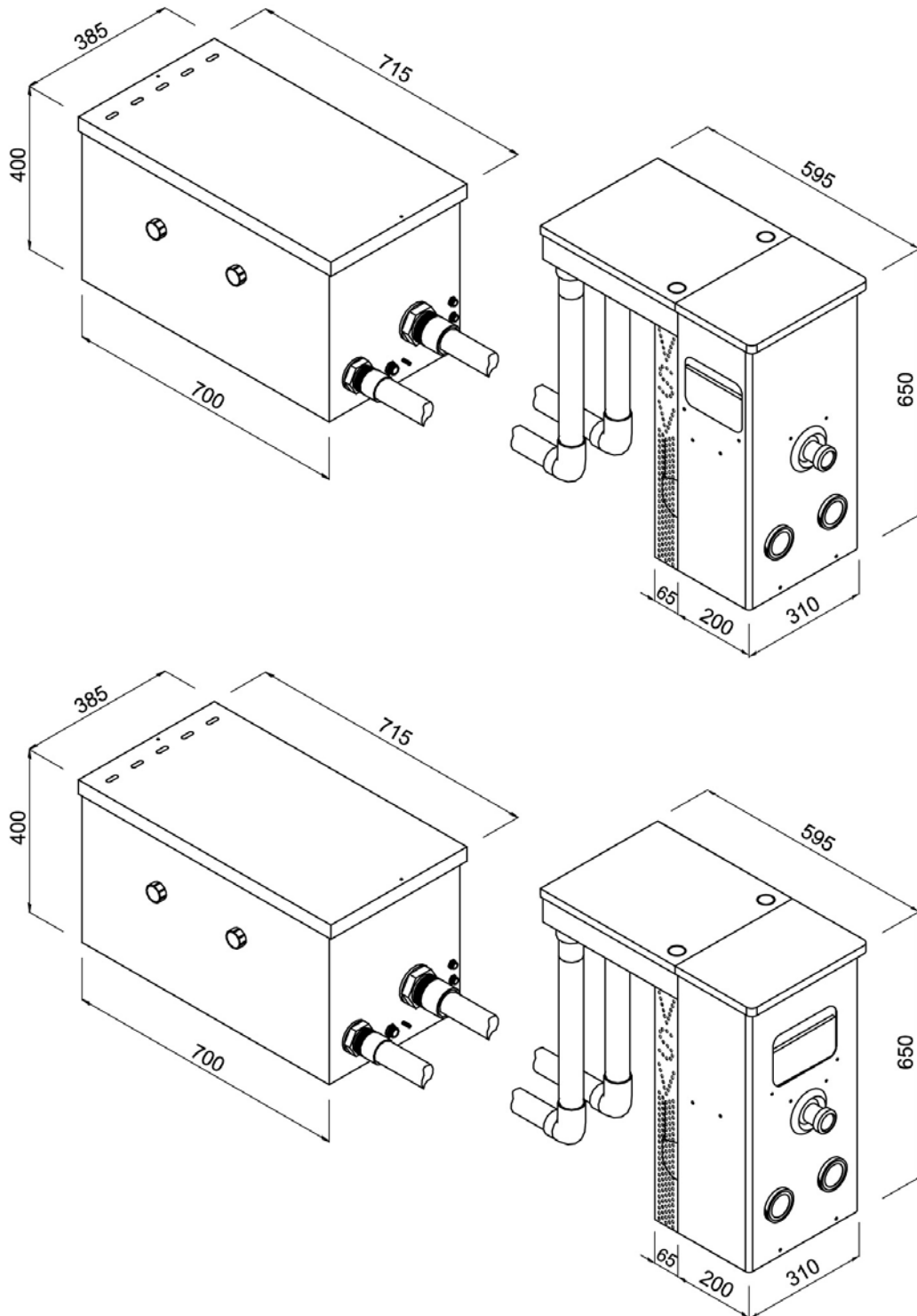


INSTALLATION MANUAL AND USER'S GUIDE

UNIVERSAL FILTRATION BLOCKS VUB15, VUB25 and VUB20/50



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1 – GENERAL INFORMATION

Universal filtration blocks VUB series

APPLICATION FIELD

We congratulate You with a purchase of a high-grade product. Universal filtration blocks of VUB series are intended for operation in all kinds of swimming pools: private, commercial and sport*. Combination of efficiency and simplified maintenance will bring you total satisfaction.

Please, read attentively present manual for safe connection, effective operation and proper maintenance of the product. Keep the user guide in the accessible place and appeal to it when needed. The serial number of the filtration unit is indicated below. In the case of necessity it will help you to obtain more detailed answers to your questions in the center of technical support.

Nº

Present user's guide is intended both for the beginners and for the experienced users and has been drawn up so that you could carry out step by step necessary works. In the user's guide are given the instructions for connection, operation and maintenance of the present product. For easier access to information User's Guide has contents. Follow recommendations and instructions of the given user's guide and VSV Aqua Group products will enjoy you for a long time.

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PROTECTION OF ENVIROMENT

PRIORITY TASKS OF OUR COMPANY

Our company constantly develops measures towards economy of the electric power, resources and decrease of an environmental pollution.

Affecting of new or modified products on an environment is constantly controlled, and new products are evaluated from the point of view of harmlessness to an environment.

Manufacturer reserves its right of making modifications without additional notification in construction, design and component parts of product.

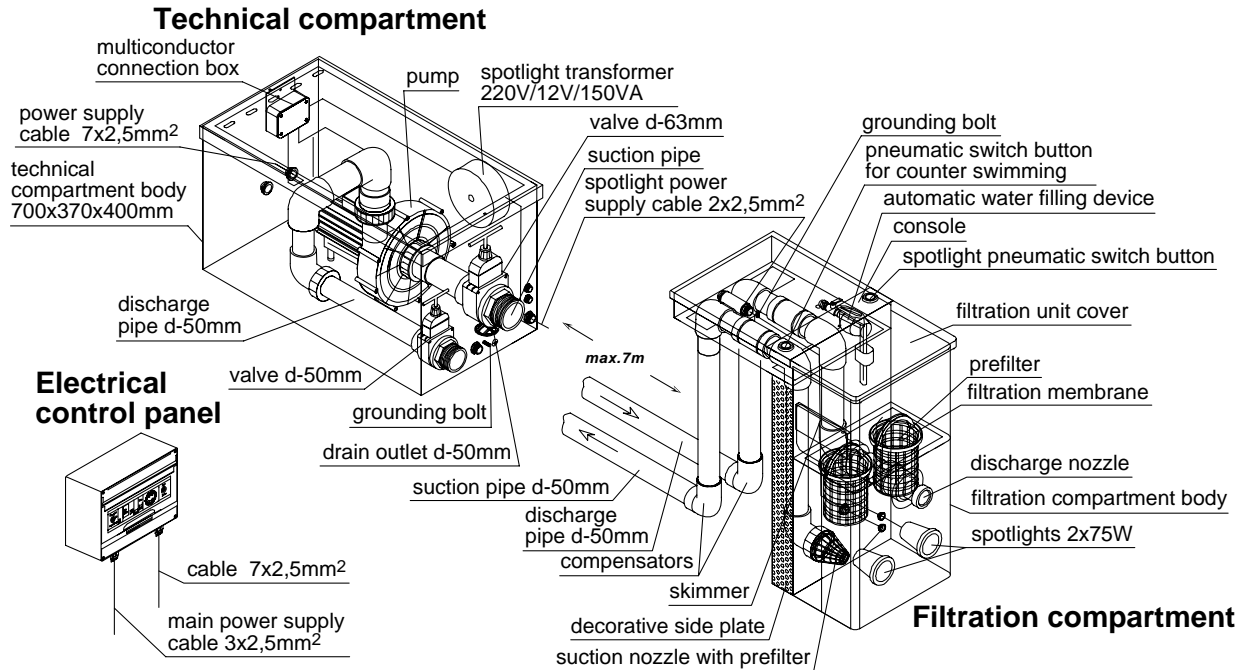
* It is forbidden to use filtration systems VUB in the swimming pools with sea water, equipped with electrolyze or ozone treatment systems. It is forbidden to use filtration systems VSV without grounding.



CE declaration of conformity is issued in compliance with the 89/336/EEC rule of electromagnetic compatibility and with 73/23/EEC rule of safety requirements for electric equipment.

2 – EQUIPMENT DESCRIPTION STANDARD VERSIONS AND THEIR COMPONENT PARTS

2.1. Principal scheme of universal filtration blocks VUB15, VUB25 and VUB20/50



- Filtration compartment of universal blocks VUB with/without heating** includes: two prefilter baskets + two cups for vacuum cleaner connection, two filtration membranes, skimmer, water discharge nozzle, two spotlights x 75W, spotlights pneumatic switch button, counter-swimming pneumatic switch button*, automatic water topping-up device, suction nozzle with prefilter, regulating support, decorative side plates, grounding bolt;
- * VUB15 and VUB25 are supplied with pneumatic button to make possible connection of counter-swimming function at the replacement of one-speed pump by two-speeds pump;
- Technical compartment of universal blocks VUB** can be installed at distance 7 meters maximum from the pool. Component parts of technical compartment vary depending on model of the block (see next pages);
- Electric control panel of universal blocks VUB** includes: timer, differential switch, protection fuses of electromotor and spotlight circuits, operational modes switch, spotlight switch;

2.1/a BLOCK VUB15

- total assigned power **0,85 kW** (with spotlights **2x75W**):
- one-speed pump **0,7 kW (50 Hz)**;
 - capacity - **15 m³/h**;
 - total dynamic head **H max. 13,5 m**;

2.1/b BLOCK VUB25

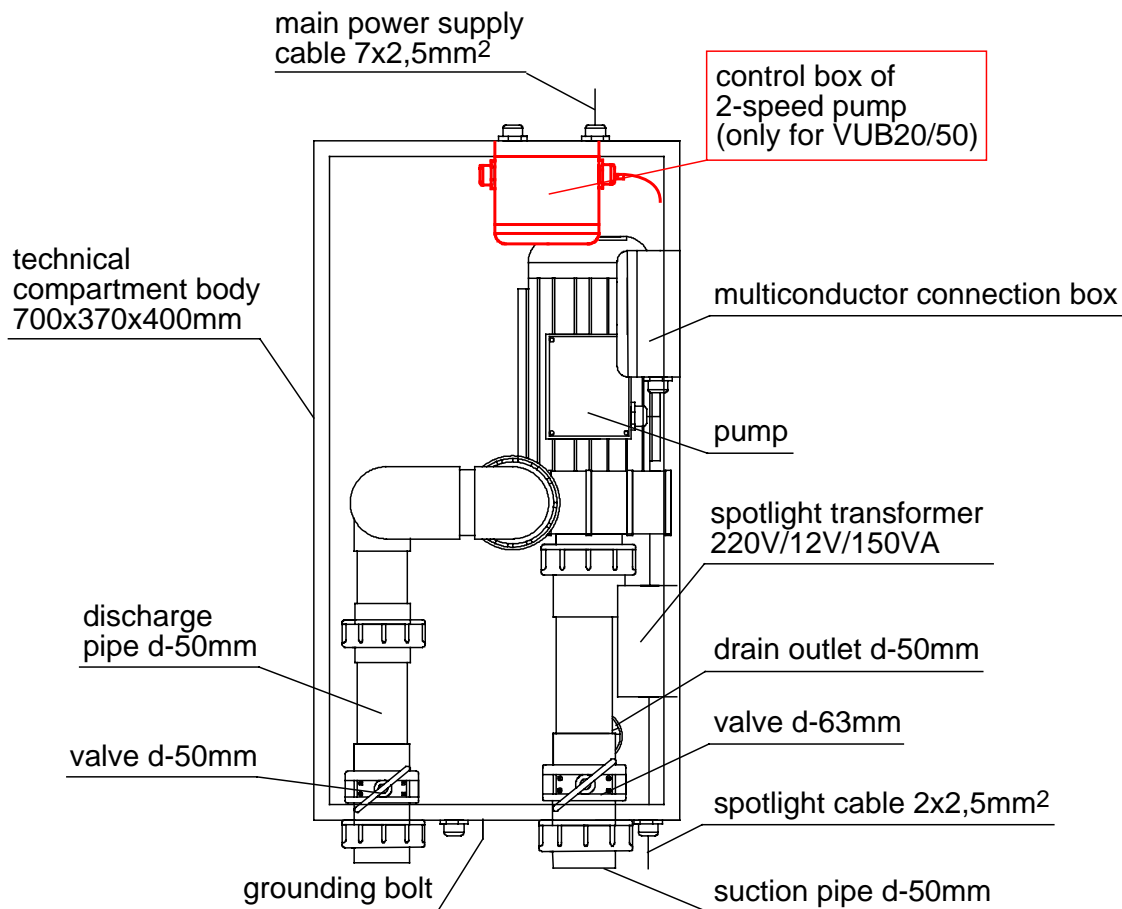
- total assigned power **1,25 kW** (with spotlights **2x75W**):
- one-speed pump **1,1 kW (50 Hz)**;
 - capacity - **25 m³/h**;
 - total dynamic head **H max. 13 m**;

2.1/c BLOCK VUB20/50

- total assigned power **1,75 kW** (with spotlights **2x75W**):
- two-speed pump **0,3/1,6 kW (50 Hz)**;
 - capacity – **20/50 m³/h**;
 - total dynamic head **H max. 19 m**;

- **Technical compartment** includes: one-speed pump 220V (in models VUB15 and VUB25) or two-speeds pump 220V with control box (in model VUB20/50), spotlights transformer, drain outlet, multiconductor connection box, connecting pipes with stop valve, grounding bolt. Technical compartment can be installed at distance 7 meters maximum from the pool.

Technical compartment without electric heater



2.1/d BLOCK VUB15 + heat exchanger

- total assigned power **0,85 kW** (with spotlights **2x75W**):
- one-speed pump **0,7 kW (50 Hz)**;
 - capacity - **15 m³/h**;
 - total dynamic head **H max. 13,5 m**;

2.1/e BLOCK VUB25 + heat exchanger

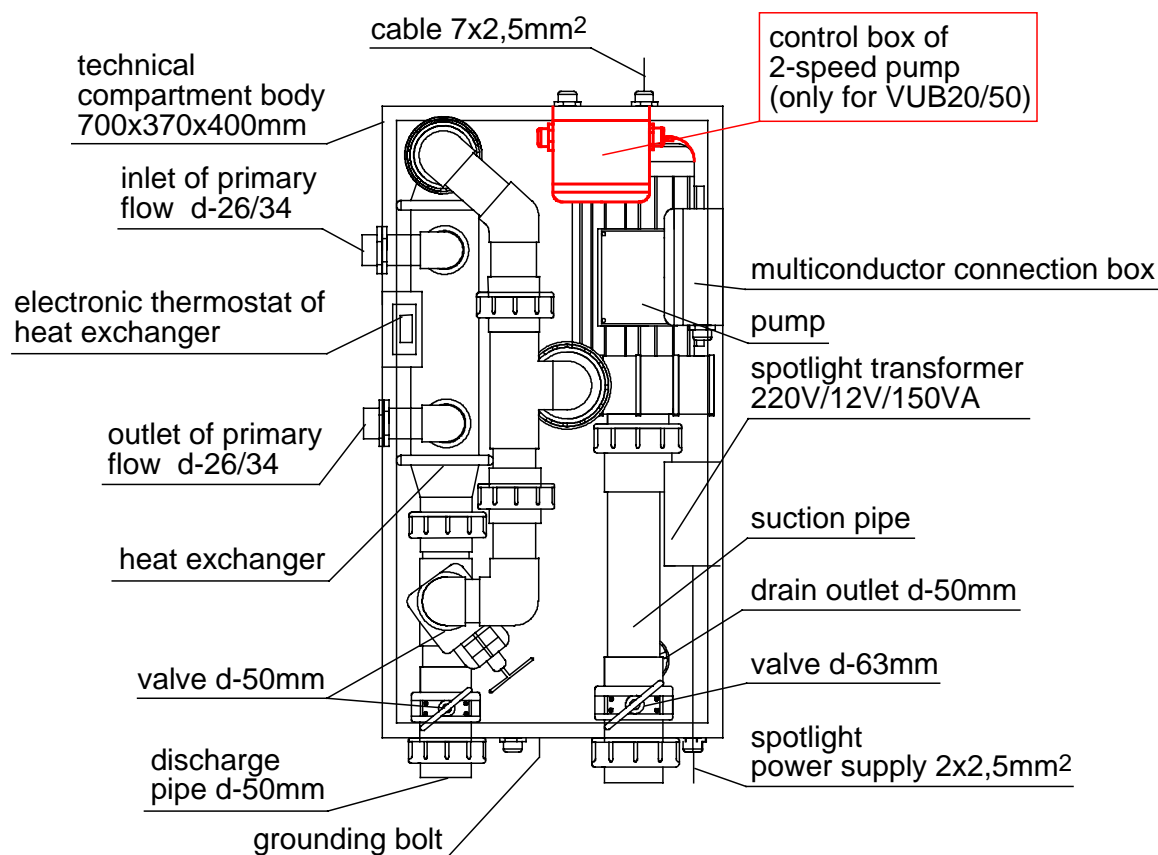
- total assigned power **1,25 kW** (with spotlights **2x75W**):
- one-speed pump **1,1 kW (50 Hz)**;
 - capacity - **25 m³/h**;
 - total dynamic head **H max. 13 m**;

2.1/f BLOCK VUB20/50 + heat exchanger

- total assigned power **1,75 kW** (with spotlights **2x75W**):
- two-speed pump **0,3/1,6 kW (50 Hz)**;
 - capacity – **20/50 m³/h**;
 - total dynamic head **H max. 19 m**;

- **Technical compartment** includes: **heat exchanger with electronic thermostat** (minimum heat transfer is **15 kW**, maximum - **59 kW**), one-speed pump 220V (in models VUB15 and VUB25) or two-speeds pump 220V with control box (in model VUB20/50), spotlights transformer, drain outlet, multiconductor connection box, connecting pipes with stop valve, grounding bolt. Technical compartment can be installed at distance 7 meters maximum from the pool.

Technical compartment with heat exchanger



2.1/g BLOCK VUB15 + electric heater

- total assigned power **0,85 kW** (with spotlights **2x75W**):
12,85 kW (with electric heater **12 kW**)
- one-speed pump **0,7 kW (50 Hz)**;
 - capacity - **15 m³/h**;
 - total dynamic head **H max. 13,5 m**;

2.1/h BLOCK VUB25 + electric heater

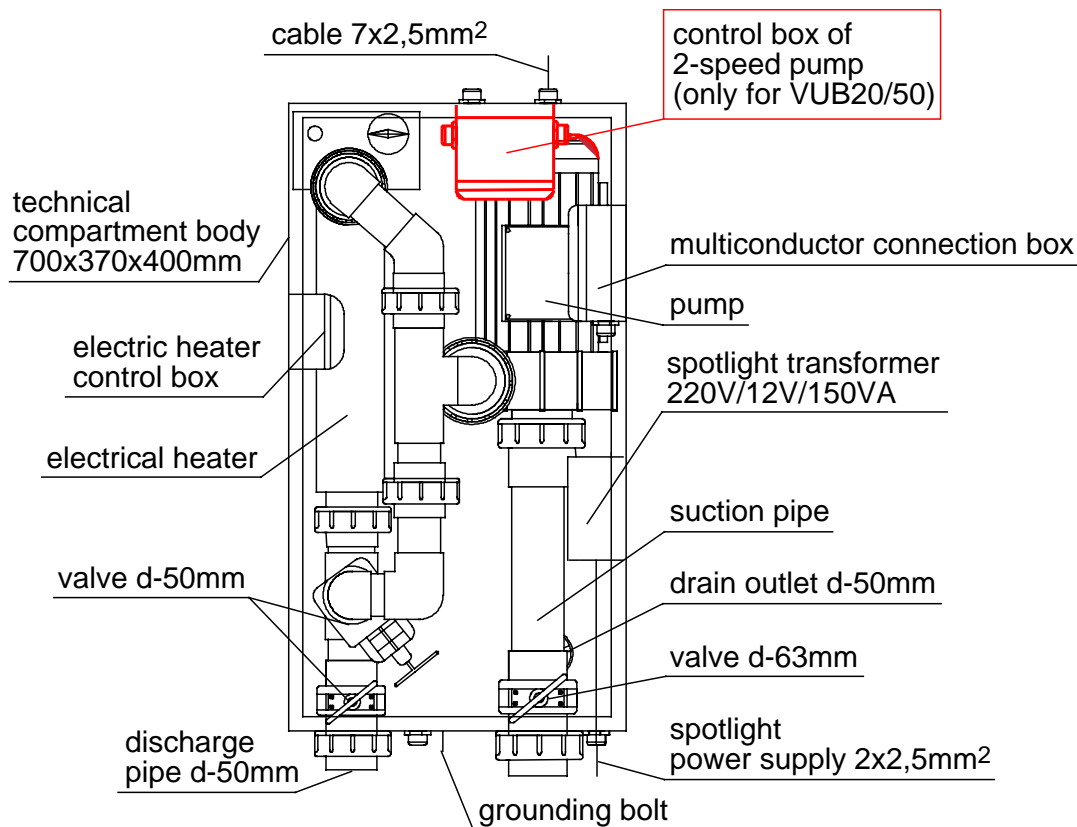
- total assigned power **1,25 kW** (with spotlights **2x75W**):
13,25 kW (with electric heater **12 kW**)
- one-speed pump **1,1 kW (50 Hz)**;
 - capacity - **25 m³/h**;
 - total dynamic head **H max. 13 m**;

2.1/i BLOCK VUB20/50 + electric heater

- total assigned power **1,75 kW** (with spotlights **2x75W**):
13,75 kW (with electric heater **12 kW**)
- two-speed pump **0,3/1,6 kW (50 Hz)**;
 - capacity – **20/50 m³/h**;
 - total dynamic head **H max. 19 m**;

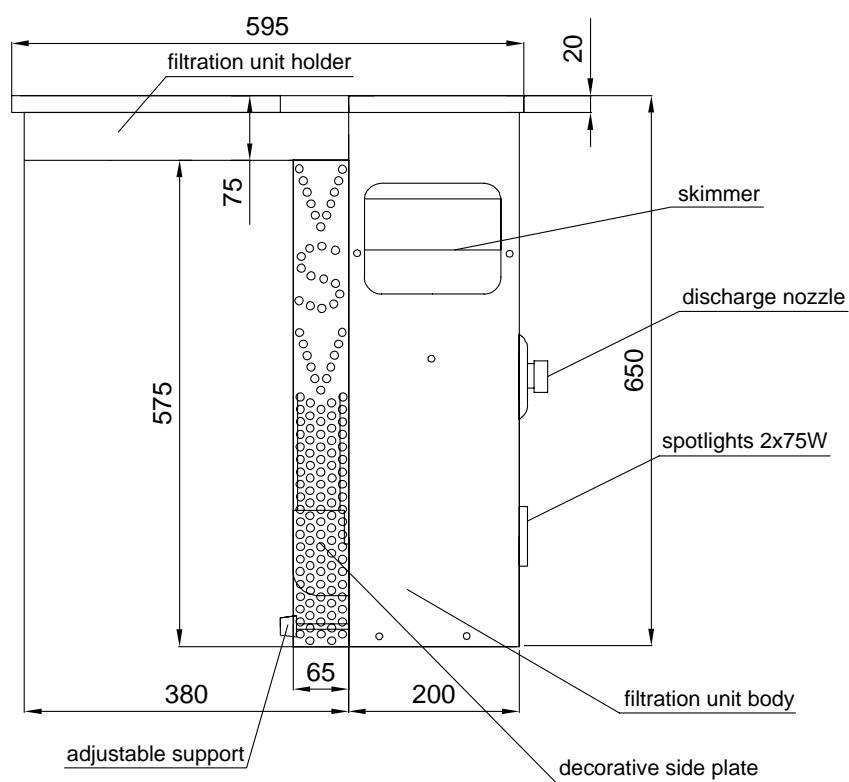
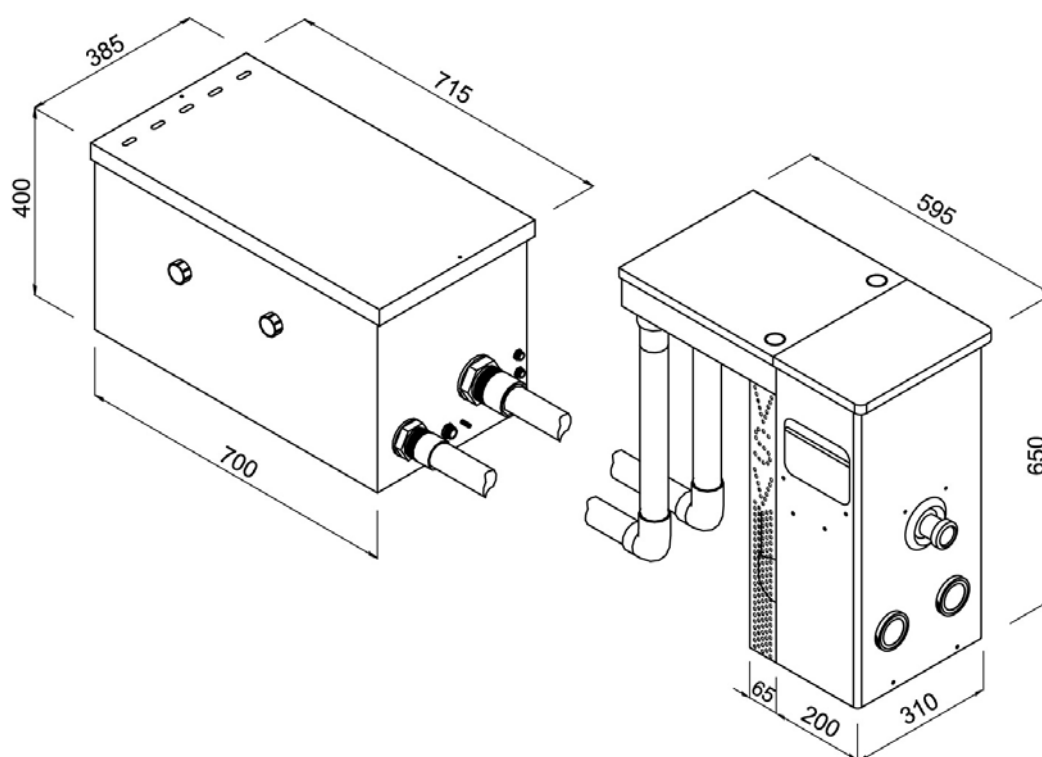
- **Technical compartment** includes: **electric heater of laser type with control box**, one-speed pump 220V (in models VUB15 and VUB25) or two-speeds pump 220V with control box (in model VUB20/50), spotlights transformer, drain outlet, multiconductor connection box, connecting pipes with stop valve, grounding bolt. Technical compartment can be installed at distance 7 meters maximum from the pool.

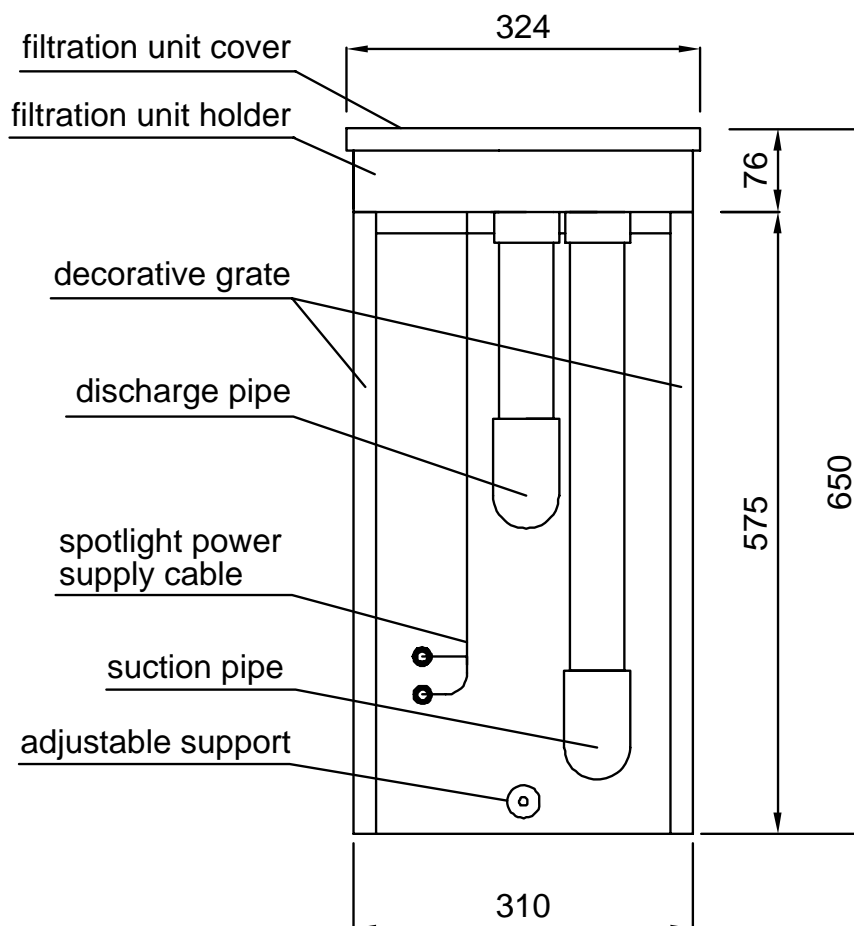
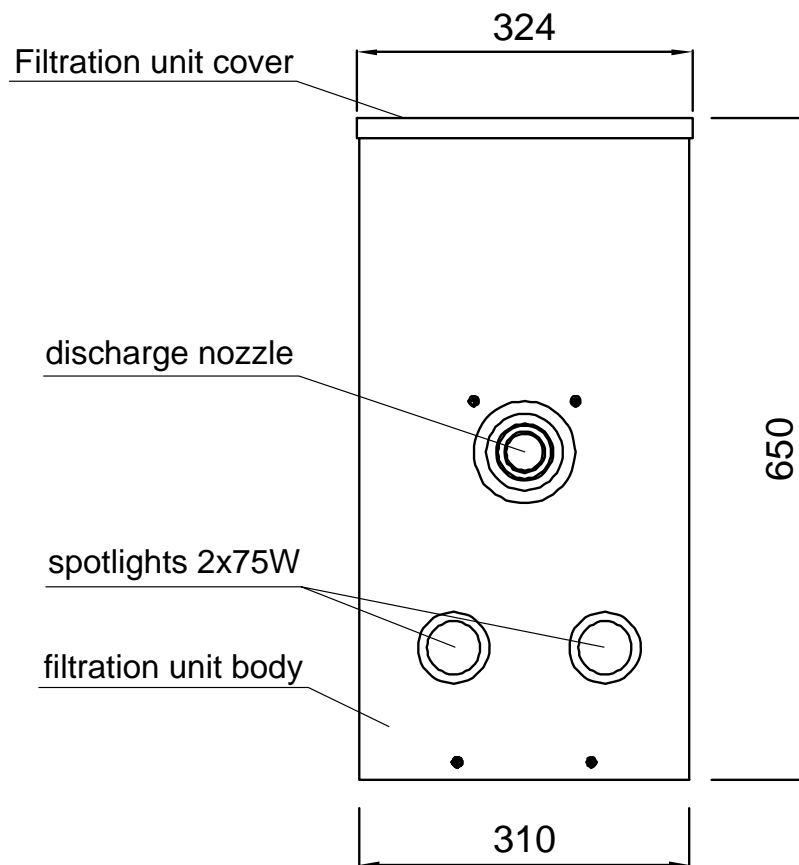
Technical compartment with electric heater



3 –TOTAL VIEW AND DIMENSIONS OF EQUIPMENT

3.1. Total view and dimensions of universal blocks VU15, VUB25 and VUB20/50

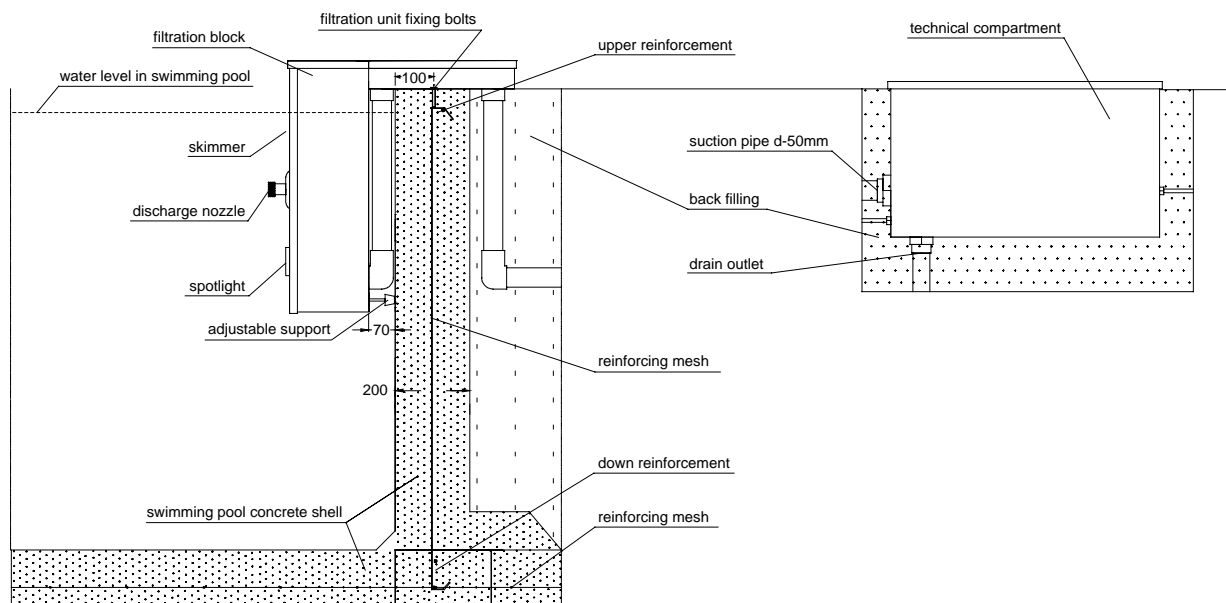




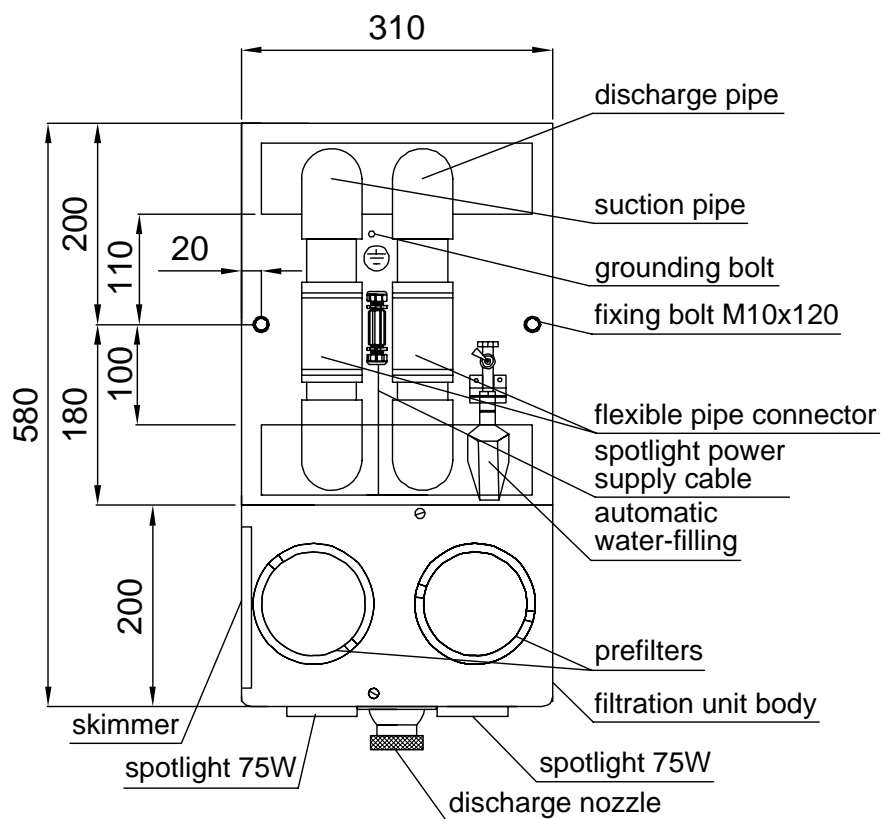
4 – INSTALLATION OF EQUIPMENT

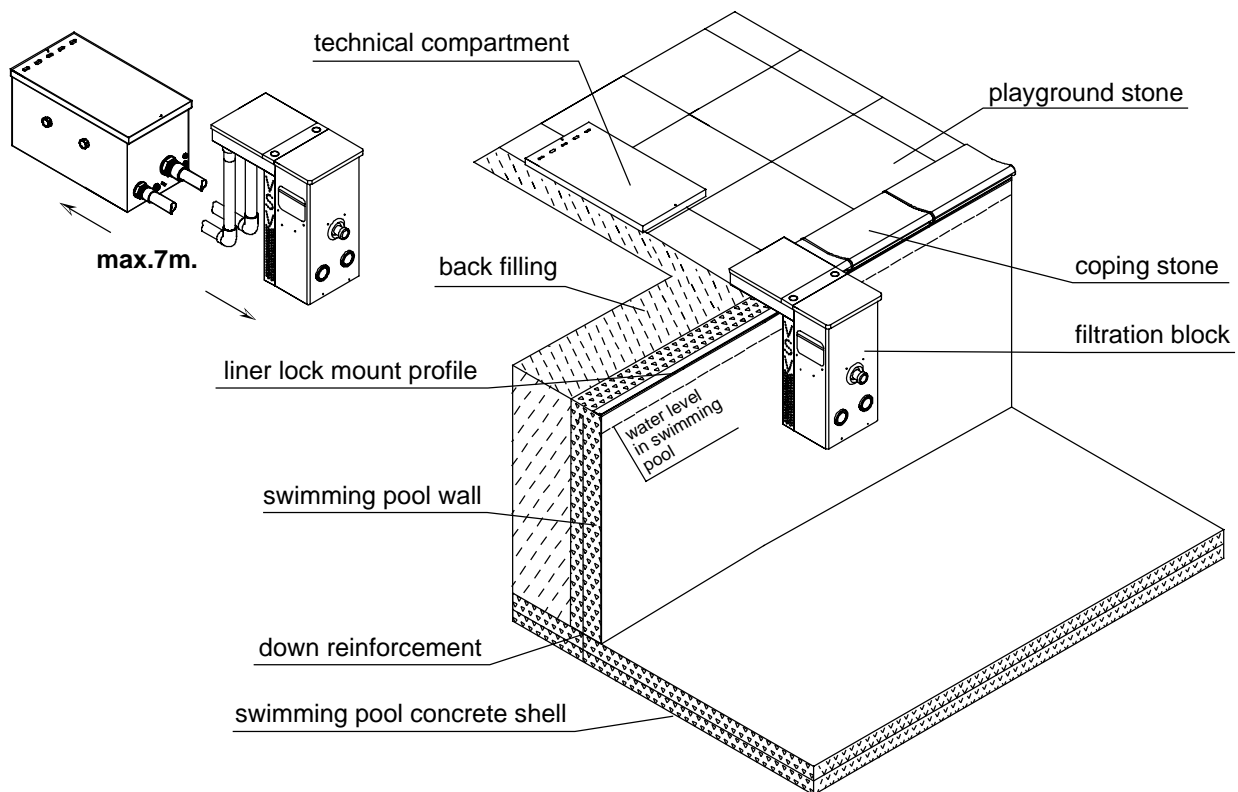
4.1. Installation of universal filtration blocks VUB15, VUB25 and VUB20/50

Install filtration block **carefully** not to damage a waterproofing covering (liner). Submerge the block into water, regulate adjustable support, after that fix it with fixing bolts on pool's wall in the specially foreseen for that places (see the drawing "Top view").



TOP VIEW



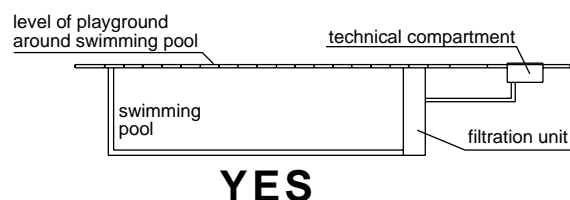
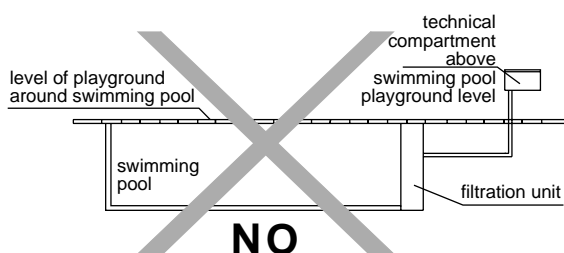


4.2. Installation of universal blocks' technical compartment

Preparation of the base for technical compartment

Technical compartment should be installed in the location zone 2 (VDE 0100-702)

For installation of the technical compartment create a basis from sand and rubble. Thickness of a basis should provide the satisfactory base. Sizes of the pit should not restrict your access for installation of the pipeline and electric cables. The overhead part of the technical compartment without cover should be the same level as platform around swimming pool. Carry out levelling of technical compartment with the help of a level meter, make sand backfilling and fix it.



5 - GENERAL SAFETY RULES

The filtration unit can be heated up under exposure of direct sunbeams. Don't touch the heated parts of filtration unit during the time of usage.

Do not allow the usage of filtration equipment by people (including children) with depressed psychophysical capabilities or with insufficient experience and knowledge, with exception of cases, when they are watched closely, or they were instructed by responsible for their safety person. Look after the children, make sure, that they are not playing with equipment.

The packaging elements of filtration equipment should not be left in the places easy of children's access, because they are the potential sources of danger.

ELECTRIC SAFETY

To avoid the danger of injuries or electric shock during connection and operation of equipment always follow the safety regulations currently in force in your country.

Please, read attentively this user's guide and make sure that the instructions given in it are clear for you. You must know about the consequences, which can be caused by the actions undertaken by you. Don't undertake any actions, which are not described in this guide, since they can lead to the appearance of the situation presenting danger to the people and/or equipment.

Keep this guide in good conditions and if necessary transfer to next owner.

All electric connections should be carried out by the qualified specialist electrician with observance of enclosed instructions and connection schemes. The connections should comply with electrical norms of your country. The electrical control panel should be installed beyond distance 3.5 meters from swimming pool. All connections in the electrical control panel should be well tightened.

Power supply line should be connected so, that fuse 16A will be placed at the beginning of panel's power supply circuit (before differential protection).

An all pole disconnection should be provided in the fixed wiring

Connection to the electrical network is carried out by connecting the copper cable 3x2.5mm² (for cable with length up to 20m) to the top terminals of the differential switch in the electrical control panels of filtration equipment and heater, observing polarity.

Bury the cables in protective pipe. If cables are not protected, it is obligatory to cover a top of a cable with warning band. Under a road or path the cables should be buried at depth not less than one meter. In all other cases depth of the cable - 0.6 m.

CAUTION! The cover of a technical compartment in which there is electric equipment, should be safely locked and fixed with screws. Disconnect power supplies before any works inside technical compartment of the filtration equipment. **The filtration unit must be without fail grounded!** Please, check up norms of your country.

DIFFERENTIAL SWITCH (GROUND FAULT CIRCUIT INTERRUPTOR)

CAUTION! Filtration unit is connected with electrical power supply only through 30mA differential switch (GFCI). Your electrical control panel of filtration equipment is equipped with differential switch, which ensures essential protection against electrical shocks and disconnects filtration unit in the case of accident.

IMPORTANT NOTE! You must test differential switch at least once a month. To do the test, it is necessary to press test button on the differential switch. At the moment when the safety mechanism is tripped you should hear a click of switching-off. Then, switch the differential switch back on.

The test should be carried out when the differential switch is under voltage. If, while pressing the test button, the differential switch is not switching-off, it is necessary to turn off the electricity and to call out the qualified electrician or your regional agent for elimination of malfunction.

6 – EQUIPMENT MOUNTING

6.1. Universal blocks mounting

WATER TOPPING-UP



Lead a pipe of the water pipeline to filtration block and connect it to the ingoing bushing (a thread of 3/8"). Ensure leak resistance of the joint.

ATTENTION! The system of automatic water filling is designed for water pressure of 4.5 Bars maximum.

ATTENTION! After the swimming pool is full with water, adjust the regulating screw of the automatic water topping-up device so, that water level will not be lower the upper edge of the skimmer shutter.

CONNECTION OF BLOCK'S FILTRATION COMPARTMENT AND TECHNICAL COMPARTMENT



a) connection with pump

With the help of pipes d=50mm connect between themselves suction and discharge openings as it is specified in the "Universal filtration blocks installation scheme". Pipes are necessary to lay down so that they will form compensators in order to prevent pipes damage from temperature expansion. It is necessary to lay down pipelines in a depth corresponding to a climatic zone of your region.



b) connection with pneumatic button of counter-swimming (for model VUB20/50)

To avoid damage of pneumatic hose during soil back filling, it is necessary to lead it in protective pipe of suitable diameter. Lead a pneumatic hose through tightening gland in the case of block's technical compartment. Connect pneumatic hose with pneumatic button in the console of the filtration compartment and pneumatic switch in the control box of the pump in the technical compartment.

CAUTION! It is necessary to lay the pneumatic hose smoothly, not bending it!



c) laying of spotlight electric cable

(follow instructions from chapter "General safety rules")

Lay a protective pipe of suitable diameter between block's filtration compartment and technical compartment. Lead in it a copper cable 2x2,5mm². One end of a cable should be in a technical compartment near the spotlight transformer, and the second end near terminals in filtration compartment. With the help of terminals connect cable wires in the filtration compartment. Connect terminals between themselves. Push the tube on the connected terminals. Heat the tube by air-heater (blow-drier) so, that it will crimp tightly the terminals. Connect the second end of cable to transformer. Tighten cable gland in the technical compartment of filtration block.



d) connection with spotlight pneumatic button

To avoid damage of pneumatic hose during soil back filling, it is necessary to lead it in protective pipe cover of suitable diameter. Lead a pneumatic hose through tightening gland in the case of block's technical compartments. Connect pneumatic hose with pneumatic button in the console of the filtration compartment and pneumatic switch in the spotlight transformer.

CAUTION! It is necessary to lay the pneumatic hose smoothly, not bending it!



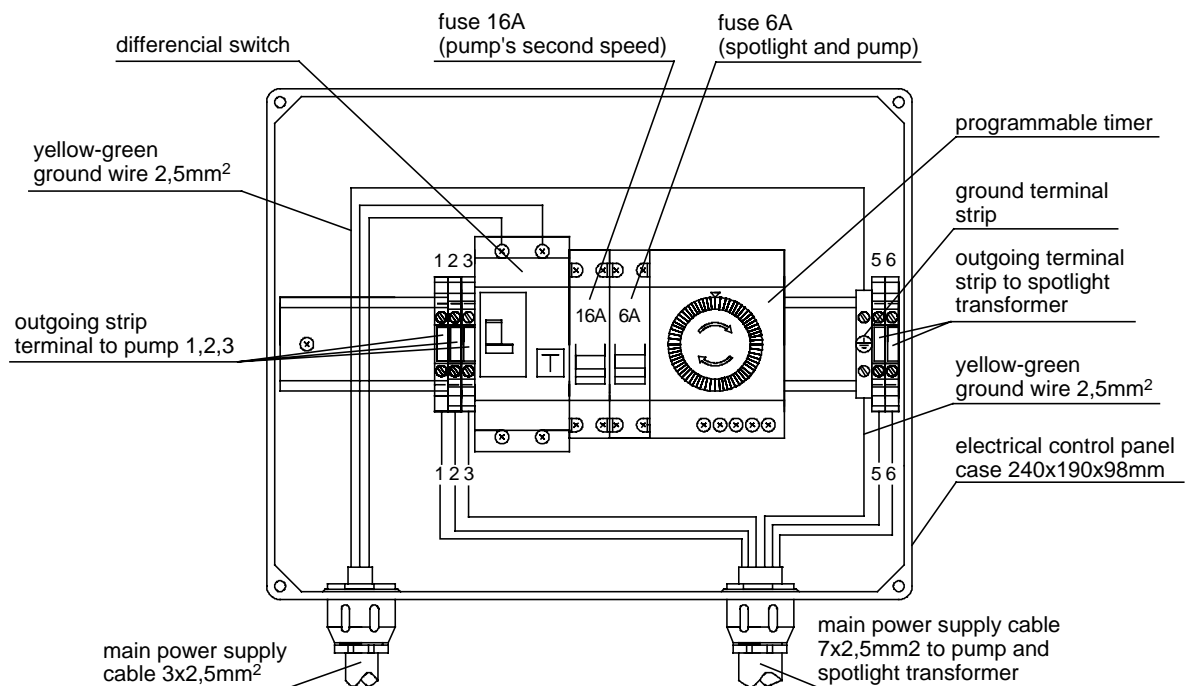
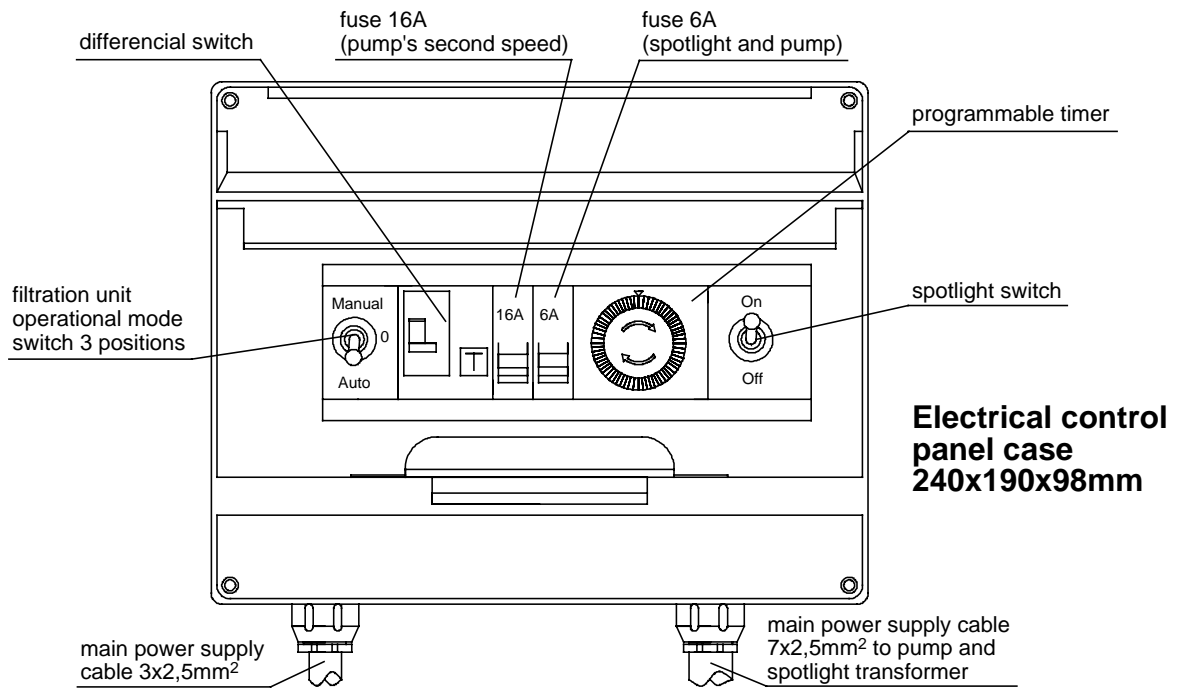
e) connection of technical compartment with drainage

With the help of pipes 50mm connect drain outlet of technical compartment with drainage. Create a slope for pipelines to avoid water level rising inside a technical compartment.

ATTENTION! If you connect the drainage pipeline to other drainage systems, carry out the joint so that water from other drainage systems will not get into drainage of the technical compartment.

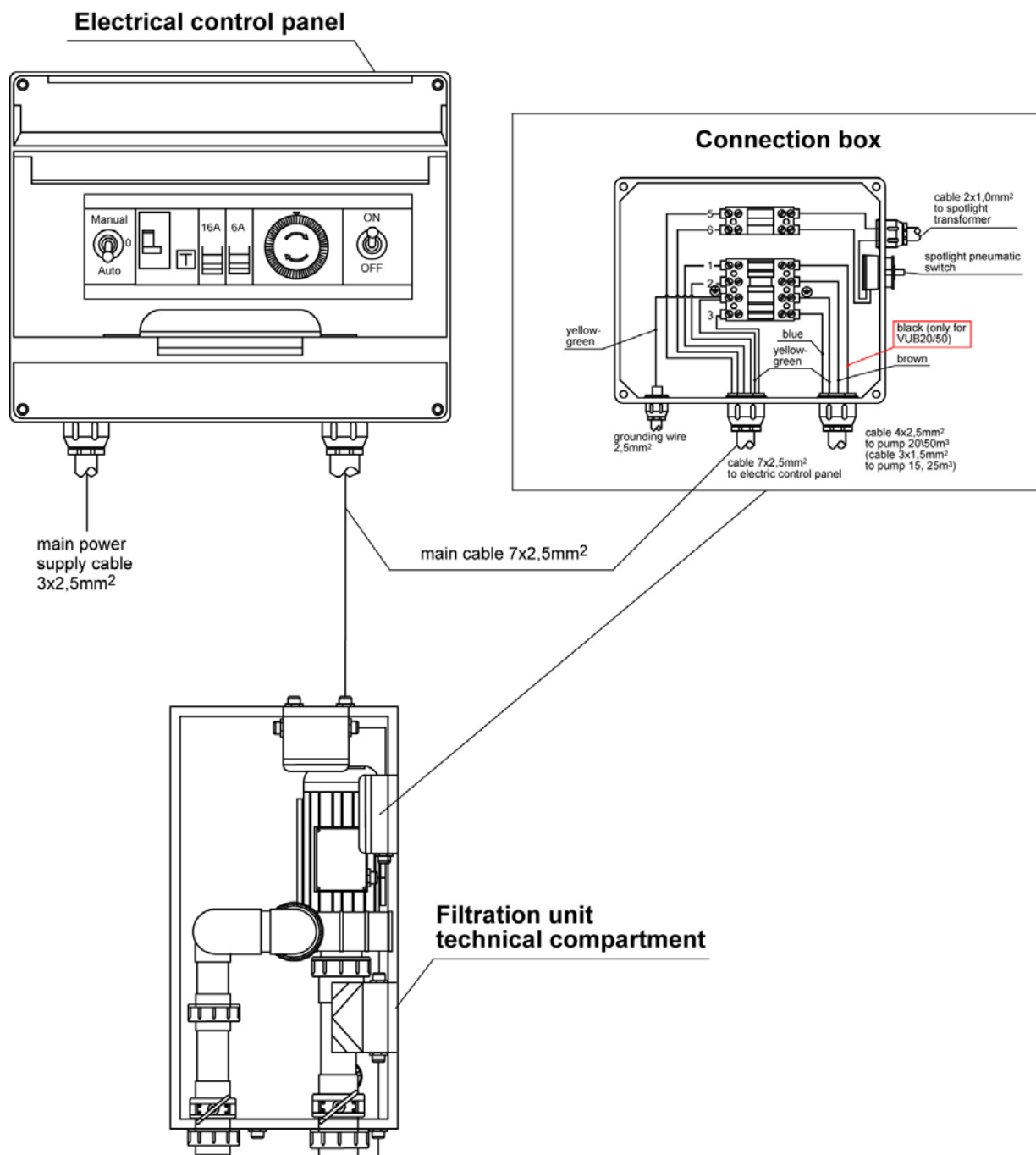
7 – ELECTRICAL CONNECTIONS

ELECTRIC CONTROL PANEL



CONNECTION SCHEME OF ELECTRICAL CONTROL PANEL in universal blocks

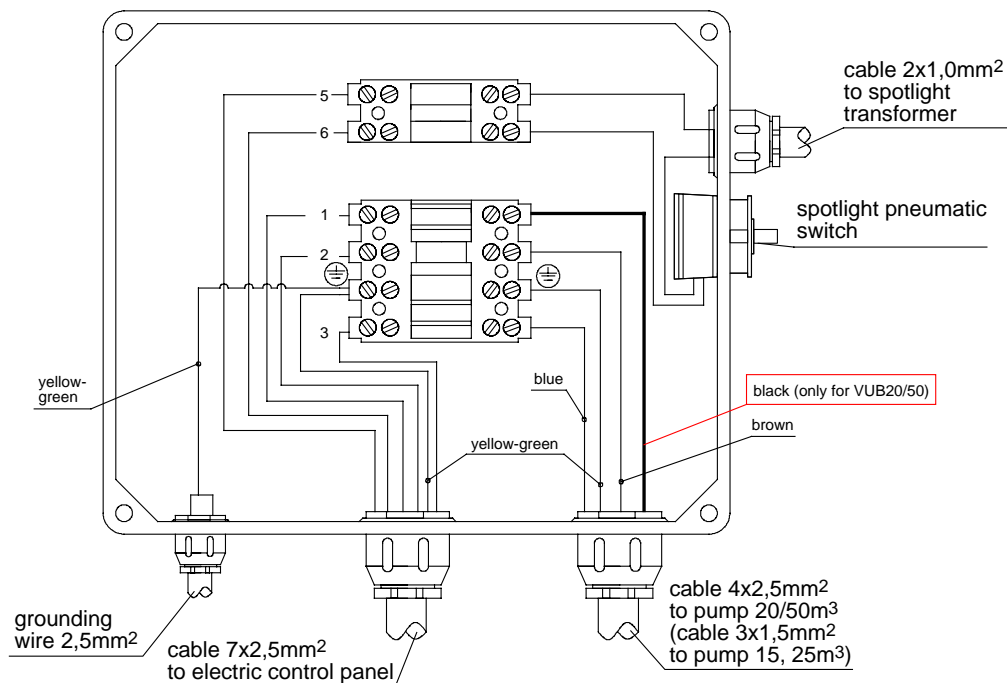
Connection of power supplies is made to the top terminals of the differential switch, observing polarity. Main power supply cable of pump and spotlight transformer is connected to terminals according marking on the cable wires and enclosed scheme.



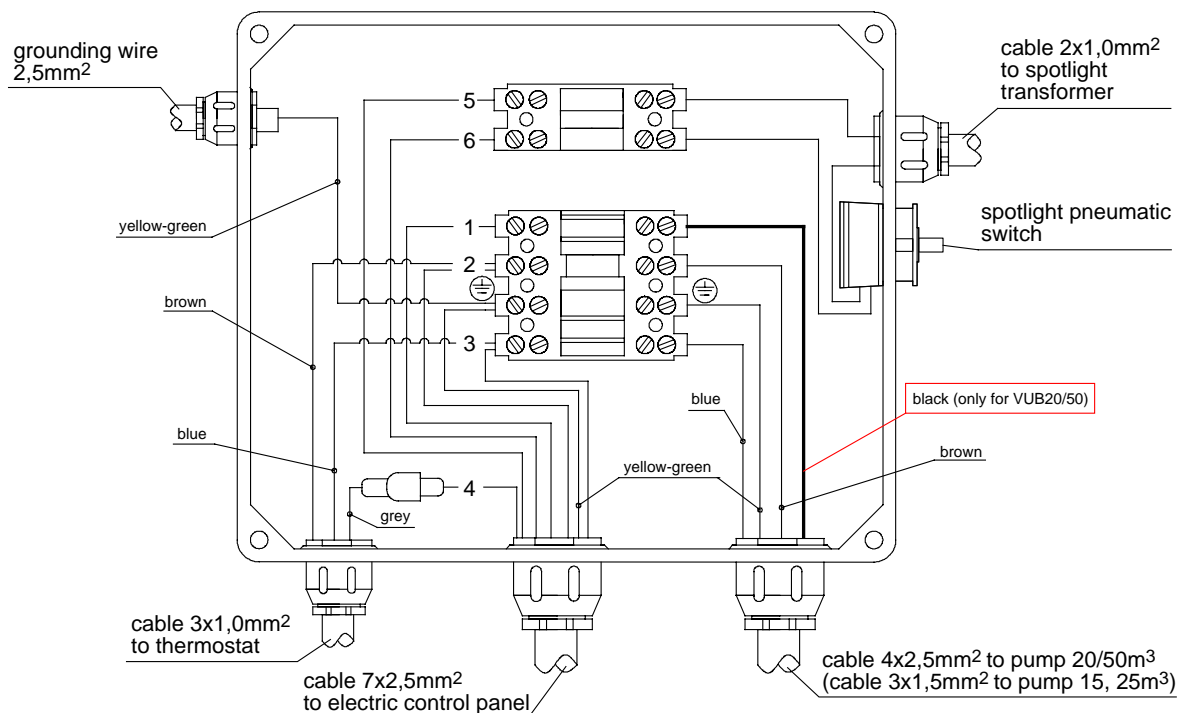
MULTICONDUCTOR CONNECTION BOXES of universal blocks

Lead pump and transformer main power supply cable into technical compartment through intended for it tightening gland. Tighten a nut of a gland to avoid water leakage into technical compartment. Lead a cable into connecting box and connect wires according enclosed diagram.

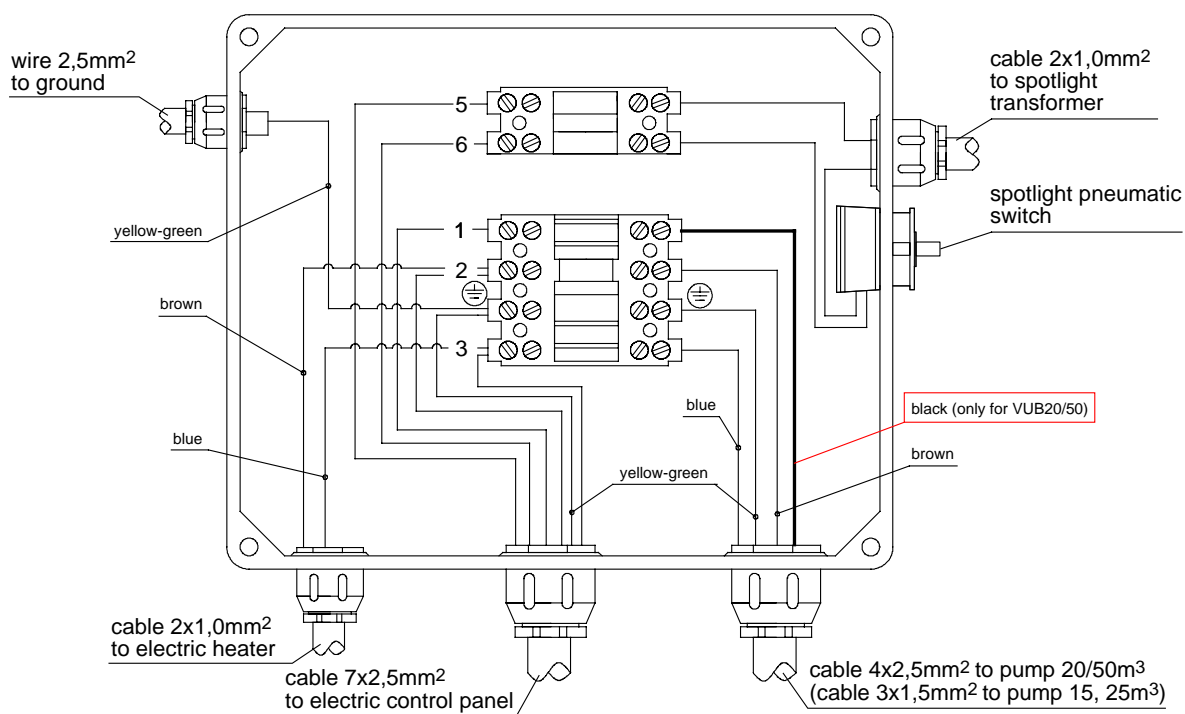
MULTICONDUCTOR CONNECTION OF FILTRATION UNITS (without water heating)



MULTICONDUCTOR CONNECTION BOX OF FILTRATION UNITS (with heat exchanger)

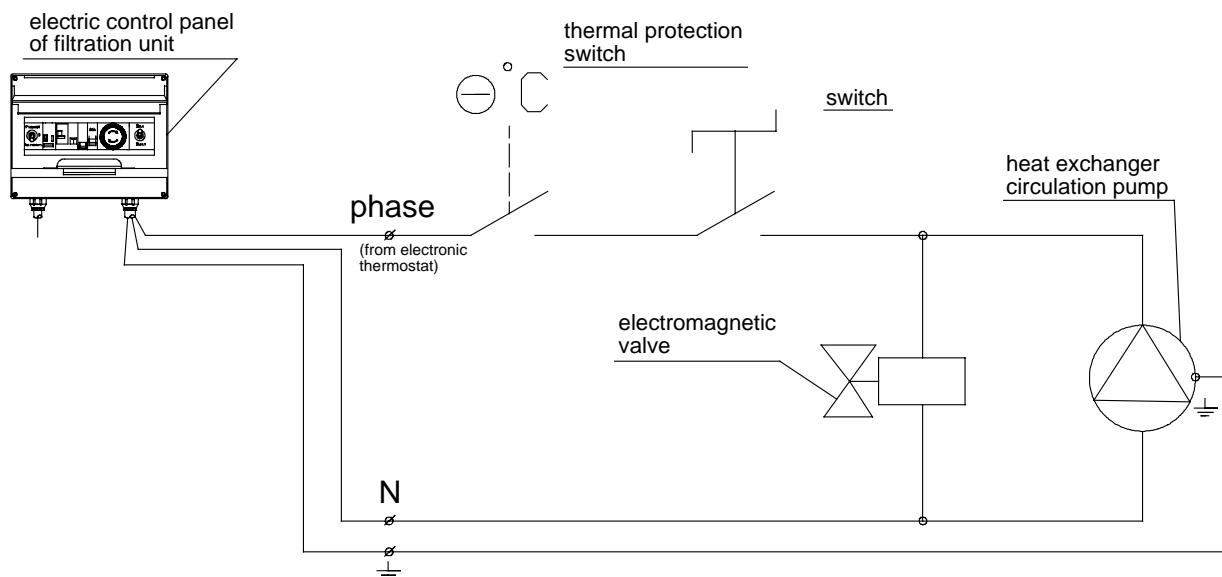


MULTICONDUCTOR CONNECTION BOX OF FILTRATION UNITS (with electric heater)



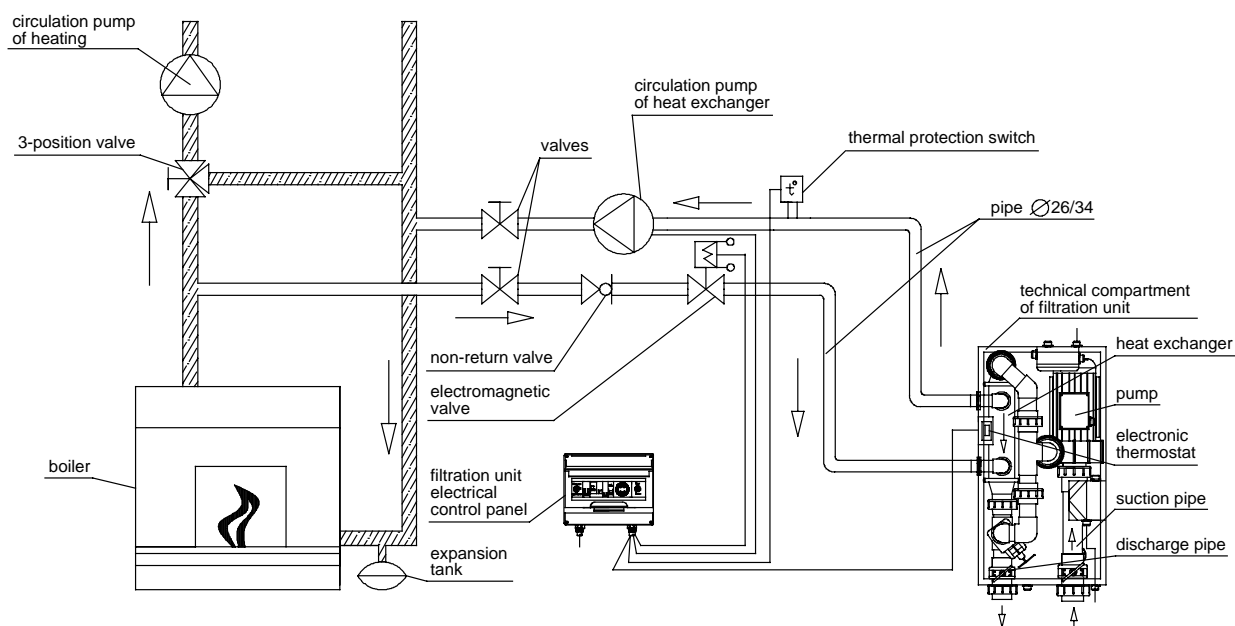
ELECTRICAL CONNECTION SCHEME OF HEAT EXCHANGER in universal blocks VUB15, VUB25 and VUB20/50

Make connection of mounted equipment and connect with electrical control panel of filtration unit according enclosed diagram.



HYDRAULIC CONNECTION SCHEME OF HEAT EXCHANGER in universal blocks VUB15, VUB25 and VUB20/50

Connect heat exchanger with gas boiler according enclosed scheme.

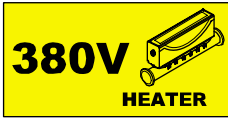


Choose the circulation pump of necessary capacity according enclosed table.

Table of circulation pumps for heat exchanger

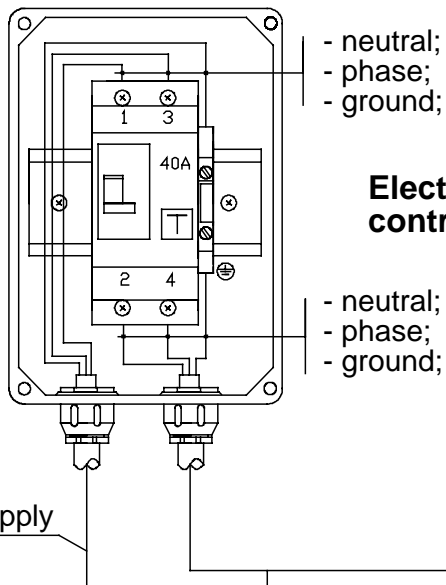
Capacity of the circulating pump	Power of the circulating pump
0,72 m ³ /h	15 kW
1,44 m ³ /h	29 kW
2,16 m ³ /h	44 kW
2,88 m ³ /h	59 kW

CONNECTION SCHEME OF ELECTRIC HEATER in universal blocks VUB15, VUB25 and VUB20/50

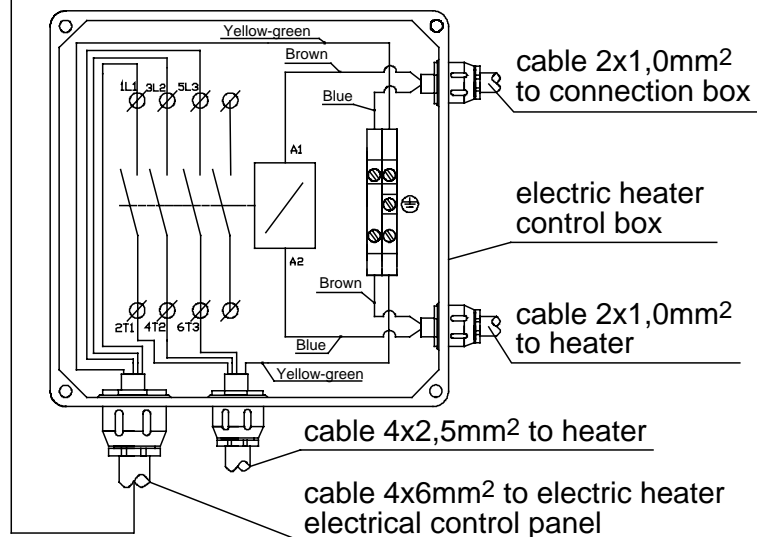
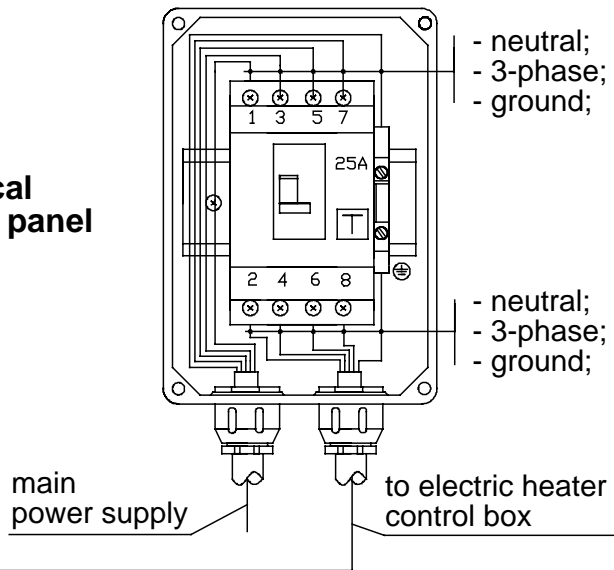


Power supply connection is made on the top terminals of the differential switch, observing alternation of phases. Pay attention that the cross-section and quantity of cable wires should correspond to your electric heater model

**Power supply
single-phase
heater**



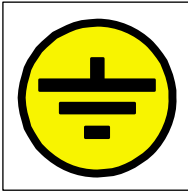
**Power supply
three-phase
heater**



3 phase	fuse	cable
6 kW	10A	4x2,5mm ²
9 kW	16A	4x4mm ²
12 kW	20A	4x6mm ²

1 phase	fuse	cable
6 kW	32A	3x6mm ²

8 - GROUND CONNECTION MOUNTING

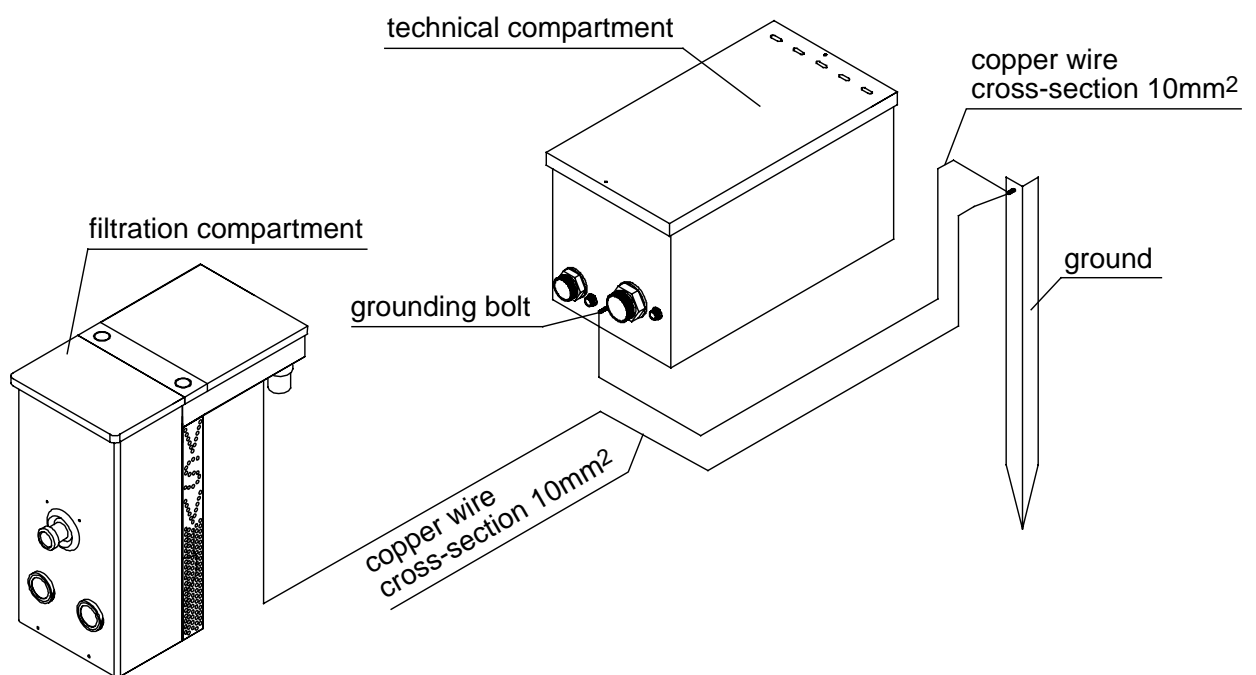


Make the grounding of the filtration equipment following norms of your country. Connect technical and filtration compartments to the ground with flexible copper wire with cross-section 10 mm².

ATTENTION! Absence of grounding is dangerous for life.

If your filtration equipment is not grounded or grounding is done incorrectly, there is a risk of corrosion for filtration unit's metal parts because of a difference of potentials.

The manufacturer cannot be considered responsible for possible damage, connected with the absence of grounding or incorrectly made grounding.



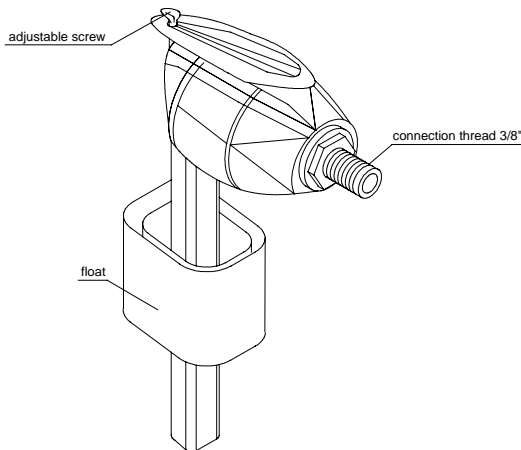
9 – PUTTING EQUIPMENT INTO OPERATION

9.1. UNIVERSAL BLOCK'S START-UP AND OPERATION

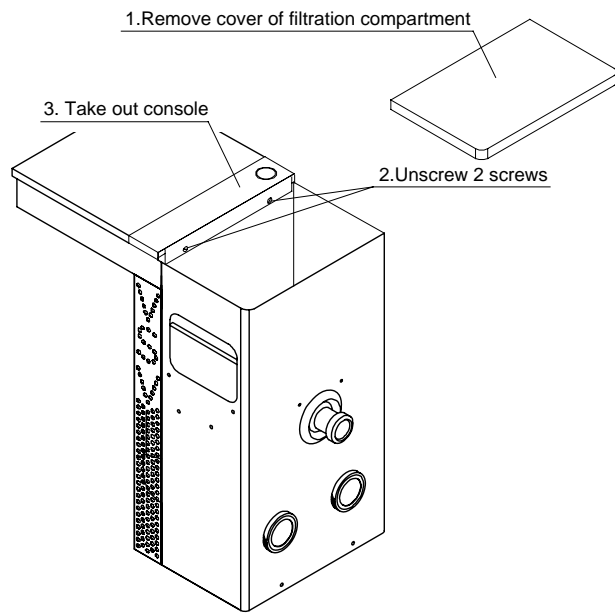
INITIAL START-UP

Check up again all pipes connections (see section "Universal filtration block mounting"). Finish swimming pool water filling. Make sure, that the water level in the swimming pool coincides with upper edge of the skimmer shutter.

ATTENTION! To keep water level in the swimming pool on the same level with upper edge of skimmer shutter, it is necessary to adjust the screw of water filling device after swimming pool filling up with water. For this purpose it is necessary to unscrew two screws inside a filtration compartment of the block (see drawing N*1), carefully remove the console. Adjust water topping-up with the help of an adjustable screw (see drawing N*2) so that water supply will be stopped at reaching the level of upper edge of skimmer shutter. After adjustment mount the console back on place and fix it with screws. **The connected automatic water filling system ensures reliable work of the filtration unit.**



Draw. 2



Draw. 1

Following the instructions from chapter «General safety rules», make electric connections. To remove air from the pipelines and pump, take flexible hose, connect it to water pipeline and insert into discharge nozzle, impacting the place of its inserting into nozzle by hand or by anything available. Holding hose by hand, open water supply and fill until the air bubbles will stop coming out in the filtration compartment of filtration unit. Make sure that there is no leakage in the pipes connection points. Backfill a place around technical compartment and pipelines with sand! Insert filtration membranes (see section «Filtration membrane and its installation»). Switch on filtration unit, setting the filtration mode switch of the electrical control panel in position «manual».

After two-three days of filtration unit operation in a «manual» mode, set on the timer duration of water filtration cycles and set the electrical control panel filtration switch in position «automatic mode».

TIMER SETTING IN THE ELECTRICAL CONTROL PANEL

You can use the timer in your electrical control panel to set the times for the daily filtration of your pool.

REMEMBER! The more often a swimming pool is filtrated, the cheaper is to maintain it!

Adapt the filtration time to water temperature: filtration time = temperature of water divided by 2 (for example, water at $t = 24^{\circ}\text{C}$, time = $24:2=12$ hours (time which filtration unit must work)).

To set filtration time, it is necessary carefully with the help of small screw-driver to shift out the segments of the timer outside. One segment corresponds to 30 minutes. To set timer's clock, it is necessary to rotate clockwise a dial face until a set time will not appear in the small window opposite a pointer. **It is forbidden to rotate a dial face counter-clockwise**, it can damage it.

COUNTER-SWIMMING FUNCTION

Counter-swimming is switching on by pressing the pneumatic button of the filtration unit's console (only in models with the two-speed pump).

ATTENTION! Do not leave a filtration unit in a counter-swimming mode for a long time as this function is not intended for a continuous work.

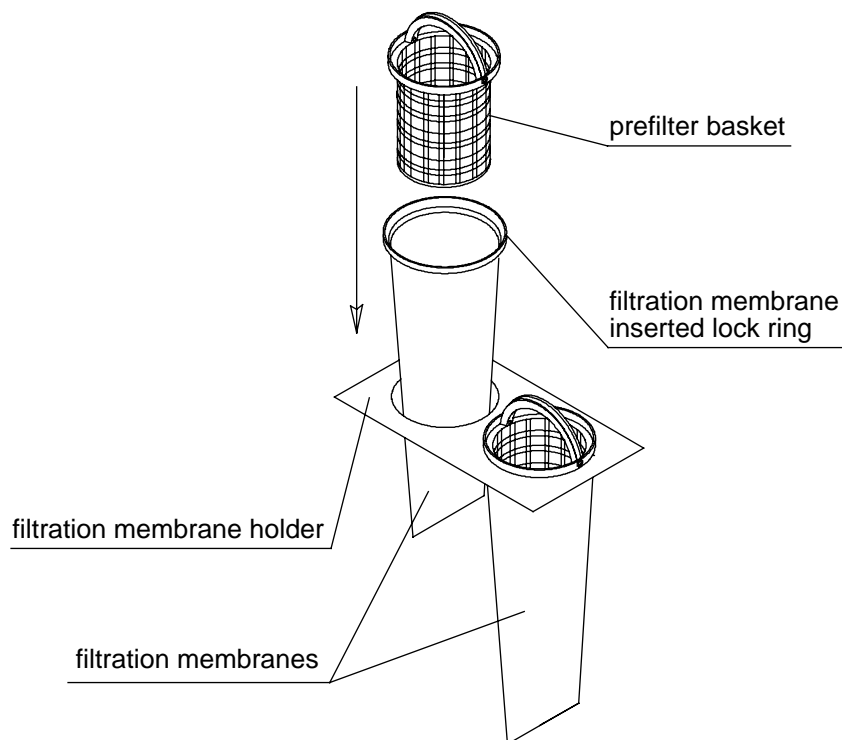
10 - FILTRATION MEMBRANE AND ITS INSTALLATION

ATTENTION! It is forbidden to operate filtration unit without filtration membrane, because it can result in pump's breakage.

In universal filtration blocks VUB water is sucked in by the skimmer and is filtrated through the filtration membrane. Then, cleaned water is driven back into the swimming pool. Prior to the filtration membranes there are prefilter baskets designed to remove the largest size impurities, for example leaves. They could serve also as containers for chlorine tablets. The efficiency of your filtration equipment will depend from cleanness of prefilter baskets and filtration membrane.

To install filtration membranes inside filtration equipment, it is necessary first of all to switch off the filtration unit. Insert the filtration membranes into openings of the holding plate placed inside the filtration unit. Thus the inserted lock ring should remain on a holding plate.

Fix filtration membranes with prefilter baskets and switch on filtration unit.



FILTRATION MEMBRANE REPLACEMENT AND CLEANING

ATTENTION! Replacement of filtration membranes can be done only after the filtration unit has been disconnected from power supply.

Disconnect filtration unit from power supply. Take out prefilter baskets and clean them with water. Then take out dirty filtration membranes, pour out water, make them inside out and hose down. You can clean filtration membranes with jetted hose water.

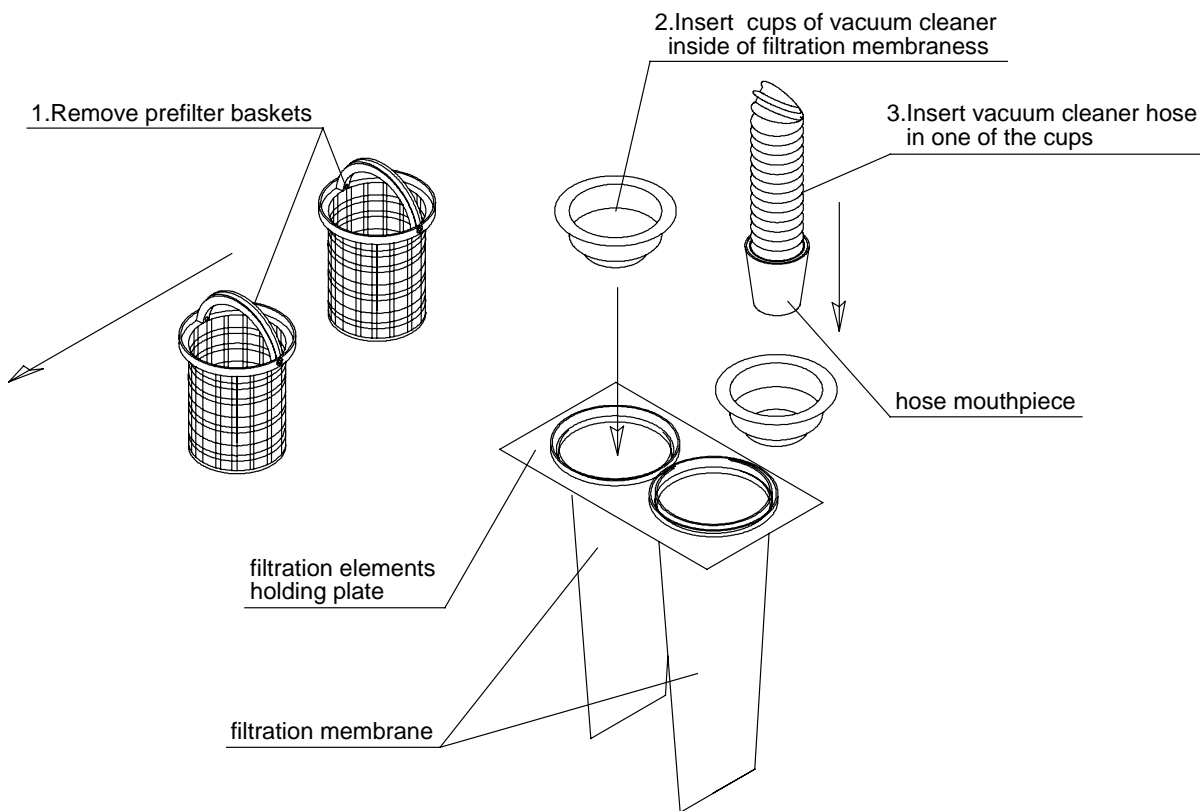
If badly clogged up, they can be washed in the automatic washing machine, but in any case after being washed down with hose. Important to remember, that washing water temperature should not exceed 30°C and any use of washing-up liquids is also forbidden. Recommended frequency of filtration membrane cleaning is not less often than once per week or depending from pollution.

ATTENTION! If near by your pool there are deciduous trees, see to it that prefilter baskets are not clogged up by fallen leaves. It makes worse effectiveness of filtration unit operation and can put out of operation the motor. Clean prefilter baskets makes better effectiveness of filtration unit operation.

VACUUM CLEANER CONNECTION AND OPERATION

Assemble water vacuum cleaner and put it down in the swimming pool. Fill a vacuum cleaner hose with water using the water discharge nozzle. Take out prefilter baskets and insert vacuum-cleaner cups on their places. Connect a vacuum cleaner hose to the cup with hole and start swimming pool vacuum cleaning.

CAUTION! It is forbidden to use counter swimming function for swimming pool vacuum cleaning!



If during the cleaning one of the filtration membranes was clogged, interchange the cups places and continue to clean your pool. If both filtration membranes are clogged, switch off filtration unit from electric power supply, then clean or replace filtration membranes (there are always two additional membranes in the kitting of equipment).

At the end of swimming pool cleaning switch off filtration unit again from power supply, disconnect a vacuum cleaner from filtration unit, remove cups of vacuum-cleaner, replace filtration membranes by clean ones and return prefilter baskets to their place! Then switch on a filtration unit again.

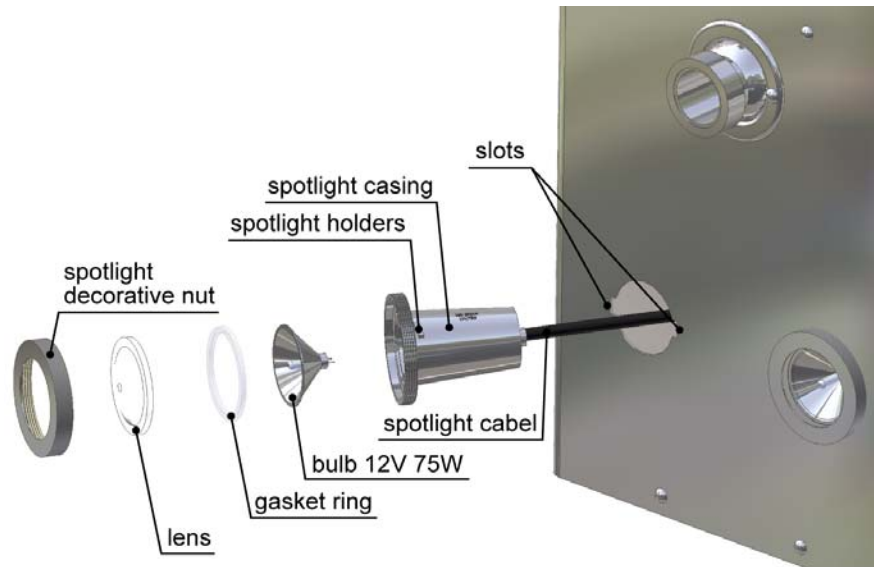
ATTENTION! Vacuum-cleaner's flexible hose should be hermetically connected with hose mouthpiece to avoid air suction and airing of filtration unit.

BIG FILTRATION MEMBRANE

Big filtration membrane is intended for quick water cleaning:

- a) during swimming pool water filling;
 - b) during first start-up of the filtration unit;
 - c) during filtration unit start-up after winterizing
- A. If the water poured in the pool doesn't correspond to the established norms (is not clean enough), make water cleaning in the pool with the help of big filtration membrane. For that insert a hose inside of big filtration membrane and fix filtration membrane and hose with tightening collar or with scotch. Lay down the hose with fixed filtration membrane into the pool, switch on water and start to fill swimming pool with water! After the swimming pool filling is finished it is necessary to switch off water, to take out the hose from pool, to disconnect big filtration membrane, then to make it inside out and wash with hosed water.
- B. Also make water cleaning in the pool with the help of big filtration membrane during first starting up of the filtration unit! For that fix clean big filtration membrane on the discharge water nozzle. Start-up filtration unit and don't remove big filtration membrane until the water in the pool will be completely cleaned. If big filtration membrane became too dirty, it could be taken out, washed with hosed water and fixed again on the discharge nozzle and swimming pool water cleaning could be continued.
- C. After water cleaning is finished don't forget to wash big filtration membrane again. Then dry it and put down. You may need it next time during start-up of filtration unit after winterizing.

11 - SPOTLIGHT BULB REPLACEMENT in universal blocks



Turn off power supply of filtration unit. Turn spotlight clockwise until spotlight's holders will not get in the slots on the front part of filtration unit. Take out the spotlight from water carefully extending a reserve of cable. Take a spotlight's cup and unscrew counterclockwise decorative nut of spotlight. Remove a glass and take out a bulb. Replace by new bulb. Then assemble the spotlight in the return sequence. Densely tighten a decorative nut of spotlight. Insert a spotlight back on its place by holders into the slots and turn clockwise again so, that it will be fixed on the front part of filtration unit.

ATTENTION! It is forbidden to switch on spotlight if it is not completely submerged into water. Spotlight works only with the safety transformer 150 VA.

12 - EQUIPMENT WINTERIZING

ATTENTION! To make correct winterizing of your filtration equipment, apply for the help to your territorial representative.

CAUTION! All electric connections should be carried out by a qualified specialist-electrician with observance of enclosed instructions.

If your filtration unit is used in the region with risk of low temperatures, we recommend you to make complete conservation of your filtration unit (if the water will become frozen, some parts of filtration equipment can be damaged).

For this purpose you should switch off the differential switch in the electrical control panel for the whole conservation period. Turn off the pipeline of automatic water filling device and ensure water emptiness in it. Empty the swimming pool up to the level of 1m from the upper edge of the pool. In the technical compartment in the multiconductor connection box disconnect the electric motor wires. Unscrew pump's fixing nuts and take the pump out from the technical compartment. Ensure that after you have drained your pump you store it in a dry place. It is necessary to turn the turbine manually 2-3 times during winter.

With the help of industrial vacuum cleaner or compressor make the pipelines and the filtration equipment free of water. If your filtration unit is equipped with heat exchanger, it is necessary with the help of industrial vacuum cleaner or compressor to free heat exchanger and pipeline to it from water.

At the end of works close the cover of filtration compartment. Don't forget to cover the technical compartment with lid and to fix it with screws.

13 - SYSTEM DISINFECTION

ATTENTION! Exceeding of chlorine level can cause the corrosion of the system.

- Put chlorine tablets into plastic prefilter baskets or chlorinator (floating container for chlorine).
- Always store your treatment products out of direct sunlight and away from children, in a well-aired or well-ventilated area
- Never add two different products at once

Chlorine is considered as the best disinfectant for your pool. The correct dosage will significantly reduce any irritation, odour and deposit problems. You should check chlorine and pH levels weekly.

Multi component (slow-dissolving) stabilized chlorine (tablet 200 g) contains 90% of active chlorine and can be used to maintain the free chlorine level of your pool (see the dosage table). Slow-dissolving chlorine doesn't effect pH level and is used for water disinfection. It is necessary to keep pH level between 7.2-7.6 and regularly to measure it with the help of special test-kit. Chlorine level should be in the borders of 0.8-1.5 g/m³.

Dosage: 1 tablet for 15-20 m³ of water. Slow-dissolving chlorine tablet ensure 5-7 days chlorination.

The dosage table

The actual dosage could be different from the figures represented in the table depending from the temperature of environment, intensity of swimming pool's use, storms, hot weather and other factors.

Once your pH has been set to the optimum level

Water volume	Slow chlorination	Algaecide*
40m ³	2 tablets	0.5 l
50m ³	2 tablets	0.5 l
60m ³	3 tablets	0.5 l
70m ³	3 tablets	0.5 l
80m ³	4 tablets	0.5 l
90m ³	4 tablets	0.5 l
100m ³	5 tablets	0.5 l
Frequency	weekly	weekly

*** First or shock application: 1L for 50m³ of water. Weekly algaecide dosage can be changed under affects of different circumstances. Main rule – add less algaecide into clean water!**

Summary: to ensure always clean water in your swimming pool, check the pH and chlorine levels on weekly base and make necessary readjusting.

ATTENTION! When using the chemical products of different manufacturers, the dosage could be changed depending on their concentration. Read attentively the instructions on the labels of water treatment chemicals.

14 - PRODUCT MAINTENANCE

ATTENTION! It is forbidden to use abrasive cleaning means.

Filtration units for swimming pools are made from high-alloyed stainless steel. Nevertheless, with time, depending on water quality and climate conditions, on the surface of a product could appear pollutions like limy sediments or fatty deposits.

Information about products, designed specially for stainless steel products cleaning, can be obtained in the Centre of technical support.

15 - HOW TO ELIMINATE SMALL MALFUNCTIONS

Sometimes the reason of malfunction can be easily eliminated. Therefore before calling to Service department, pay attention to the following instructions:

Nº	MALFUNCTION	POSSIBLE REASON	ELIMINATION
1.	Filtration unit does not work in a manual and automatic mode	Triggering of differential switch in the electrical control panel	Switch on the differential switch
		Power supply is switched off	Check up, whether there is power in electricity network
2.	Filtration unit does not work in a filtration mode	Triggering of safety fuse 6A in the electrical control panel	Replace safety fuse 6A
3.	Filtration unit does not work in counter swimming mode	Pneumatic button's pipeline is disconnected from the pneumatic button or from the pneumatic switch	Connect the pneumatic pipeline
		Triggering of a safety fuse 16A in the electrical control panel of filtration unit	Check a safety fuse 16A
		Triggering of heat protection in the pump's electric motor	Switch off a filtration unit for 15 minutes and switch on again.
4.	Filtration unit spotlight does not shine (filtration unit is working)	Pneumatic button's pipeline is disconnected from the pneumatic button or from the pneumatic switch	Connect the pneumatic pipeline
		Triggering of protection fuse in spotlight transformer	Call service department
		Spotlight bulb burned out	Replace the bulb as written in section 11 on page 25
5.	Filtration unit is working, but skimmer is closed	Filtration membranes are dirty	Replace or clean filtration membranes
		Prefilter baskets are dirty	Clean prefilter baskets
6.	In the water from discharge nozzle there are many air bubbles, the water flow is lower (acceptable operational mode)	Too much aeration in the water	Switch off filtration unit for 30 seconds and then switch on again
7.	The water vacuum cleaner does not collect a dirt from a bottom of pool	Filtration membranes are dirty	Replace or clean filtration membranes
	The water vacuum cleaner does not collect a dirt from a bottom of pool (filtration membranes are clean)	Mouthpiece of vacuum cleaning hose is badly connected with hose	Take out the vacuum-cleaning hose from the cup, connect hermetically mouthpiece of hose with vacuum-cleaning hose.

16 - CENTER OF TECHNICAL SUPPORT

For additional information apply to the centre of technical support to the address:

e-mail: info@vsv-group.com

If you have any questions and proposals or if you want to get information about other VSV Aqua Group products, manual and installation instructions, you are welcomed to visit us in Internet:
www.vsv-group.com.

WARRANTY

WARRANTY CONDITIONS

Guarantee is given only at presence of an authentic guarantee coupon, in which there were indicated the serial number of Equipment and the date of its purchase. Company VSV Group reserves its right to refuse in guaranteed after-sales service, if after the primary purchase of equipment this information was lost or changed.

Repair or replacement can be executed with use of functionally equivalent repaired details. The replaced parts or components are carried over to VSV Group.

We undertake to intervene as soon as possible, depending on the time required to obtain spare parts from our suppliers.

The present warranty does not cover the malfunctions resulted from normal wear of the equipment and also from incorrect handling of equipment, including, but not being limited by this, not prescribed use of the Equipment and with infringement of Equipment operational and service VSV Group instructions. The present warranty does not cover also the malfunctions of Equipment resulted from instability of electricity networks (a deviation of frequency from nominal for more than 0,5 % and voltage deviation for more than 10%), accident, natural disaster, interference in design, installation of additional components, modification or repair of the Equipment by the persons not authorized by company VSV Group.

The guarantee also loses its power if product malfunctions have appeared as result of buyer's infringement of the rules of transportation, storage, actions of the third parties. Repair should be done only by the qualified specialists having the appropriate admission.

Company VSV Group does not carry any other obligations or responsibility, except specified in this manual.

No other warranty obligations, written or verbal, different from listed in the given chapter "Warranty", are not granted. All implied warranties, including, but, not being limited by this, implied warranties of commercial benefit or suitability for definite purposes, are limited by term of the given warranty. Company VSV Group under no circumstances does not bear the responsibility for indirect or consequent damage of any origin, including, but, not being limited by this, loss of the profit or commercial damage.

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