



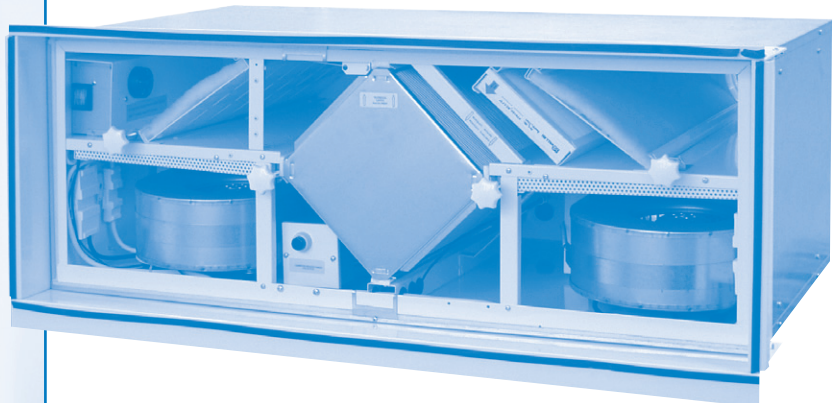
VALLOX TSK

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CODE 3468

INSTRUCTIONS FOR USE AND MAINTENANCE

**Supply / extract ventilation
with heat recovery
for dwellings in blocks of flats
and terraced houses**





MAIN PARTS

EVERYDAY QUICK GUIDE

VALLOX TSK has been initially adjusted for normal circumstances in your home. Ventilation adjustment is needed mainly in the following circumstances:

• **Taking a sauna bath:**

Boost ventilation in bathing and washing facilities in order to ensure that the rooms get dry as quickly as possible. It is recommended to have boosted ventilation on for 2 to 3 hours after taking a sauna bath.



• **Washing and drying clothes:**

Boost ventilation in washing and drying facilities during these activities.



• **Sleeping:**

Ventilation in a bedroom has to be sufficient throughout the night. The level is correct when air does not smell fusty when you enter the room in the morning.



• **Empty dwelling:**

To save energy, ventilation can be adjusted to the minimum level.



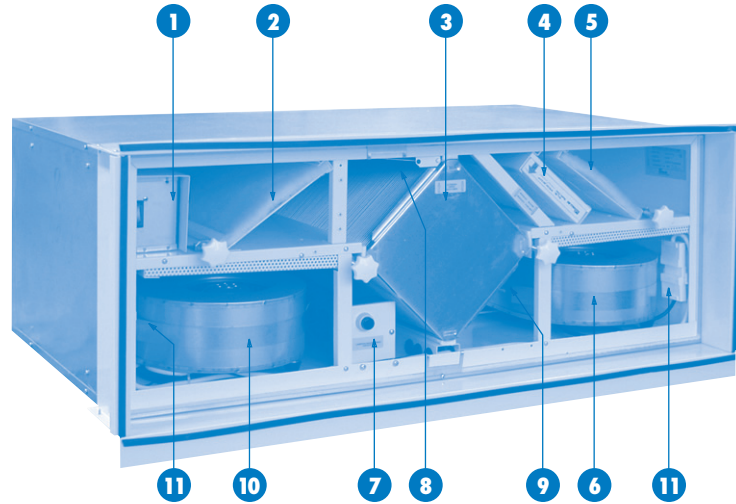
• **Cooking:**

If the ventilation unit is connected to a cooker hood, boost ventilation during cooking (the most common way of abating cooking smokes in blocks of flats). Small detached houses and terraced houses are normally equipped with a separate cooker hood.



VALLOX TSK

The unit is available as a right (R) and left (L) hand model. The figure shows the R model.



- 1 Safety switch and electric box
- 2 Extract air coarse filter G3
- 3 Heat recovery cell
- 4 Outdoor air fine filter F7
- 5 Outdoor air coarse filter G3
- 6 Extract air fan (105 or 180 W)
- 7 Post-heating radiator, electric (1.0 kW) or water/liquid radiator ca 1.5 kW (VKL model)
- 8 Damper for summer / winter ventilation
- 9 Cell antifreeze sensor
- 10 Supply air fan (105 or 180 W)
- 11 Electrical quick-connect terminal for fans



THREE QUESTIONS ABOUT VENTILATION

Why is air replaced in dwellings?

Good ventilation promotes healthy living for both residents and the building. Air in a dwelling needs to be replaced in order to remove humidity brought about by living as well as impurities emanating from structures and human bodies. Impurities of indoor air include carbon dioxide, formaldehyde, radon and other gases as well as dust.

Mechanical ventilation is needed in order to be able to adjust air circulation as needed by the residents. In a tightly sealed house, air does not circulate sufficiently by natural means. Even in a poorly sealed house air is only replaced because of differences between indoor and outdoor air temperatures, or because of winds. This means that ventilation is dependent on weather conditions and cannot be regulated.

It is especially important that humidity and carbon dioxide content of indoor air stay at a healthy level. Recommended humidity content of good indoor air is approximately 45%. Humidity content is lower in winter and higher in summer and autumn. Dust mites thrive in indoor air if humidity exceeds 50%, and if humidity stays at over 60% for a long time in winter, water will condense in the cold structures of the house and mould will start to form.

The recommended maximum carbon dioxide content in good indoor air is circa 1,000 ppm.

What are the characteristics of adequate ventilation?

- Indoor air stays fresh in all the rooms of the dwelling, also in bedrooms during night. **Without adequate ventilation**, carbon dioxide content tends to rise high especially in bedrooms.
- The bathroom and sauna get dry quickly.
- During the heating season, the windows and other outer wall structures remain dry.
- Humidity in indoor air is not condensed in the ventilation ducts.
- Air is fresh in the toilet as well.

How much air is replaced?

For air to be clean to breathe, it has to be replaced with outdoor air **once in two hours**. In a new and a renovated house, air needs to be circulated continually, at least once an hour, during the first year in order to remove harmful gases and structural humidity. In buildings that are more than a year old and dry, ventilation can be regulated as needed. Ventilation is boosted during for instance a sauna bath, clothes washing and cooking, and reduced during very cold periods or when there is nobody at home.

Window ventilation

Dwelling-specific supply / extract air circulation by no means prevents you from opening windows and the door to the balcony or airing through them. In window or door ventilation, however, attention needs to be paid to the following factors:

1. During the heating season window ventilation consumes, uncontrollably, a considerable amount of energy.
2. An open window lets in dusty and dirty air.
3. An open window also lets in noise pollution.
4. During summer, door / window ventilation may bring in air that is warmer than that in the dwelling.

SEASONAL CALENDAR



Spring:

- Wash or replace the coarse filter and replace the fine filter if needed.
- Clean the fan blades and the post-heating unit if needed.
- Check that summer ventilation is in operation. When this is the case, extract air does not heat air coming from the outside.



Autumn:

- Wash or replace the coarse filter and replace the fine filter if needed.
- Check that the heat recovery cell is clean.
- Check that the condensing water outlet is not clogged.
- Switch summer ventilation off.

NOTE!

For further details, see inner pages.



VENTILATION SYSTEM



WARNING

If ventilation of the dwelling is closed, it also prevents new, clean outdoor air from coming in and dirty air from going out.

Impurities emanating from human bodies, structures and the soil, such as carbon dioxide, humidity, smells, formaldehyde, dust and radon, quickly spoil indoor air and cause health damage.

Too high a humidity may destroy the building structures and cause mould and fungus growth. Therefore, the building regulations require ventilation to be continually in operation and the level of ventilation to be adjusted as needed by the user.

As the name says, a dwelling-specific ventilation system (blocks of flats, terraced houses) is meant for only one dwelling.

The system includes two sides. The extract air side takes dirty and humid air out, while the supply air side brings a corresponding amount of outdoor air in.

Ventilation in the rooms is continual and can be regulated as needed. Outdoor air is mainly brought to the bedrooms, sitting room, fireplace room, dining room and sauna. From these rooms supply air can flow freely, for instance through door vents, to the bathroom, sauna, toilet, walk-in wardrobe, kitchen and other rooms with air extraction vents. If also cold outside air comes in to the sauna, only use it when needed as combustion air for a wood heated sauna oven.

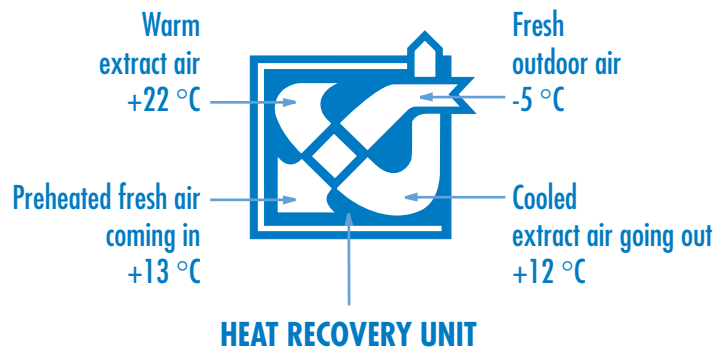
The resident may regulate the power of ventilation (air circulation) as needed.

Filtering

Outdoor air is filtered before taking it in to the dwelling. A coarse filter first removes the biggest litter particles, thereby preventing the system from getting dirty. After that air passes through a fine filter, which catches finer dust and even the smallest pollen particles.

Heating of outdoor air

During the heating season, heat included in extract air is used to heat air coming from the outside. Heat travels in the heat recovery cell through panels, and extract air never mixes with air coming inside. This may provide all the heating needed. The ventilation units may, however, be equipped with a post-heating radiator, which can be used to warm air if more heating is needed.



Winter and frosts

When temperature in winter falls below -10...-20 °C, the intake of outdoor air is restricted by stopping the supply air fan. This prevents the water that condenses in the unit from extract air from freezing.

For indoor air to stay healthy and beneficial also for the structures of the dwelling, ventilation has to be in operation continuously. It is not advisable to stop ventilation even for longer holidays because it makes indoor air stuffy. Also, during the heating season indoor air humidity may condense in the ducts and structures and therefore cause humidity damage.

Initial adjustment

The ventilation system works properly when air flows in the rooms have been measured and adjusted with the valves in accordance with the planned values. **After the initial adjustment, the position of the ventilation valves must not be changed.** If there is an outlet valve with a knob in the ceiling of the sauna, it can be adjusted as needed. The initial adjustment ensures that a sufficient amount of air is circulated and that extract air flow is always greater than supply air flow, i.e. the dwelling is negatively pressured compared to outdoor air. If the dwelling is positively pressured, air in the dwelling penetrates the outer envelope of the building and between windows, which may cause humidity damage during the heating season.

In normal conditions **basic ventilation**, with a change of air every two hours, is sufficient in living areas. Boosting is needed during for example sauna baths, cooking, clothes washing or family parties.

If the user does not know the measured air flows, the adjacent table shows approximate extract air flows as well as the total electricity consumption of the fans at various fan speeds. The table also shows the fan speed that is sufficient for recommended basic ventilation in dwellings of different sizes.

The switch positions, i.e. fan speeds displayed in the table against a darker background, are factory preset values. If needed, an expert or electrician can change settings (or has changed during the initial adjustment) and select speeds shown against a white background instead. Voltage changes are also made by an expert, not the user himself.

VALLOX TSK (105 W fan)

SWITCH POSITION	1 70 V	1.1 90 V	2 120 V	2.1 135V	3 160 V	3.1 180 V	4 230 V
Living area (m ²)	30	45	85	110	140	150	200
Air flow (dm ³ /s)	15	20	30	40	50	55	70
Total electricity consumption of fans (W)	25	38	65	80	105	130	185

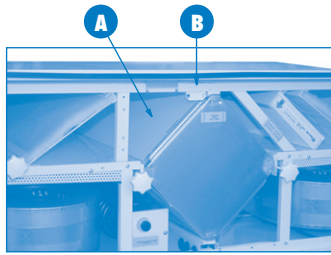
VALLOX TSK (180 W fan)

SWITCH POSITION	1 70 V	1.1 90 V	2 120 V	2.1 135V	3 160 V	3.1 180 V	4 230 V
Living area (m ²)	40	70	140	170	200	220	250
Air flow (dm ³ /s)	20	30	50	60	70	80	90
Total electricity consumption of fans (W)	43	65	110	130	165	195	240

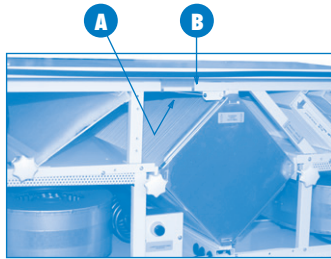


INSTRUCTIONS FOR USE

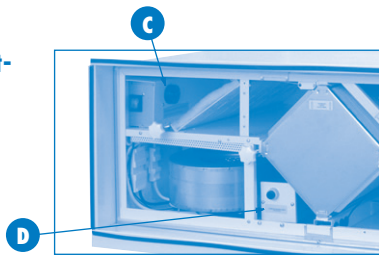
**Heat recovery
bypass on
(summer position)**



**Heat recovery
bypass off
(winter position)**



**Thermostat and post-
heating radiator**



Heat recovery cell bypass with summer / winter damper

In summer when there is need for cooling, the damper (B) can be released from the spring behind the support (A). The damper then goes down upon the cell, preventing flow through the cell. At the same time, a duct opens behind the cell, letting extract air flow past the cell. In autumn when the heating season starts, the damper must be put in winter position by lifting it on top of the spring behind the support. Damper position change can take place during the maintenance of filters, for instance. If the unit has electric post-heating, turn the thermostat to +2 °C (C) and change it back for winter when bypass has been turned off, to +13 °C.

Heat recovery cell antifreeze

The cell is kept unfrozen by a thermostat (inside the electric box), which stops the outdoor air fan in advance. The thermostat has been set at the factory to stop the fan when exhaust air temperature goes down to +5 °C. The fan restarts as soon as exhaust air temperature goes up to +10 °C. The setpoint of the thermostat can be changed afterwards. If freezing takes place in the cell, the threshold may be raised by turning the spindle clockwise, and if the fan keeps stopping too early, the threshold may be lowered. Spindle positions have been marked on the inner surface of the electric box cover. **NOTE!** Even a change of one or two degrees has a substantial impact.

Post-heating

The unit may have electric (D, 1000 W) or water-based post-heating. The thermostat (C) for electric heating is confined to about 2...14 °C. The water radiator may be controlled by a self-actuated thermostat, which has been installed inside the ceiling behind the unit, or inside the room. Post-heating does not require special maintenance.



Adjustment of ventilation power

VALLOX TSK ventilation unit can be controlled with either a cooker hood or a separate control centre.

Cooker hood control

The cooker hood is connected to the ventilation unit and is used to control air circulation in the whole dwelling. Four power ranges are available.

Speed 1

Use during absence. When the dwelling is empty, ventilation can be temporarily diminished.

Speeds 2 and 3

These are speeds that are normally used. Speed 2 is used when the need for ventilation is fairly small and air is good.

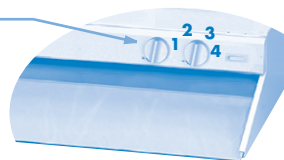
Speed 3 is used when there is a need for boosting, for instance in the following situations: cooking, taking a sauna bath, drying clothes, use of toilet, guests, excess heat and "large dwellings".

Speed 4

Boosting position, used as needed for example during cooking, parties and hot weathers.

Cooking

Open the flap of the cooker hood during cooking. At other times, the flap must be kept closed. An open flap decreases the power of ventilation in other rooms. There are different kinds of cooker hoods. For more details, see the instructions of the hood in question.



The table on page 5 indicates rated speeds and air flows for dwellings of different sizes. The table also indicates the total electricity consumption of the fans at each speed.



INSTRUCTIONS FOR USE



Control centre



Control centre with a separate switch

Separate cooker hood (most often in detached houses)

If there is a cooker hood independent of the ventilation system in the dwelling, only use it when needed. Using it does not affect the operation of the ventilation unit, because the unit replaces air in other rooms. There is in this case minor extract ventilation in the kitchen, connected to the ventilation unit. The ventilation unit is then controlled with a separate control centre.

Separate control centre

The regulator (switch) is only used to control the ventilation unit. There are four power ranges available.

Speed 1

Use during absence. When the dwelling is empty, ventilation can temporarily be diminished.

Speeds 2 and 3

These are speeds that are normally used. Speed 2 is used when the need for ventilation is fairly small and air is good.

Speed 3 is used when there is a need for boosting, for instance in the following situations: cooking, taking a sauna bath, drying clothes, use of toilet, guests, excess heat and "large dwellings".

Speed 4

Boosting position, used as needed for example during cooking, parties and hot weathers.

Cooking

Cooking fumes are taken out with a cooker hood or an integrated hood and ventilator. For more instructions, see the instructions of the equipment in question.

Detailed instructions for special control centres are available.

MAINTENANCE INSTRUCTIONS

The cleaning and maintenance of ventilation units is usually the responsibility of the maintenance company used by the housing company.

Start

The maintenance for the unit of each dwelling is carried out from the staircase, through the locked service door situated above the door to the dwelling in question. Remove the door plates (A) of the unit by opening the star knobs (B). The unit includes a maintenance switch (C), which is used to stop the unit for the duration of maintenance. Depending on the internal electricity connections of the house, the maintenance switch may also make the cooker hood in the dwelling dead.

Filters

Maintenance includes the cleaning or replacement of G3 coarse filters (D) as needed, for instance 2 to 4 times a year. F7 fine filter (E) is a disposable filter and cannot be cleaned, but it must always be replaced with a new one when needed, preferably at one-year intervals depending on local air quality. It is recommended to replace filters in autumn. This way the filters stay cleaner throughout the winter and can effectively filter off winter dust.

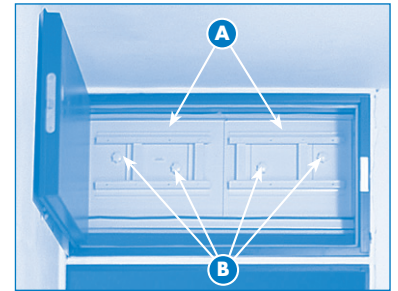
G3 filters (D) must always be in the unit. It is recommended to time filter maintenance so that at least one filter replacement takes place in autumn when the pollen period is already over. This ensures clean filters for winter, without any smells and natural dust that would form a suitable breeding ground.

Condensing water, i.e. water condensing from extract air

During the heating season, humidity of extract air condenses into condensing water. Water formation may be abundant in new buildings or if ventilation is low compared to the humidity build-up caused by the residents.

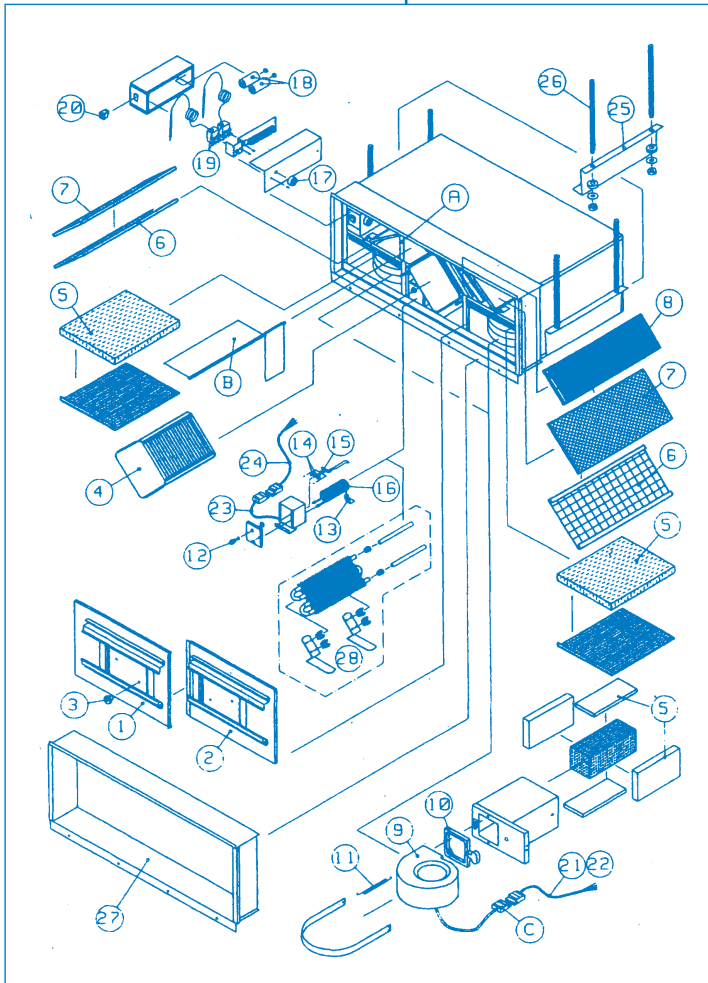
During maintenance activities, e.g. in autumn before the beginning of the heating season, make sure that the condensing water outlet (at the rear edge of the bottom reservoir, at where the heat recovery cell F is) in the bottom reservoir is not clogged. Test it by pouring water into the reservoir.

Do not let water flow into electrical devices.





MAINTENANCE INSTRUCTIONS



Heat recovery cell (HR)

Check the cleanliness of the cell (4) at two-year intervals. When needed, clean the cell with a detergent and water. Grab the ears at the ends of the cell and pull the cell out of the unit.

Fans

The fans (9) can be easily removed for maintenance. Detach the spring (11) and the electrical connector (C) and pull the fan out of the unit for maintenance. When mounting the fan back, make sure that it tightly fits the collar (10).

Other cleaning

During maintenance, also check the general cleanliness of the inner side of the unit, including fans, heating radiator, bottom reservoir and other internal casing. If there is dirt, clean it gently, for instance with a damp cloth, brush, vacuum cleaner or similar. It is forbidden to run water into the electrical devices and motors. Keep the unit clean to ensure its flawless operation and hygiene.

After maintenance

- Switch the unit on at the maintenance switch.
- Ensure that the fans rotate.
- Close the doors.



MAINTENANCE INSTRUCTIONS

Other parts of the ventilation system

Cooker hood (connected to the ventilation unit)

The most important object of maintenance is the grease filter. To ensure sufficient absorption capacity it needs to be cleaned sufficiently frequently, once or twice a month. The filter can be cleaned e.g. in the dishwasher.

It is important to keep the whole cooker hood clean. Neglecting the cleaning of the filter reduces the abatement of fumes and may cause a risk of fire.

For more detailed maintenance instructions for instance on the changing of lamps, see the instructions of the cooker hood.

Cooker hood (with an integrated fan)

Follow the same instructions as for the cooker hood connected to the ventilation unit. For special instructions, see the instructions of the cooker hood.

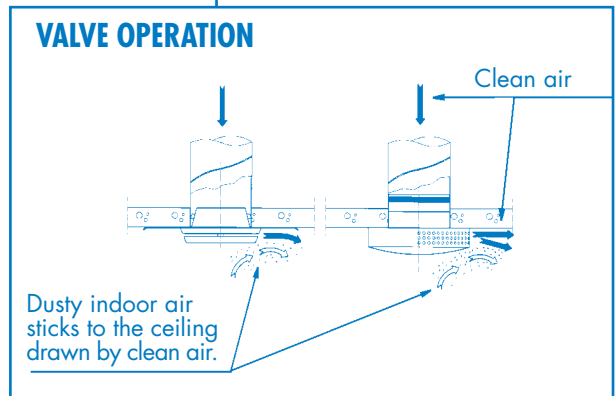
NOTE! It is absolutely forbidden to flambé under the cooker hood.

Ductwork

In blocks of flats and terraced houses, the housing company takes care of the maintenance and cleaning of the ductwork in accordance with the regulations and instructions.

Valves

The valves may be gently cleaned on the surface. It is forbidden to remove the valves and to change their adjustment values. Room dust may also gather around the supply air valve. The easiest way to remove it is to vacuum the valve with a brush nozzle. Dirt does not come from the ductwork with ventilation, but consists of dust in indoor air. This dust sticks to the ceiling or the wall caused by the flow coming from the valve.





TROUBLESHOOTING

In case of failure in a block of flats or terraced house, contact either the person responsible for maintenance or the maintenance company.

1. Outdoor air coming to the dwelling is cold

- Air cools down in the attic ducts.
- The post-heating radiator, if there is one, does not work.
- The extract air filter or the cell is clogged.
- The initial adjustment of ventilation has not been done.
- The heat recovery cell is frozen, which is why extract air cannot heat outdoor air.

DO THIS

- Measure the temperature of supply air in the unit and compare it with the air coming from the valve. If air cools down in the duct, check the insulation of the attic ducts.
- If the electric radiator does not heat up, check if the adjustment thermostat is in the desired position (change the setting if needed) or if overheat protection has tripped (press the black button at the end of the radiator). If the protector has tripped, you hear a click when pressing the button. Pressing the button resets the radiator in working order after the tripping of the overheat protector. Consult an expert to find out why the overheat protector tripped. If the water radiator of the VKL model does not heat up, it may be caused by many reasons: wrong position of thermostat; water does not circulate in the radiator; pump may be stopped or some of the valves off; water circulating in the radiator may be cold, etc. If necessary, consult an expert.
- If a filter or cell is clogged, clean it (see the instructions).
- If the initial adjustment has not been done, have it done.
- If the cell is frozen, check the operation of the antifreeze thermostat.

2. Other possible disturbances

- Outdoor air fan stops at too high outdoor temperatures.
- Both fans of the VKL model have stopped.

DO THIS

- If the fan keeps stopping at too high outdoor temperatures, check the operation of the antifreeze thermostat. The function starts as soon as outdoor temperature goes below -10 °C. The threshold is not absolute, but is dependent on the length of the ductworks, insulation, the speed of the unit and other things.
- If both fans of the VKL model have stopped, the antifreeze function of water-operated radiator is active. **NOTE!** If there is no non-freezing solution in the water of the radiator, the radiator is at risk of freezing and breaking down. If the radiator breaks down, there is a risk of water damage. Immediately troubleshoot the situation. Check if heating is on. The situation may pass by itself as soon as supply air temperature exceeds 10 °C, but do not wait till it happens.

You can influence the operation of the antifreeze thermostat as follows:

- If freezing occurs in the cell, you can set the sensor closer to the cell, which makes the fan stop earlier (the cell has to be thawed out before closing the cover).
- If the fan keeps stopping at too high outdoor temperatures (no humidity, no freezing), you can move the sensor further away from the cell.
- An expert may also adjust the thermostat in the connection box by turning its spindle clockwise to +10 °C or counter-clockwise to 0 °C. At 0 °C freezing is likely; at 10 °C no freezing occurs but extract air can be too warm when going out. According to the factory setting, the antifreeze thermostat works at 4 °C.

