

INSTALLATION AND USER INSTRUCTIONS

BY NILAN



VGU 250 (English)

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Safety

Important information

Power supply

 **CAUTION** Always disconnect mains electricity to the unit if a fault occurs which cannot be rectified via the control panel.

 **CAUTION** If a fault occurs on the electricity-conducting elements of the unit, always contact an authorised electrical installer to rectify the fault.

 **CAUTION** Always disconnect mains electricity to the unit before opening the doors, e.g. for installation, inspection, cleaning and filter change.

Disposal

Ventilation system



Nilan units mainly consist of recyclable materials. They should therefore not be disposed of with household refuse. Take them to your local recycling centre.

Heatpump



Concerning disposal of units with heat pumps, it is important to contact the local authorities for information about correct handling of these. The heatpump contains the refrigerant R134a, which is harmful to the environment if not handled correctly.

General information

Introduction

General information prior to installation

The following documents are supplied with the unit:

- Installation/user instructions
- Wiring diagram

The instructions can be downloaded from the Nilan website: <http://www.nilan.dk/da-dk/forside/download>

If you have further questions on unit installation after reading the instructions, contact your nearest Nilan distributor, who can be found on www.nilan.dk/forhandlere.

The purpose of these instructions is to give the installer advice on correct installation and maintenance of the unit.

The unit must be started up immediately after installation and connection to the duct system. In periods where the ventilation system is not in operation, humid air from the rooms may penetrate into the ducts and form a condensate. The condensate may leak out of the valves and damage furniture and floors.

The unit is supplied fully tested and ready for operation.

Unit type

Product description

VGU 250 is an extraction unit with active heat recovery.

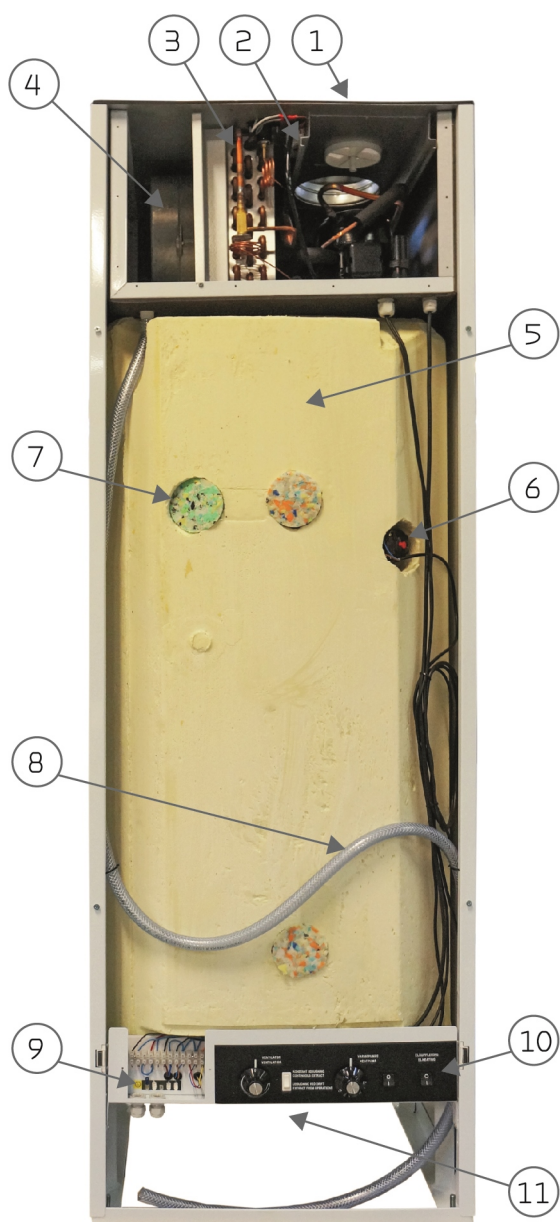
It extracts warm, humid air from kitchens, bathrooms and utility rooms. The energy from the extracted air is reused to produce domestic hot water, and the system is so efficient that the unit only uses a third of the energy of a conventional water heater.

It consists of a 230 litre hot water cylinder and a steplessly variable fan with a capacity for extracting up to 325 m³/h.

The hot water cylinder is lined with a double layer of glass enamel and has a sacrificial anode, thus providing optimum corrosion protection and extending the cylinder's service life.

The unit is supplied with an extra heating coil, which means it can be combined with solar heating, oil, gas, district heating or other fuel for increased domestic hot water production.

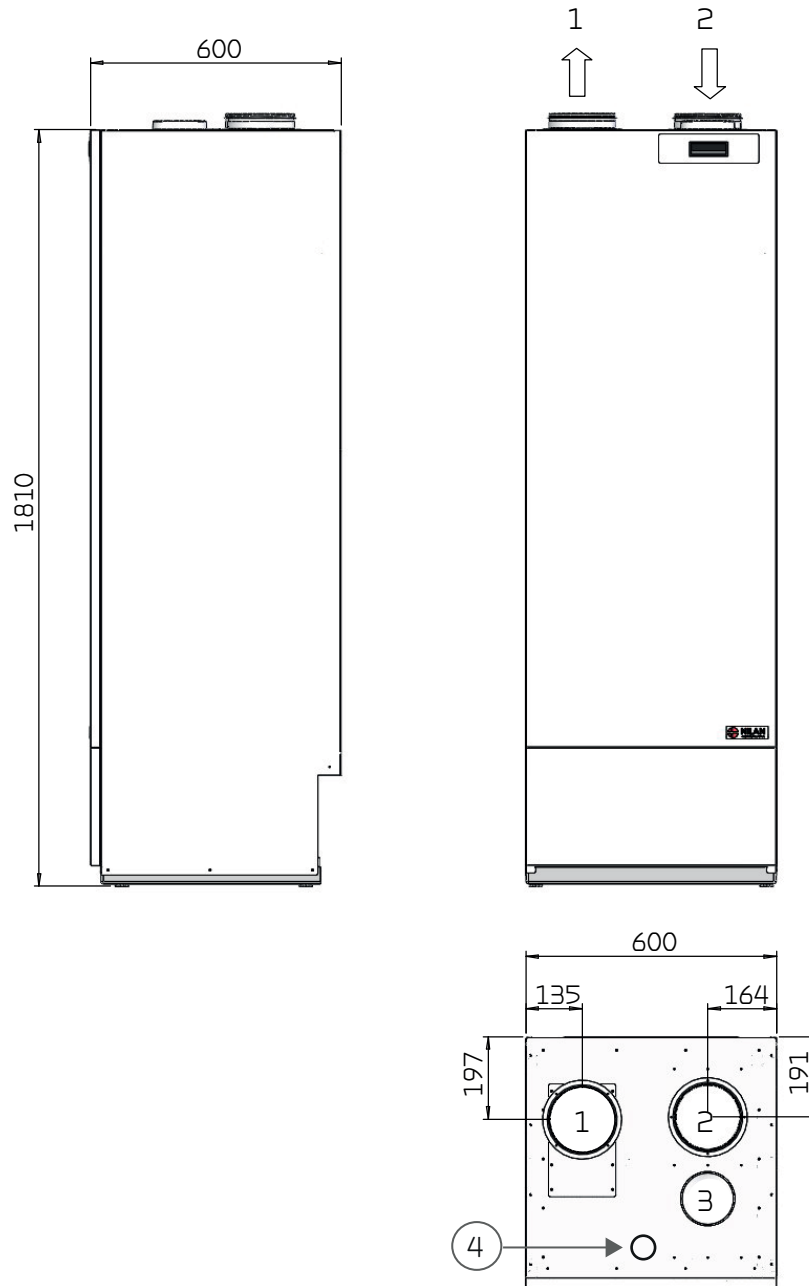
The unit is supplied as standard with a G4 filter in the extract air duct (outlet)



1. Duct connections
2. Filter drawer for G4 filter in extract air duct (outlet)
3. Heat pump
4. Fan
5. 230 L hot water tank
6. 1.5 kW electric element (overheating thermostat is reactivated in case of failure)
7. Sacrificial anode
8. Condensate drain with water trap
9. Power connection
10. Control panel
11. Plumbing connections

Dimensional drawing

All dimensions are in mm.



Connections:

1. Exhaust air
2. Extract air (outlet)
3. Outlet valve
4. High-pressure switch

Accessories

Flexible silencing



To facilitate later servicing of the unit, we recommend fitting a flexible connection between the unit and the duct system.

Nilan's sound damping flexi-hose gives good sound damping both to the duct system and to roof stacks.

Safety group



The safety group consists of:

The safety group, which is made of brass, consists of a stop valve with an integral non-return valve, a safety valve and drain cock. It can be installed directly beneath the hot water tank.

Anti-scald device



If a solar panel is used for extra heating of the domestic hot water, an anti-scald device must be fitted.

Assembly

Mounting

Positioning of unit



ATTENTION

When assembling the unit, consideration must always be given to future service and maintenance.

It must be easy to replace filters, and it must be possible to replace the fan or other components.

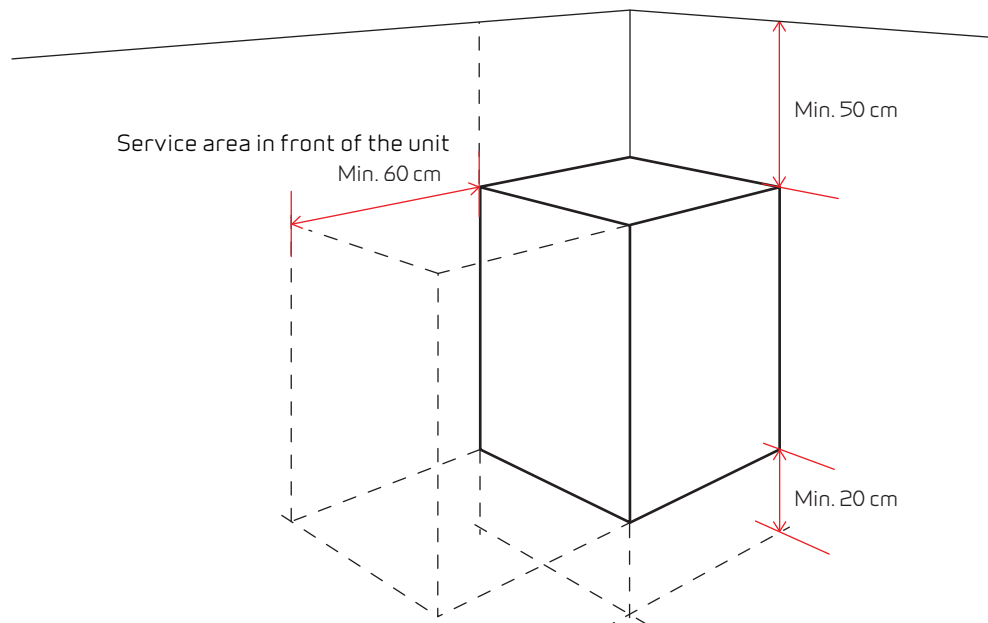


ATTENTION

A minimum free space in front of the unit of 60 cm is recommended.

It is important that the unit is level in order to achieve proper run-off from the condensate tray.

Top unit



ATTENTION


If a cover is used to protect the unit, this must be easy to remove.

Electrical installation

Electrical connections

Safety


 **ATTENTION** All work must be carried out by qualified personnel and in accordance with applicable legislation and regulations.

 **ATTENTION** It is important that power is disconnected when working with the unit's electrical components.

It is important to check that cables have not been damaged or trapped during connection and use.

Electrical connections unit

Supply

 **CAUTION** Power supply, including safety switch, must be installed by an authorised electrician.

Unit



Power supply
230V 50Hz max 13 A
Safety switch

Plumbing installation

Condensate drain

Important information

The unit is supplied with a 20 mm reinforced condensate drainage hose with integral water trap.

**ATTENTION**

The condensate drain should be installed with an even fall of at least 1 cm per m to the nearest drain. Similarly, the overflow from the safety valve for the cold water supply must be led to a prominent drain.

**ATTENTION**

If the unit is assembled outside the climate screen, it is important to secure the condensate drain against icing. Frost protection of the unit is the installer's responsibility.

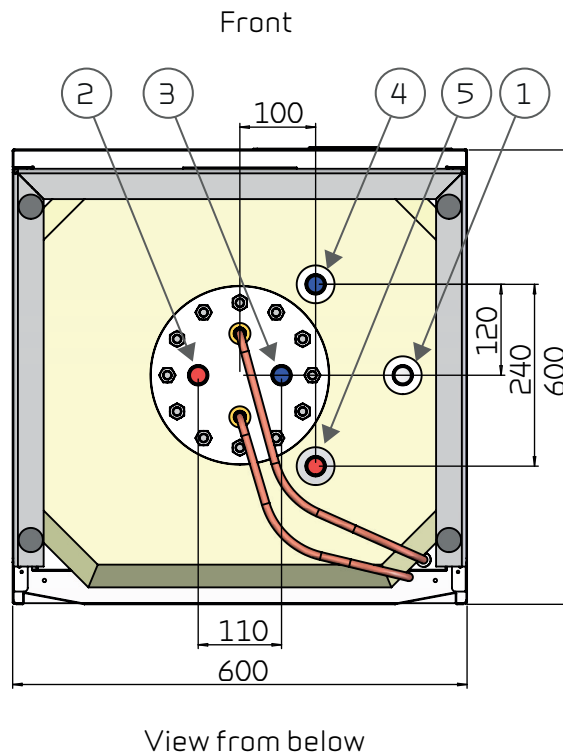
The connection of the water trap must be air-tight, otherwise air will be sucked into the unit and condensate will remain in the unit. This could lead to water damage if the condensate overflows the condensate tray and from there out of the unit.



The water trap is integrated in the hose running from the condensate tray to the drain, and is fitted by the factory.

Hot water tank

Connections list



Connections:

1. Connection for circulation pipe 3/4"
2. Hot water outlet 3/4"
3. Cold water intake 3/4"
4. Return supplementary heating coil 3/4"
5. Supply supplementary heating coil 3/4"

The supplementary heating coil is located at the base and has an external diameter of 22 mm and a length of 8500 mm, corresponding to 0.6 m².

Connection



ATTENTION

All work must be carried out by qualified personnel and in accordance with applicable legislation and regulations.

Nilan's hot water tanks have a double enamel lining, ensuring long service life. The efficient foam insulation protects against unnecessary heat loss.

All water connection nozzles have 3/4" thread and are located in the base of the tank.

The tank is fitted with a sacrificial anode, which should be checked at least once a year.



CAUTION

It is important to replace the sacrificial anode when severely corroded. If this is not done, the hot water tank will corrode and the tank warranty will lapse.

The hot water tank has a 1.5 kW supplementary power supply. This is turned off at the factory, and must be switched on from the control panel if required.



ATTENTION

The supplementary power supply must not be activated unless the tank is filled with water.

Hot water circulation

If wished, hot water circulation can be established by fitting a non-return valve and a circulation pump for domestic water to the tank's circulation connector (1).

If hot water circulation is not established, the connector must remain closed with the factory-mounted shut-off plug.



ATTENTION

Hot water circulation can lead to a significant heat loss in the pipes, diverting a good proportion of the heat pump's output. To avoid this, circulation pipes and the hot water loop must be insulated with at least 30 mm mineral wool.

It is advisable to set a timer so that the circulation pump is not running constantly.

Solar heating coil

The unit has an integral supplementary heating coil, see connections list.

The solar heating coil has a surface area of 0.6 m² and is designed for solar heating systems, but can be connected to other heat sources.



ATTENTION

If a solar collector or other heat source is connected to the unit, it is recommended that an anti-scald group is connected to the hot water outlet to secure against scalding.

Softened water

If it is wished to soften water with salt in a Nilan hot water tank, the following must be observed:

- The hardness of the water must be at least -2° dh (proportion of alkaline earths 0,4 mmol/l)
- The conductivity must be between 13 mS/m og 150 mS/m (millisiemens per m)
- The pH value must be between 6.5 and 9.5
- The chlorine content must be under 250 mg Cl/l

If the above criteria are exceeded, the anode current will be too high, the anode will break down too quickly and the water will begin to smell bad.



CAUTION

Demineralised water (double ion exchange) must not be used as the tank will corrode very rapidly. Demineralised water is also called totally desalinated water and deionised water.

Ventilation mounting

Duct system

Legislation

**ATTENTION**

All work must be carried out by qualified personnel and in accordance with applicable legislation and regulations.

Ducts

There are two systems for transporting air round the building.

Spiral tubes

Spiral tubes are metal ducts which are cut to size with an angle grinder, screwed together with bends and manifolds and laid out in accordance with the working drawing. The duct pipes are typically laid at the rafter ends and fixed with perforated band or suspended with suspension band. Avoid unnecessary bends in the ducting.

To avoid noise transmission, where sound is transmitted from room to room, a sound damper must be mounted in each room.

The ducts must be insulated to avoid heat loss and condensation. In some cases this can be avoided if the ducts are led through the ordinary insulation or inside the climate screen.

NilAIR tubes

NilAIR tubes are a flexible system which is easy to mount. The tubes are easily cut to size with a hobby knife and laid according to the working drawing without use of bends and manifolds. A manifold box is installed after the unit and the tubes run from this out to the various rooms.

With NilAIR tubes it is unnecessary to mount sound dampers in each room, as there is no risk of noise transmission.

If the tubes are led outside the climate screen they must be insulated to avoid heat loss and condensation. This is easier than with spiral tubing, as NilAIR tubes are easier to lead through ordinary insulation.

NilAIR tubes are more flexible than spiral tubing and can therefore be laid in places where ordinary spiral tubing would be impossible.

Unit

Nilan recommends mounting a flexible connection between the unit and the duct system.

This is to avoid oscillations from the unit being transmitted to the duct system, but also to ease future servicing where it is necessary to move the unit.

Nilan offers flexible silencing, which, apart from providing a flexible connection between the unit and the duct system, also dampen the passage of sound from the unit to the duct system.

Flexible silencing are insulated for condensation, but it may be necessary to insulate them further to meet local requirements for duct system insulation.

Extract air

Exhaust valves are mounted in the moisture-generating rooms and strategically placed where they can extract the moisture air most effectively.

Moisture-generating rooms:

- Bathroom
- Toilet
- Kitchen
- Utility room

Roof cowl

The air outlet must be located and designed to limit pressure fluctuations in the fan system caused by wind impact, and also to prevent access by birds and other animals, and to ensure that the connected duct system is kept free of plant parts and foreign objects.

Sound damping should also be mounted between the unit and roof cowl to avoid noise annoyance to neighbours.

Initial regulation

Important information



ATTENTION

For the ventilation system to operate optimally, it is important that initial regulation is carried out correctly. We recommend having this done by experts.

Initial regulation

Ceiling valves are opened with the valve cone and the front edge at the same level.

The fan is set to the desired level on the control panel. The further procedure is as follows:

- Rotate the nearer valves 8 times
- Rotate the furthest valve 14 times
- Set the intermediate valves to between 8 and 14 turns.

Quickguide

The control panel

Functions



1. Extractor fan selector

This selector enables activation of **constant extraction** or **extraction during operation** (extraction only in connection with heat recovery) In the event of consumption of hot water (e.g. a shower), the unit will start up and recover the heat. The fan will run until the water temperature has been restored to the previous level.

2. Adjustment of outlet valve

Stepless regulator for setting the correct ventilation level in the home. For reasons of internal air quality and constructional soundness, the indoor air should be replaced approx. 0.5 times per hour.

3. Supplementary heating

The hot water tank has a 1.5 kW electric heating element to assist with heating in the case of heavy consumption of hot water. Generally, the supplementary heating should be switched off (position 0), as the unit is able to produce approx. 400 litres of 60°C hot water per day.



ATTENTION

Supplementary heating must never be switched on unless the tank is filled with water.

4. Operating thermostat

The thermostat is used to set the desired water temperature. Low temperatures will give better operating economy and prolong the components' service life. A temperature of 40-45°C is recommended (max. 55°C).

5. Electric switch

In position 1, the fan and compressor are turned on.



ATTENTION

The compressor must never be switched on unless the tank is filled with water.

Troubleshooting

Errors and solutions

Problem	Possible cause	Solution
The unit works, but with reduced output	Check that the unit is receiving sufficient air. Inspect the filter and check that the valves are sufficiently open. The filter may be blocked so that insufficient air is reaching the unit.	Try setting the fan to the highest level. Any dampers on the extract air line should be closed where outdoor temperatures are under 6°C. Check filter and replace it if clogged.
The unit works, but is not producing hot water	Check that the tank is empty and has no hot water in it. If the unit has a circulation pump and the circulation line is uninsulated, this could lead to high heat loss with consequent impairment of unit capacity. The operating thermostat has not been correctly adjusted The filter may be blocked so that insufficient air is reaching the unit. Check that the duct insulation is adequate and sealed	Insulate the circulation line. Check filter and replace it if blocked. Set the operating thermostat (4) correctly. Apply extra insulation to the ducts.
The unit is not working	Is the voltage connected to the group switch and on the unit? Check that thermostat and switch are adjusted as indicated under the control panel	Check whether a fuse has blown or an HPFI relay has tripped. Set thermostat and switch correctly.

Service and maintenance

Maintenance

External cleaning

The ventilation unit

- The outside of the unit can be cleaned with a mild soap solution.

The ceiling valves

- It is a good idea to dismantle and clean the valves when necessary.
- The valves are set by the installer for a specific airflow, so it is important not to rotate them, as this will change the setting and unbalance the ventilation system.

Changing the filters.

The filter is there to protect the fans and heat exchanger by preventing them from being coated by dust and dirt.

For optimum operation it is important to change the filters before they become blocked. In normal operation, the G4 filter from Nilan should be changed every three months. In new-build, it is recommended that the filter is changed when the house is first occupied, as they may be blocked by building dust.

If the filter is not changed regularly, this will impede ventilation, reducing the indoor air quality, using more power than necessary, and producing insufficient domestic hot water.

Illustration of filter change



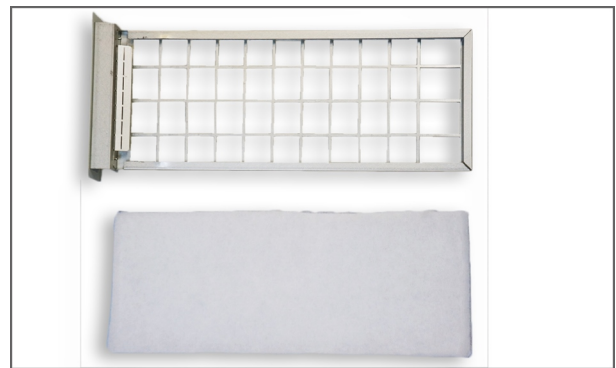
1. Remove the filter drawer from the unit



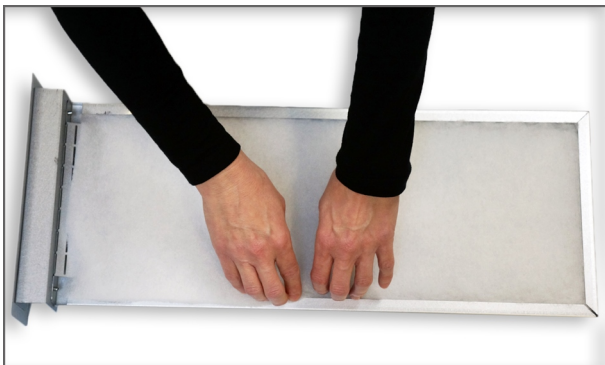
2. It is a good idea to vacuum the filter chamber to remove any dirt which has collected there



3. Remove the filter pad from the filter frame



4. Place the new filter pad with its smooth side down in the filter frame.



5. Carefully fix the filter pad in place in the filter frame, pushing it well out into the sides.



6. Replace the filter drawer in the unit with the filter pad facing upwards

Service

Internal cleaning

For hygienic reasons, it is important that the unit undergoes annual internal cleaning. This will prevent the formation of fungus and bacteria which impair the internal air quality.

- Wipe down the internal plate parts and pipes with a damp cloth and a mild soap solution.
- Check and clean the evaporator coil.
- Clean the condensate tray with a damp cloth and a mild soap solution.
- Check the condensate outlet to make sure the water can exit freely.

Check the air exhaust

It is important for operation of the unit that air can freely move through the air exhaust.

If a roof cowl has been fitted to the air exhaust, check that it is not blocked, e.g. with birds' nests, leaves or other dirt which can hamper air passage.

If, instead of a roof cowl, a grille has been mounted in facades or eaves, check that it is not clogged with leaves or dirt. Grilles are particularly likely to become clogged.

Check ventilation ducts

It is important for operation of the unit that there is free air passage through the ventilation ducts.

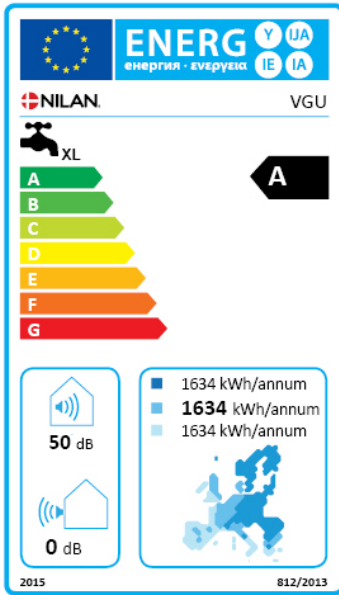
After some years of operation, dirt will settle on ventilation ducts or tubes, and accumulations may lead to higher pressure drop in the ducts, leading to higher power consumption. It is therefore important to clean out the ducts when too much dirt has collected.

If the outlet valves have been altered in any way, it will be advisable to have the system fully adjusted again, to ensure optimum operation of the ventilation system.

However, it will not be necessary to clean ducts more than every few years.

Product data

Ecodesign data



Consumer profile water heater	XL (Extra large)
Energy efficiency class	A.
Energy efficiency of water heating average climate	103 %
Annual consumption - average climate	1634 kWh/year
Thermostat settings	10 - 65 °C
Sound power level LWA	57 dB(A)
The water heater is able to function outside the peak load periods (Smart grid)	No
Precautions to be taken during mounting, installation and maintenance	See installation instructions
Energy efficiency of water heating cold climate	103 %
Energy efficiency of water heating warm climate	103 %
Annual power consumption - cold climate	1634 kWh/year
Annual power consumption - warm climate	1634 kWh/year

CE declaration



EU/EC Declaration of Conformity

For the CE-marking inside the European Union

Nilan A/S

We declare that the Ventilation and Air to Water Heat Pump

VGU250

Confirm to the following EU/EC Directives, providing the products are used in accordance with the ordinary use.

EU-Directives:

- Directive on harmonization of the laws of the Member States concerning pressure equipment (pressure equipment directive)
2014/68/EU
- Directive on harmonization of the laws of the Member States relating to electrical equipment to be used within certain voltage limits (the low voltage directive)
2014/35/EU
- Household and similar electrical appliances - Safety - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers.
IEC 60335-2-40:2013
- Directive on harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC directive)
2014/30/EU
- Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS directive)
2011/65/EU
- Directive of Energy Related Products in a framework which primarily focuses on environmental care of requirements for energy-related products (ECODESIGN)
2009/125/EU

Harmonized standards applied and EU regulations, in particular:

EN 60335-1 EN 60730-1 (EU) 1253/2014

EN 60335-2-80 EN 50581 (EU) 1254/2014

Hedensted: 2016-11-08


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