

Installer manual
NIBE ERS 20-250
Ventilation heat exchanger

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1 Important information

Safety information

This manual describes installation and service procedures for implementation by specialists.

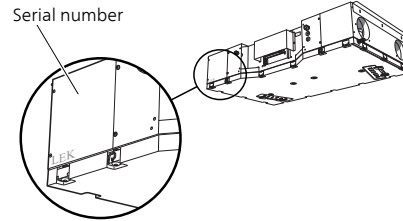
This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

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Serial number

The serial number can be found at the top left.



Caution

You need the product's serial number for servicing and support.

Symbols



NOTE

This symbol indicates danger to machine or person.



Caution

This symbol indicates important information about what you should observe when maintaining your installation.



TIP

This symbol indicates tips on how to facilitate using the product.

Marking

The CE marking means that NIBE ensures that the product meets all regulations that are placed on it based on relevant EU directives. The CE mark is obligatory for most products sold in the EU, regardless where they are made.

Recovery



Leave the disposal of the packaging to the installer who installed the product or to special waste stations.

When disposing of the product, the constituent materials and components, such as compressors, fans, circulation pumps and circuit boards, must be disposed of at a special waste station or at a dealer who provides this type of service.

To access the separate components, refer to the section that shows the construction of the product. No special tools are required for access.

Improper disposal of the product by the user results in administrative penalties in accordance with current legislation.

Country specific information

Installer manual

This installer manual must be left with the customer.

2 Delivery and handling

Transport and storage

ERS 20 should be transported and stored in the dry.

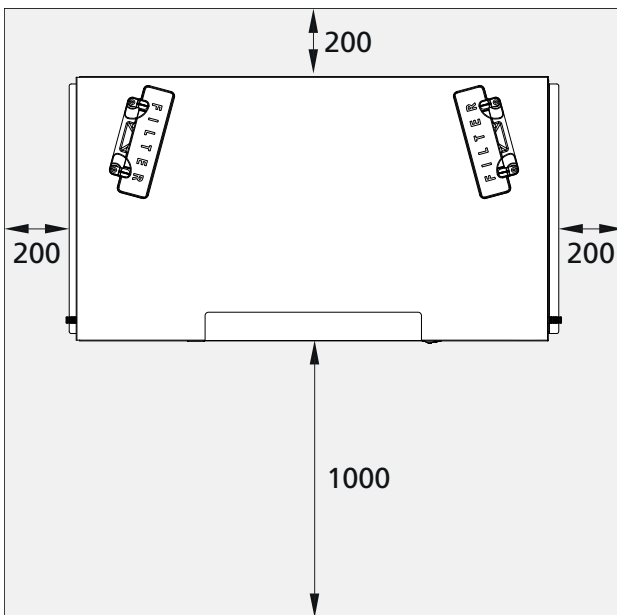
Assembly

ERS 20 is installed in the roof using the enclosed roof brackets. Noise from the fans can be transferred to the brackets.

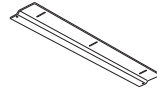
- Install ERS 20 on an outside wall, ideally in a room where noise does not matter, in order to eliminate noise problems. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem.
- Wherever the unit is located, walls to sound sensitive rooms should be fitted with sound insulation.
- Condensation comes from the underside of the ventilation heat exchanger. Condensation outlet with water seal must be installed and routed to an internal drain.
- The product's installation area must always have a temperature of at least 10 °C and max 35 °C.

Installation area

Leave a free space of 1,000 mm in front of the distribution box and 200 mm in front of the other sides. Because servicing is carried out from underneath, free space of 1,600 mm is recommended below the unit.



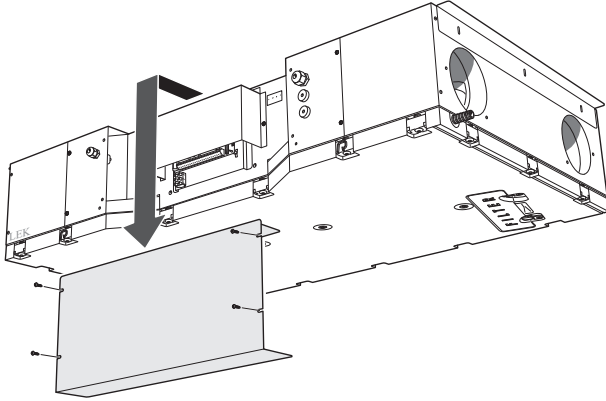
Supplied components



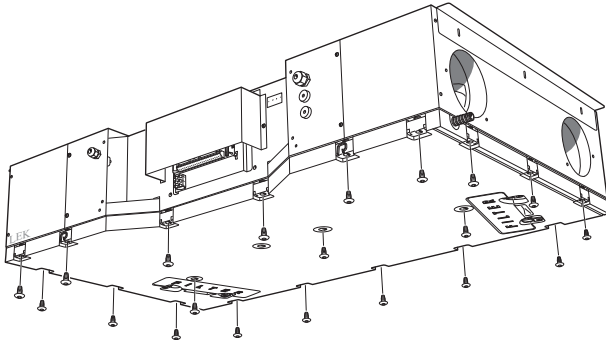
2 x roof brackets

Removing the covers

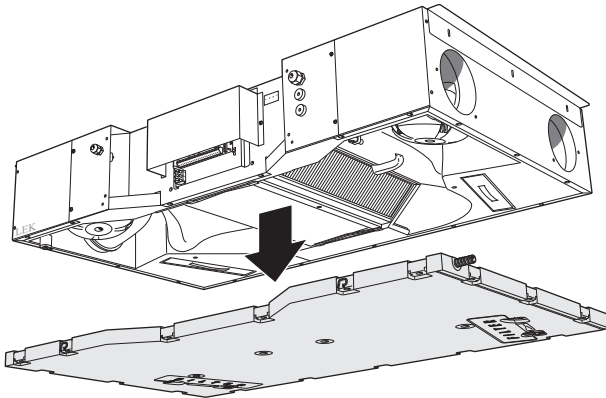
1. Slacken off the four screws holding the side panel. Move the panel out and downwards.



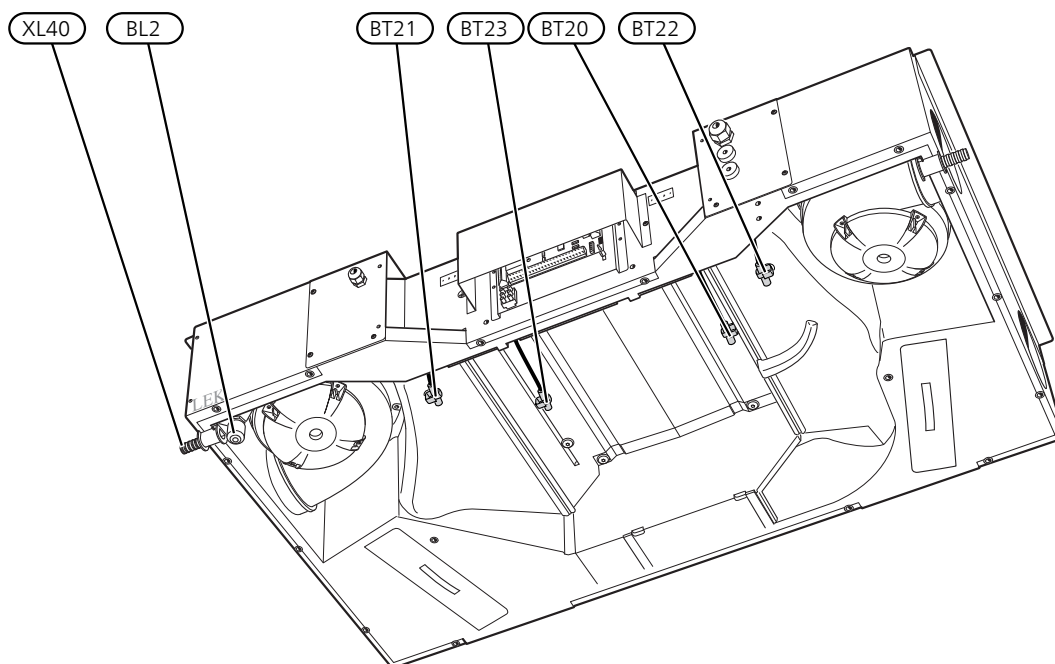
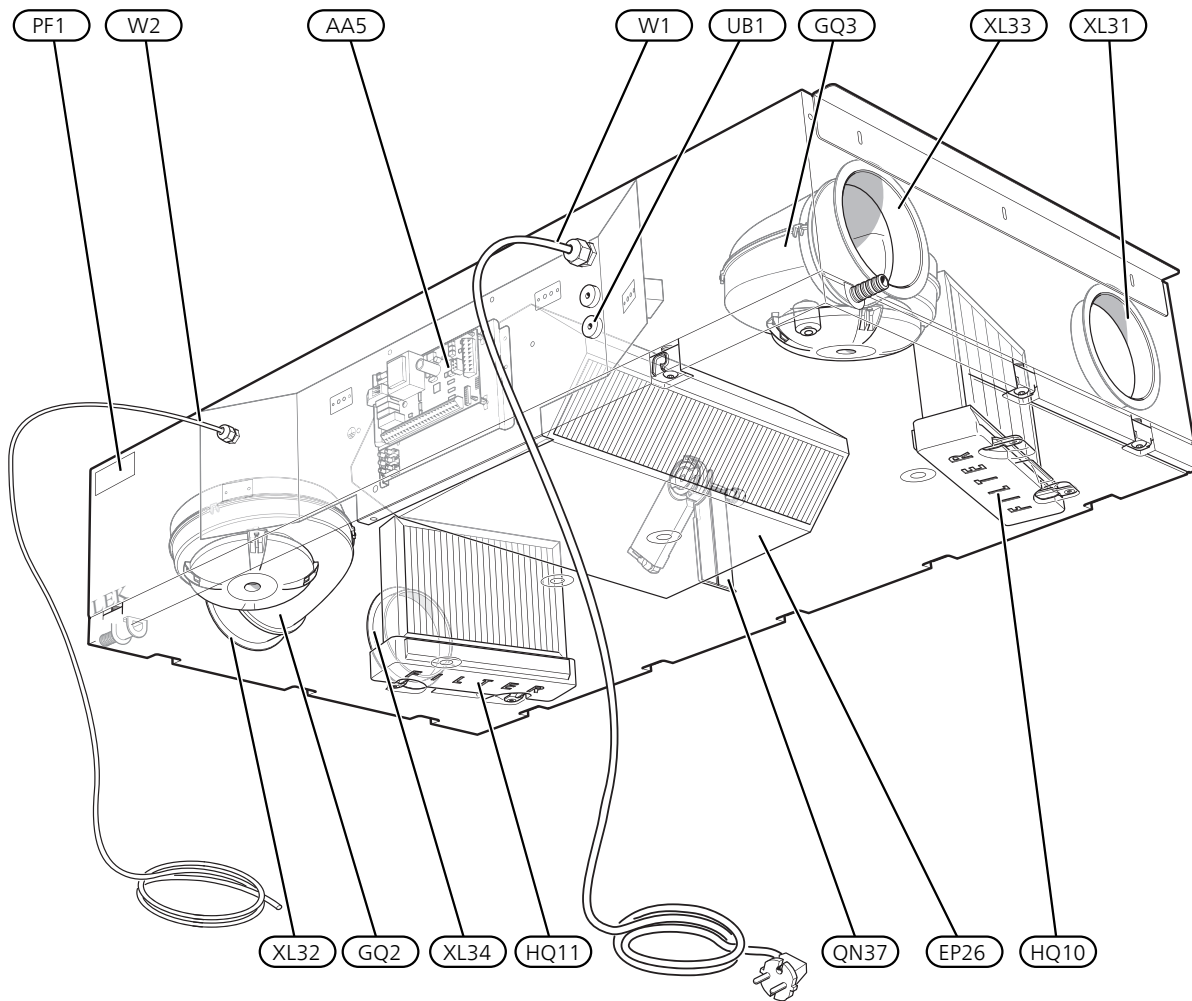
2. Unscrew all the screws holding the bottom panel.



3. Lift the bottom panel down.



3 The ventilation heat exchanger design



Pipe connections

XL31	Ventilation connection, exhaust air
XL32	Ventilation connection, extract air
XL33	Ventilation connection, supply air
XL34	Ventilation connection, outdoor air
XL40	Condensation water drain

Sensors etc.

BT20	Temperature sensor, exhaust air
BT21	Temperature sensor, extract air
BT22	Temperature sensor, supply air
BT23	Temperature sensor, outdoor air
BL2	Level monitor

Electrical components

AA5	Accessory card
EP26	Heat exchanger
UB1	Cable gland
W1	Cord with connection plug
W2	Communication cable

Ventilation

EP26	Heat exchanger
GQ2	Exhaust air fan
GQ3	Supply air fan
HQ10	Exhaust air filter
HQ11	Supply air filter
QN37	Bypass damper

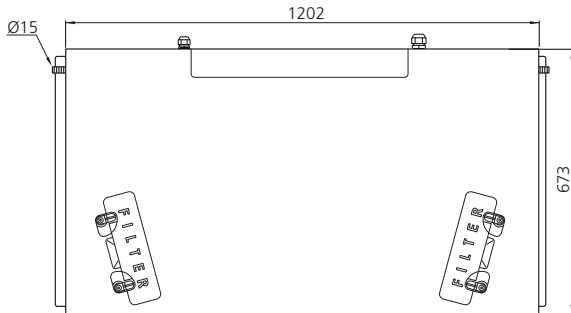
Miscellaneous

PF1	Type plate
WM5	Condensation water trough

Designations in component locations according to standard IEC 81346-1 and 81346-2.

4 Pipe and ventilation connections

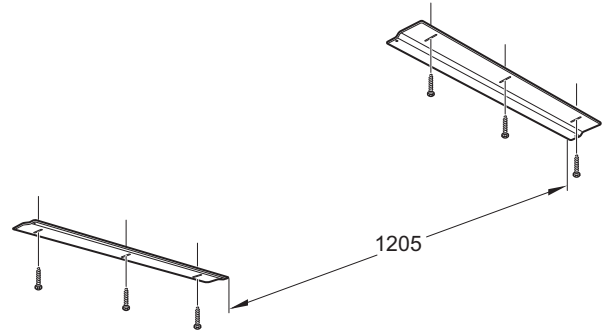
Dimensions and pipe connections



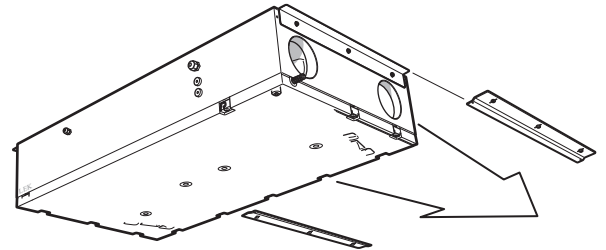
Mounting

When installing on a wooden roof, a vibration damper is recommended to prevent vibration being transferred.

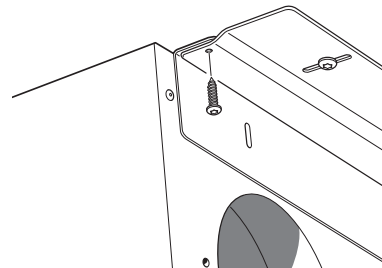
1. Install the two enclosed roof mountings in the roof.



2. Move ERS 20 into position.



3. Secure ERS 20 with screws.



Condensation water drain

ERS 20 can produce several litres of condensation water per day. It is therefore important that the condensation drain is correctly laid out and the unit is installed level.

Check that the water seal is airtight and firmly in position. The connection must be made so that the user can check that the water seal is functioning, without opening ERS 20.

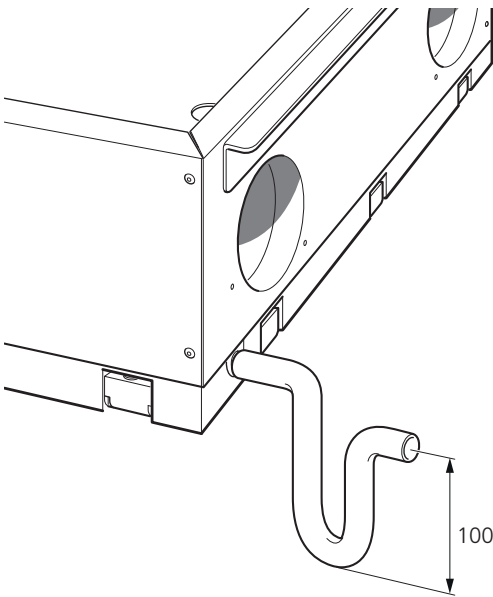
Installation from the water seal and forward to the drain must be carried out with a necessary fall of 1 %. If the unit is installed in a cold area, the condensation water drain pipe must be insulated so that the condensation water in the pipe does not freeze. It is also recommended that the water seal is mounted in a heated area to guarantee that the water in the water seal does not freeze.

If it cannot be guaranteed that insulation will protect the condensation water drain pipe against frost, a thermostat controlled heating cable must be installed around the condensation water drain pipe.



NOTE

During operation there is a negative pressure in the unit which means that a water column of at least 100 mm must be guaranteed in the water seal.



General ventilation connections

Ventilation installation must be carried out in accordance with current norms and directives.

To prevent fan noise being transferred to the ventilation devices, install silencers in the ducts. This is especially important if there are ventilation devices in bedrooms.

The extract air and outdoor air ducts are to be insulated using diffusion-proof material (PE30) along their entire lengths. Ensure that the condensation insulation is sealed at any joints and/or at lead-in nipples, silencers, roof cowls or similar. Provision must be made for inspection and cleaning of the duct. Make sure that there are no reductions in cross-sectional area in the form of creases etc., since this will reduce the ventilation capacity. The air duct system must be a minimum of air tightness class B.

All joints in the ducting must be sealed to prevent leakage.

It is recommended that the outdoor air inlet be located on the north or east side of the house to achieve optimal comfort in the house.

When positioning the outdoor air and extract air hood/grille, bear in mind that the two air flows must not short circuit to prevent the exhaust air from being sucked in again.

Exhaust air duct /kitchen fan

Exhaust air duct (kitchen fan) must not be connected to ERS 20.

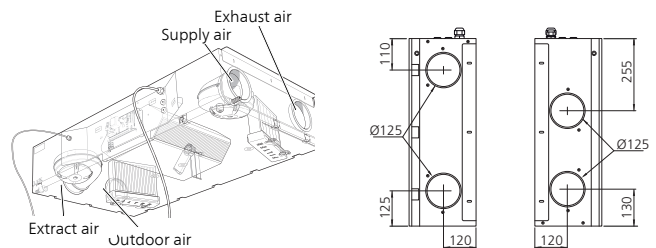
To prevent cooking odours from being led to the ERS 20, the distance between the kitchen fan and the exhaust air valve must be observed. The distance must not be less than 1.5 m, but may vary between different installations.

Always use a kitchen fan when cooking.



NOTE

A duct in a masonry chimney stack must not be used for extract air.



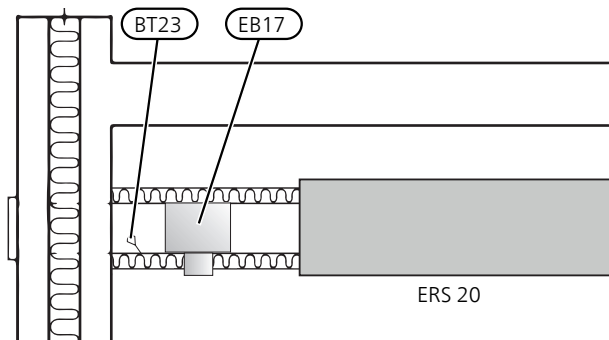
NOTE

To ensure a sealed connection to ERS 20, nipples must be used for connection of the air ducts (Ø 125 mm).

Preheating the outdoor air

If the extract air temperature is too low the supply air fan slows down to prevent the condensation water in the heat exchanger freezing.

To prevent this from happening too often in areas with colder climates, an electrical air heater EAH (EB17) must be installed in the outdoor air duct as illustrated. This heats the incoming outdoor air so that the extract air temperature does not fall to the stated level.



The outdoor air sensor (BT23) in ERS 20 must be disconnected and replaced with the one supplied with EAH.

See the Installation manual for EAH for further instructions.

Ventilation flow

Connect ERS 20 so that all exhaust air except exhaust kitchen air (kitchen fan) passes the heat exchanger (EP26) in the heat pump. The lowest ventilation flow must comply with the applicable national standards. The supply air flow must be lower than the exhaust air flow to prevent over pressure in the house.

Ensure that the ventilation openings are not blocked. Set the ventilation capacity in the main product's menu system (menu 5.1.5).

Adjusting ventilation

To obtain the necessary air exchange in every room of the house, the exhaust air valve and the supply air inlet as well as the fans in the ventilation heat exchanger must be correctly positioned and adjusted.

Immediately after installation adjust the ventilation so that it is set according to the projected value of the house.

Incorrect ventilation adjustment may lead to reduced installation efficiency and thus poorer operating economy, and may result in moisture damage to the house.

5 Electrical connection

NOTE

All electrical connections must be carried out by an authorised electrician.

Electrical installation and wiring must be carried out in accordance with the stipulations in force.

ERS 20 must not be powered during installation.

NOTE

If the supply cable is damaged, only NIBE, its service representative or similar authorised person may replace it to prevent any danger and damage.

NOTE

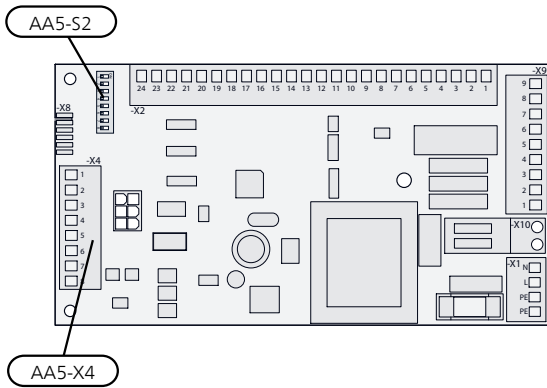
Communication and/or sensor cables to external connections must not be laid closer than 20 cm from high voltage cables, to prevent interference at any splices.

For electrical wiring diagram, see page 23.

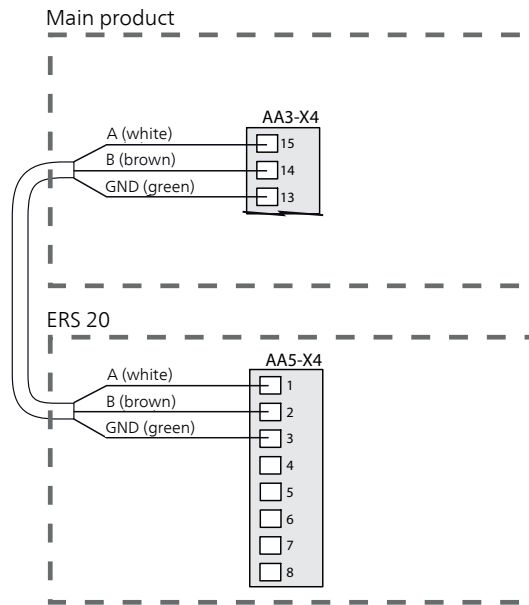
Connecting to main product

If several accessories are to be connected, or are already connected, the following cards must be connected in series with the previous card.

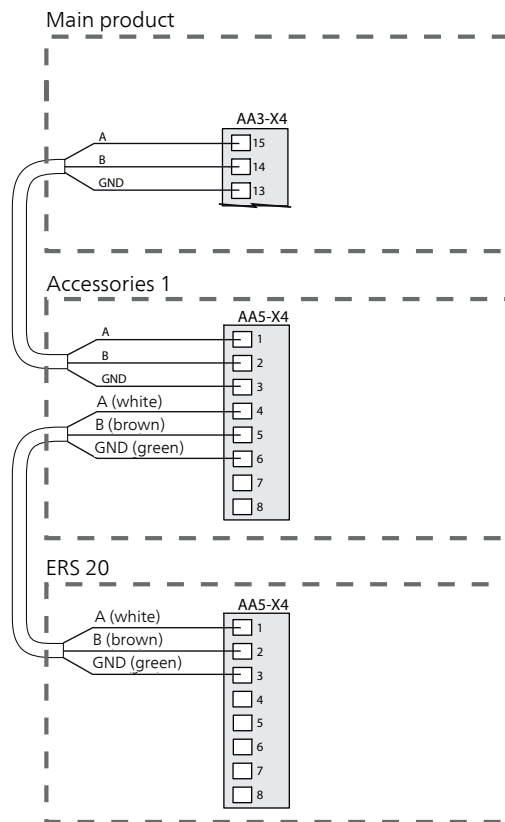
Use cable type LiYY, EKKX or similar.



The communication cable (W2) in ERS 20 must be connected to the main product.



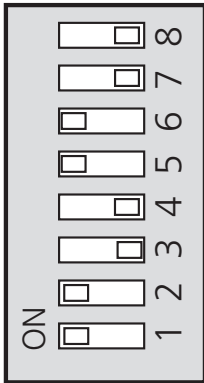
If more accessories are installed, ERS 20 must be connected last in the series, as illustrated.



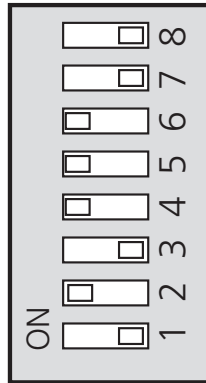
TIP

See the main product's Installer Manual for the location of the input board (AA3).

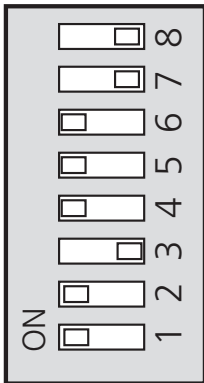
The DIP switch (AA5-S2) must be set as follows.



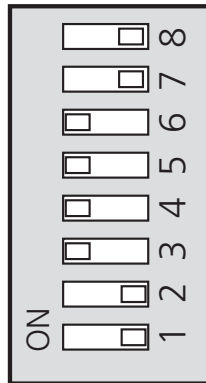
ERS 20 no. 1



ERS 20 no. 2



ERS 20 no. 3



ERS 20 no. 4

6 Commissioning and adjusting

Preparations

- Check the miniature circuit-breaker (FA1) in the main product. It may have tripped during transportation.
- Check that the air filters are clean, they can become dirty after installation.

Filling and venting

- Check that there is water in the water seal, fill if necessary.

Start-up and inspection

Setting the ventilation

Ventilation must be set according to applicable standards. The supply air flow is adjusted to ensure a negative pressure. The settings are made in menus 5.1.5 and 5.1.6.

Even if ventilation is roughly set at installation it is important that a ventilation adjustment is ordered and permitted.



Caution

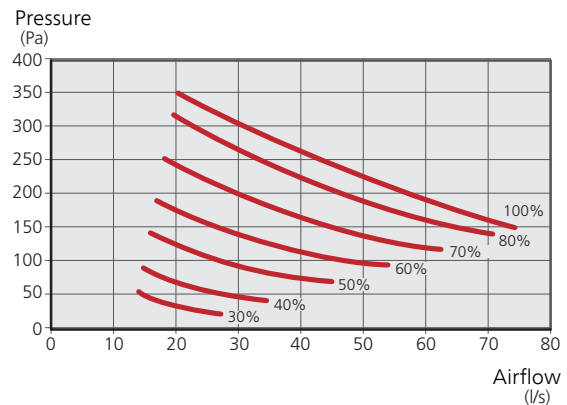
An incorrectly set ventilation flow can damage the house and may also increase energy consumption.



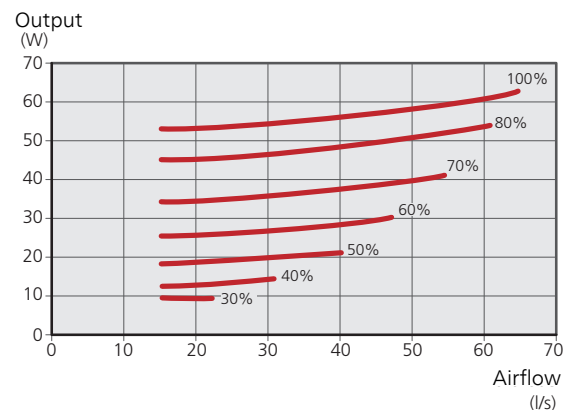
NOTE

Order a ventilation adjustment to complete the setting.

Ventilation capacity



Fan rating¹



¹The diagram shows the power consumption per fan.

7 Program settings

Program setting of ERS 20 can be performed via the start guide or directly in the menu system in the main product.



Caution

See the documentation for the main product.

Start guide

The start guide appears upon first start-up after heat pump installation, but is also found in menu 5.7.

Menu system

If you do not make all settings via the start guide or need to change any of the settings, this can be done in the menu system.

Menu 5.2.4 -system settings

Activating/deactivating of accessories.

Activate: "exhaust/supply air module".

Menu 5.3.12 - exhaust/supply air module

Settings specific to ERS 20.

"Lowest extract air temp.": Set the minimum extract air temperature to prevent the heat exchanger freezing. The supply air fan speed reduces if the extract air temperature at (BT21) is lower than the set value.

"Bypass at temperature": If a room sensor is installed, set the over-temperature at which the bypass damper (QN37) must open here.

"Months btwn filter alarms": Set how often the filter alarm must be displayed.



TIP

When ERS 20 is activated, the other ventilation menus will also light up.

8 Disturbances in comfort

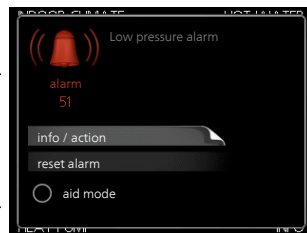
In most cases, the main product notes a malfunction (a malfunction can lead to disturbance in comfort) and indicates this with alarms and shows action instructions in the display.

Info-menu

All the measurement values are gathered under menu 3.1 in the main product's menu system. Looking through the values in this menu can often simplify finding the source of the fault. See help menu or the main product's user manual for more information about menu 3.1.

Manage alarm

In the event of an alarm, some kind of malfunction has occurred, which is indicated by the status lamp changing from green continuously to red continuously. In addition, an alarm bell appears in the information window.



Alarm

In the event of an alarm with a red status lamp, a malfunction has occurred that the main product cannot remedy itself. By turning the control knob and pressing the OK button, you can see in the display what type of alarm it is and reset it. You can also choose to set the main product in aid mode.

info / action Here you can read what the alarm means and receive tips on what you can do to correct the problem that caused the alarm.

reset alarm In most cases it is enough to select "reset alarm" to correct the problem that caused the alarm. If a green light illuminates after selecting "reset alarm" the alarm has been remedied. If a red light is still visible and a menu called "alarm" is visible in the display, the problem that caused the alarm remains. If the alarm disappears and then returns, see the troubleshooting section (page 17).

aid mode "aid mode" is a type of emergency mode. This means that the heat pump produces heat and/or hot water despite there being some kind of problem with the heat pump. This can mean that the heat pump's compressor is not running. In this case the immersion heater produces heat and/or hot water.

Problems with ERS 20 do not affect the main product's operation. You therefore do not need to select "aid mode" in event of problems with ERS 20.



Caution

Selecting "aid mode" is not the same as correcting the problem that caused the alarm. The status lamp will therefore continue to be red.

Troubleshooting

If the operational interference is not shown in the display the following tips can be used:

Basic actions

Start by checking the following possible fault sources:

- That the main product is running and that the supply cable to ERS 20 is connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The main product's fuses/temperature limiter.

High or low room temperature

- See Installer Manual for the main product.

Low or a lack of ventilation

- Level monitor (BL2) tripped.
 - Checking the condensation water drain and water seal.
- Filter blocked.
 - Clean or replace the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the exhaust air devices.
- Fan speed in reduced mode.
 - Enter the main product's menu 1.2 and select "normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Fan running slow because of low incoming outdoor air temperature.
 - Check the function and settings for the electrical air heater if installed.

High or distracting ventilation

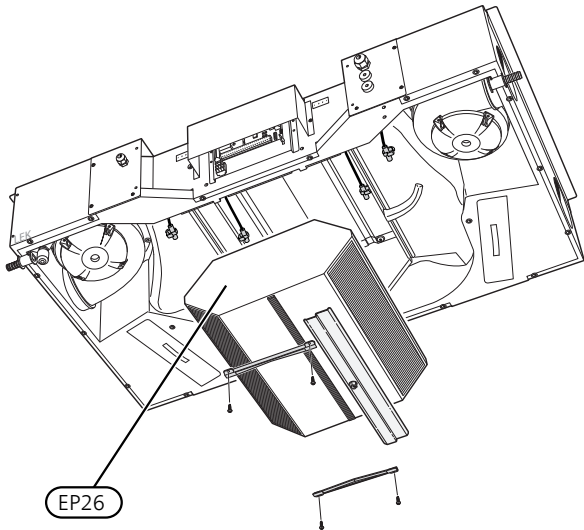
- Filter blocked.
 - Clean or replace the filter.
- The ventilation is not adjusted.
 - Order/implement ventilation adjustment.
- Closed, too much choke or blocked ventilation device.
 - Check and clean the exhaust air devices.
- Fan speed in forced mode.
 - Enter the main product's menu 1.2 and select "normal".
- External switch for changing the fan speed activated.
 - Check any external switches.
- Silencers not correctly installed.
 - Check the silencers.

9 Service



NOTE

Always cut the power before opening ERS 20.



Heat exchanger

The heat exchanger (EP26) must be inspected at regular intervals. Every other year is recommended.

If it is dirty it must be removed and cleaned without touching the fins. Water can be used when cleaning.

1. Remove the four screws holding the heat exchanger.
2. Remove the trim and the metal rail.
3. Carefully lift the heat exchanger out. Bear in mind that the fins are sensitive and easily damaged.

Carry out assembly in reverse order.



NOTE

It is important that the metal rail is positioned on the same side, so that the heat exchanger is angled in the same direction as previously when reinstalling.



NOTE

Do not damage the fins. If the fins are damaged the output may be reduced.

Water seal for condensation water

The water seal must be installed so that it can be checked by the user, without needing to open ERS 20.

The water seal may dry out during the hotter periods of the year when no condensation is generated. Therefore, before the cold periods of the year, the condensation water drain must be checked for blockage due to dirt and filled with water.

Pour approx. one litre of water into the water seal and check that it runs through unobstructed.

The water seal must not dry out during those months of the year that condensation is created because, due to the negative pressure in the unit, air will be sucked into the unit which will then prevent the condensation water from running off. ERS 20 can produce several litres of condensation water each day. If the condensation water drain does not function, water may cause damage inside the house.

10 Accessories

Electrical air heater EAH 20

This accessory heats the incoming outdoor air so that the extract air temperature is not too low.

Part no. 067 604

Top cabinet

Top cabinet that conceals the ventilation ducts and reduces the sound to the installation room.

245 mm

Part no. 089 756

345 mm

Part no. 089 757

445 mm

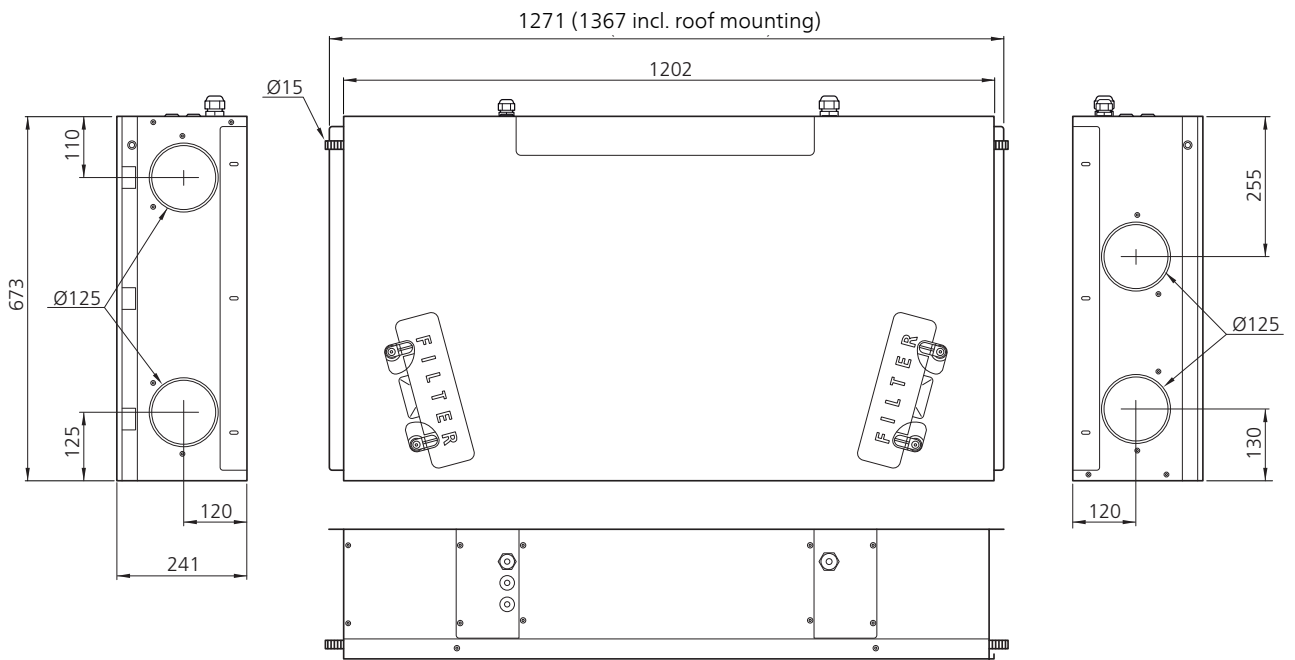
Part no. 067 522

385-635 mm

Part no. 089 758

11 Technical data

Dimensions



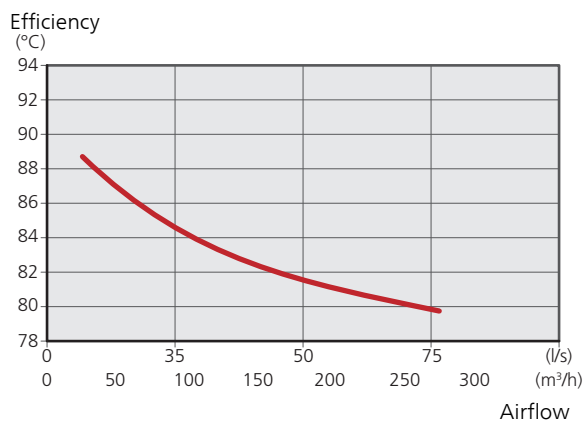
Technical specifications

		ERS 20
Electrical data		
Supply voltage		230 V ~ 50 Hz
Fuse	A	10
Driving power fan	W	100 x 2
Enclosure class		IP21
Ventilation		
Filter type, exhaust air filter		G4
Filter type, supply air filter		F7
Sound pressure levels		
Sound pressure level ($L_{W(A)}$) at 1 m ¹	dB(A)	47.4
Sound pressure level ($L_{W(A)}$) at 1 m ²	dB(A)	50
Pipe connections		
Ventilation connection	mm	Ø125
Connection, condensation water drain	mm	Ø15
Dimensions and weight		
Length, supply cable	m	2.4
Length, control cable	m	2.0
Width	mm	1,202
Depth	mm	673
Height	mm	241
Weight	kg	25
Part no.		066 068

1105 m³/h at 50 Pa

2250 m³/h at 140 Pa

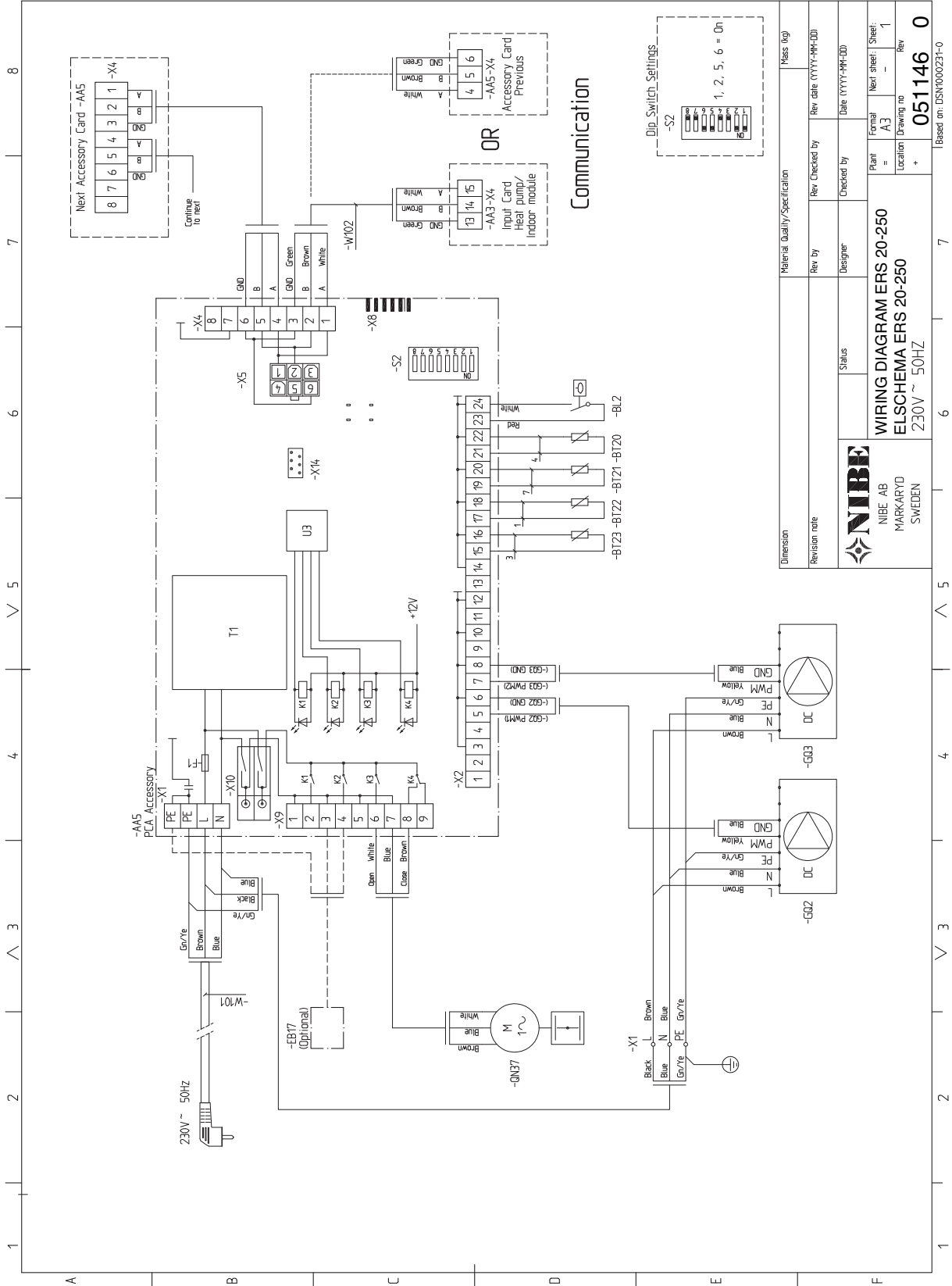
Temperature efficiency



Energy labelling

Supplier		NIBE
Model		ERS 20-250
Specific energy consumption (SEC)	kWh/(m ² year)	Average: -34.9 Cold: -71.3 Warm: -11.5
Energy efficiency class		A
Declared typology		RVU, Bidirectional
Type of drive		Variable speed drive
Type of heat recovery system		Recuperative
Thermal efficiency of heat recovery		82
Maximum air flow rate	m ³ /h	258
Electric power input of the fan drive at maximum flow rate	W	116
Sound power level (LWA)	dB	46
Reference flow rate	m ³ /s	0.05
Reference pressure difference	Pa	50
Specific power input (SPI)	W/m ³ /h	0.288
Control factor and control typology		Clock control (0.95)
External leakage rates	%	Internal: 2.5 External: 1.6
Information about filter warning		See user manual.
Information about supply/exhaust grilles in the facade		See section General ventilation connections on page 11.
Information about pre-/disassembly		See section Recovery on page 5. This installer manual can also be accessed at www.nibe.eu .
The annual electricity consumption	kWh/year	370
Annual heating saved, kWh primary energy per year	kWh prim/year	Average: 4,356 Cold: 8,521 Warm: 1,970

Electrical circuit diagram



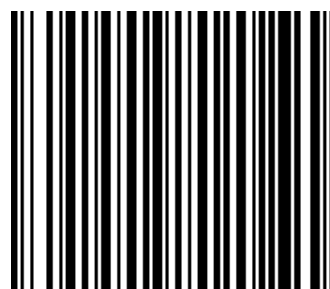
Dimension	Material Quality/Specification	Mass (kg)	
Revision note	Rev. by	Rev. date (YYYY-MM-DD)	
 NIBE AB MARKARYD SWEDEN	Status	Checked by	
	WIRING DIAGRAM ERS 20-250 ELSCHEMA ERS 20-250 230V ~ 50HZ	Designer	Date (YYYY-MM-DD)
		Plant	Next sheet: Sheet: 1
		Location	Drawing no
		Rev	051146 0
		Based on: DSN000231-0	

Contact information

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