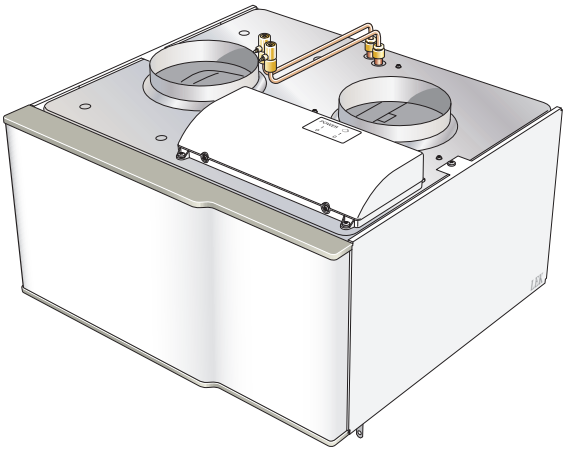
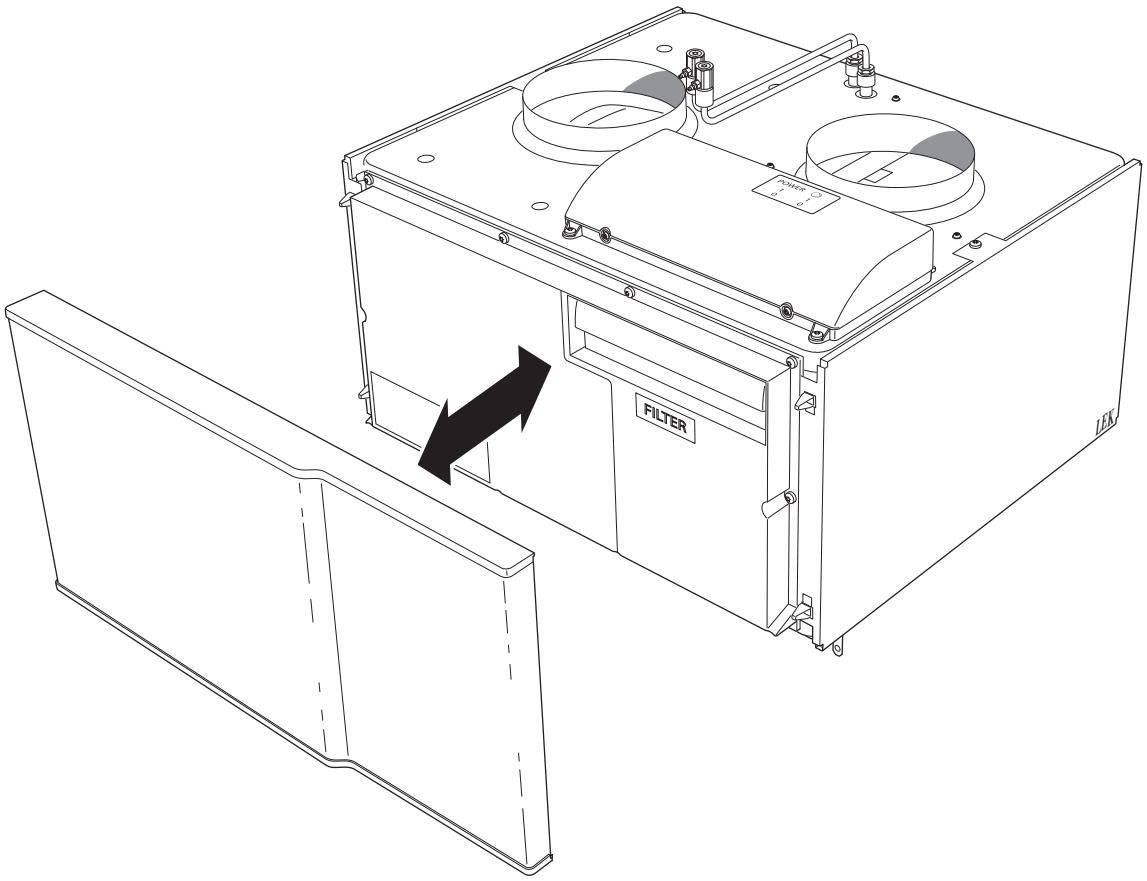


Installer manual

SAM 40

Supply air module

IHB GB 1513-3
031934


POWER
FILTER
LEK

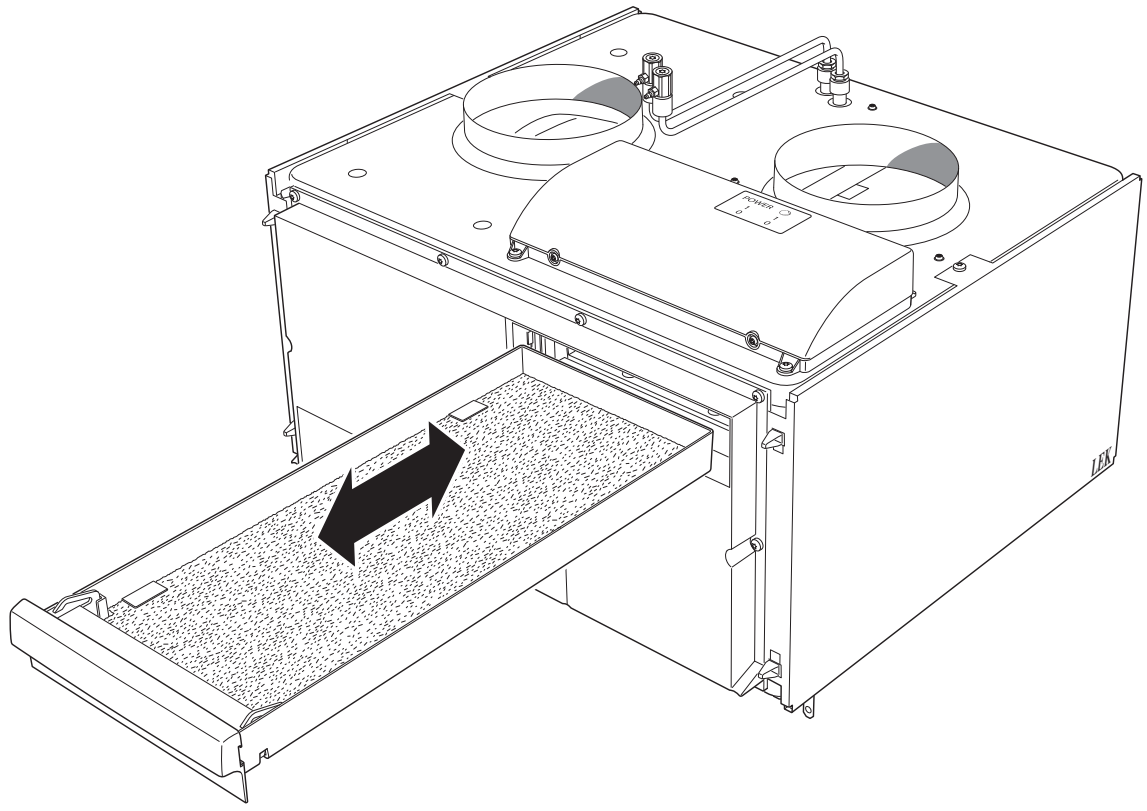

POWER
LEK

Table of Contents

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.

Rights to make any design or technical modifications are reserved.

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

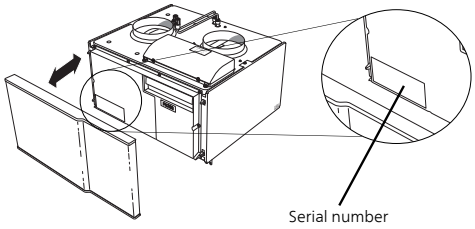
SAM 40 is CE marked and fulfils IP21.

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.

IP21 means that objects with a diameter larger than or equivalent to 12.5 mm cannot penetrate and cause damage and that the product is protected against vertically falling drops of water.

Serial number

The serial number can be found at the bottom left inside the front cover.



Caution

Always give the product's serial number (14 digits) when reporting a fault.

Country specific information

Installer manual

This installer manual must be left with the customer.

Inspection of the installation

Fill in the page for information about installation data in the User manual.

Current regulations require the supply air module must be inspected before it is put into service. The inspection must be carried out by a suitably qualified person.

✔	Description	Notes	Signature	Date
Ventilation (page 14)				
	Setting ventilation flow exhaust air			
	Setting ventilation flow supply air			
Heating medium (page 10)				
	System flushed			
	Accessories bled			
	Check against output and pressure drop diagrams			
	Connected according to outline diagram			
Electricity (page 15)				
	Supply connected 230 V			
	Connected communication			

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RU © **"EVAN"** 17, per. Boynovskiy, Nizhny Novgorod

Tel./fax +7 831 419 57 06 E-mail: info@evan.ru www.nibe-evan.ru

SE **NIBE AB Sweden**, Box 14, Hannabadsvägen 5, SE-285 21 Markaryd

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For countries not mention in this list, please contact Nibe Sweden or check www.nibe.eu for more information.

2 Delivery and handling

Transport

The supply air module must be transported and stored dry.

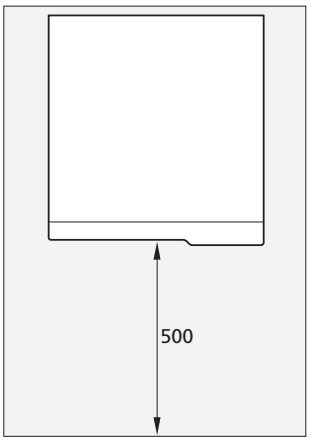
Assembly

SAM 40 is mounted free standing on brackets, alternatively above a VPB 200 (For VPB 300/VPBS 300 installation is with the help of brackets). Noise from the fan can be transferred to the brackets.

- Install the brackets to 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.
- Route pipes so they are not fixed to an internal wall that backs on to a bedroom or living room.

Installation area

Leave a free space of 500 mm in front of the supply air module. All service on SAM 40 can be carried out from the front.



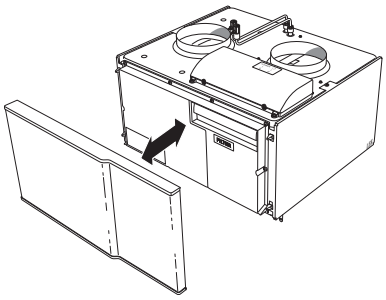
NOTE

Ensure that there is sufficient space (300 mm) above the supply air module for installing ventilation hoses.

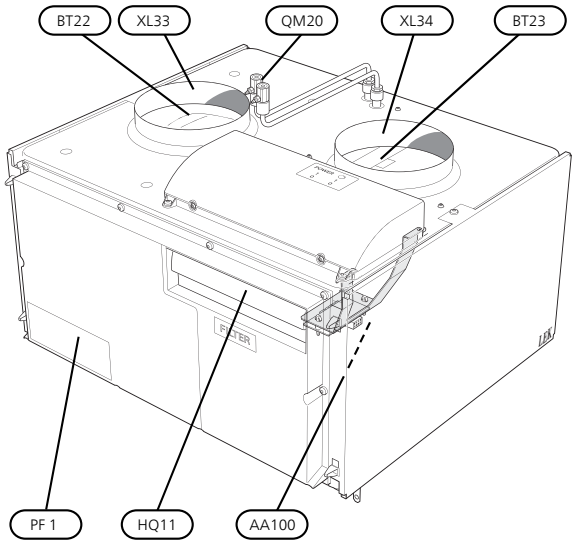
Removing the covers

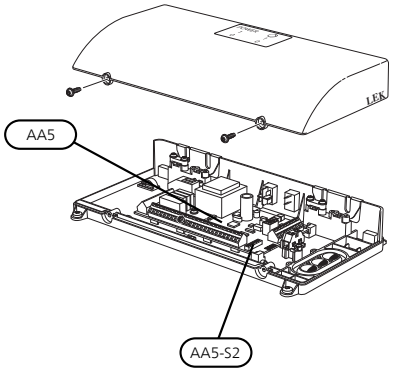
Front cover

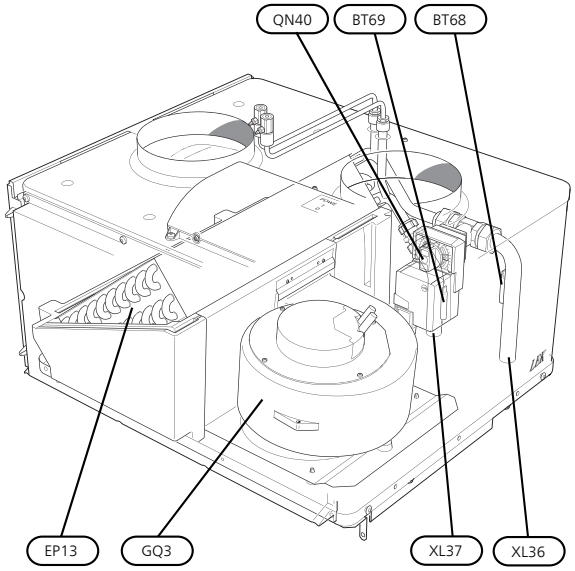
1. Remove the service cover by pulling it straight out.

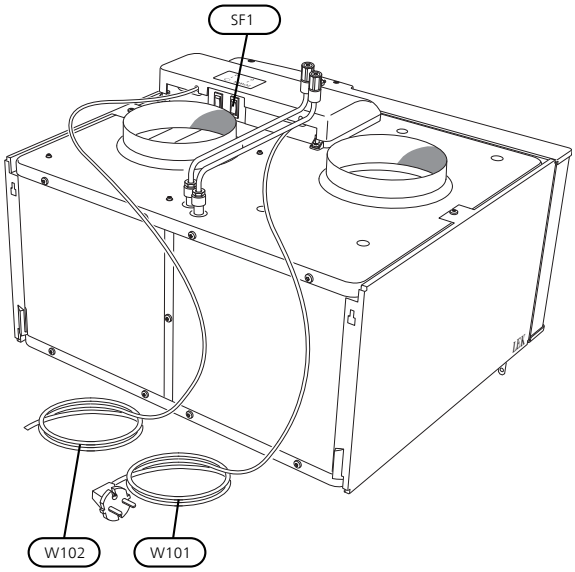


3 The design of the supply air module









Pipe connections

XL33	Ventilation connection supply air
XL34	Ventilation connection outdoor air
XL36	Connection, heating medium in
XL37	Connection, heating medium out [1]

HVAC components

EP13	Supply air battery
QM20	Venting heating medium
QN40	Control valve heating medium

Sensors etc.

BT22	Temperature sensor, supply air
BT23	Temperature sensor, outdoor air
BT68	Temperature sensor, flow
BT69	Temperature sensor, return[1]

Electrical components

AA5	Accessory card
	AA5-S2 Dip switch
AA100	Joint card
SF1	Switch, position 0 - 1, main switch
W101	Cord with connection plug
W102	Control cable

Ventilation

GQ3	Supply air fan
HQ11	Air filter supply air

Miscellaneous

PF1	Rating plate

[1] Not visible in the image

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

4 Pipe and ventilation connections

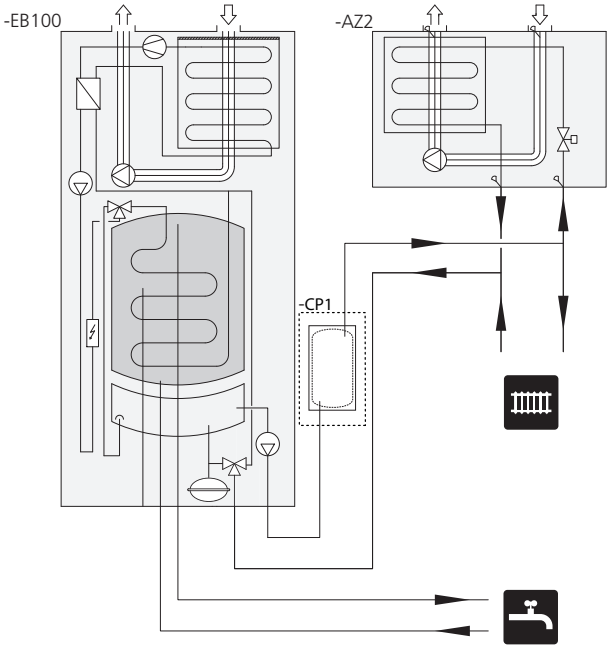
General pipe connections

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

Symbol key

Symbol	Meaning
	Control valve
	Shunt / shuttle valve
	Temperature sensor
	Expansion vessel
	Circulation pump
	Fan
	Compressor
	Heat exchanger

Outline diagram



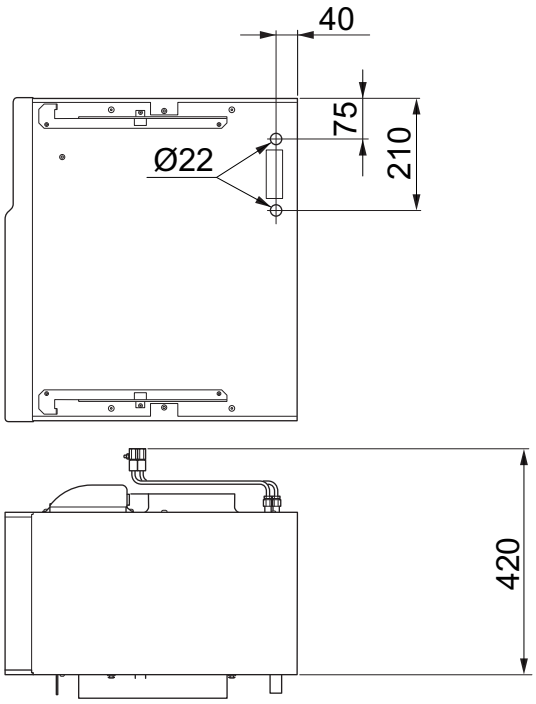
Caution

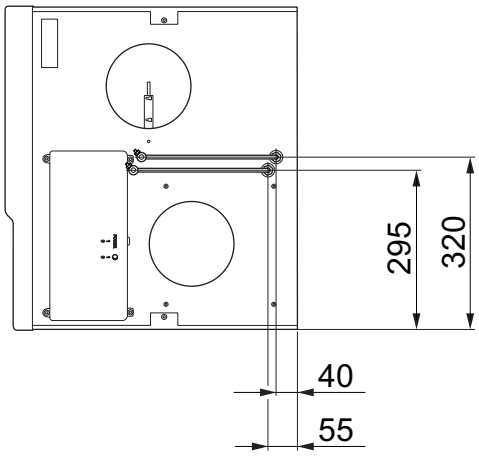
If the total circulating volume in the climate system (excluding the heat pump volume) falls below 40 litres, extra system volume is connected, for example volume vessel UKV (CP1) according to the outline diagram above.

NOTE

If several climate systems (ECS 40/ECS 41) are present, SAM 40 must be connected in parallel with climate system 1. A circulation pump must be used to ensure the flow over SAM 40.

Dimensions and pipe connections

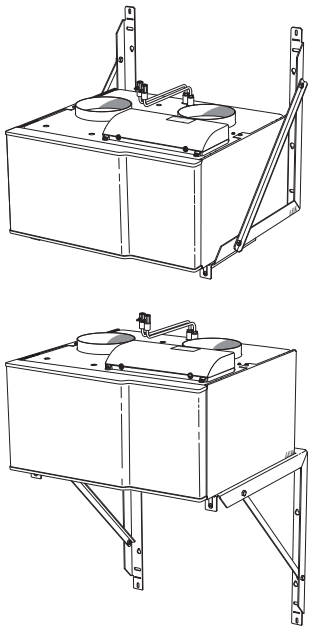




Mounting

Installing on brackets

1. Install SAM 40 on brackets.
2. Connect heating medium and ventilation pipes.

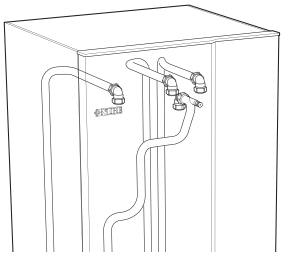


Installing on VPB 200

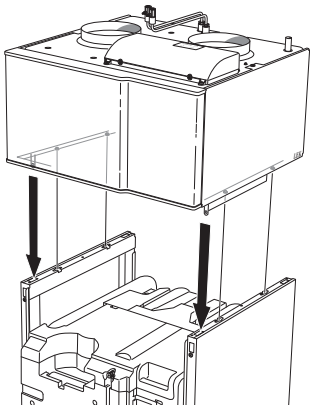
Caution

For connection of VPB 200 together with F750 docking kit DEW 40 is used.

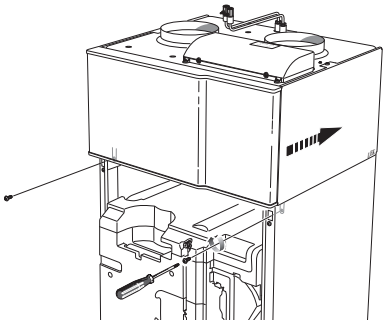
1. Remove the service cover from VPB 200.
2. Remove the top panel from VPB 200 (installed with 6 screws).
3. Install DEW 40 according to the instructions in the installation manual. The pipes in VPB 200 can be adjusted/replaced in such a way that SAM 40 can easily be installed above VPB 200.



4. Install SAM 40 from the top and slide into position.



5. Secure SAM 40 with the 2 screws supplied.



6. Connect heating medium and ventilation pipes.
7. Reinstall the service cover on VPB 200.

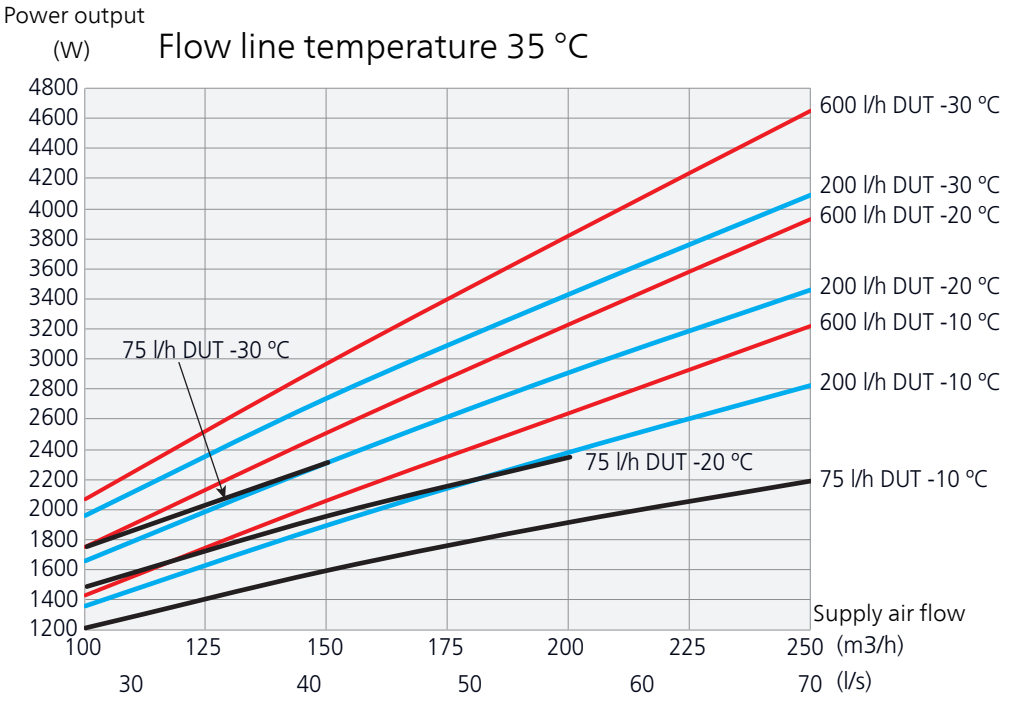
Heating medium side

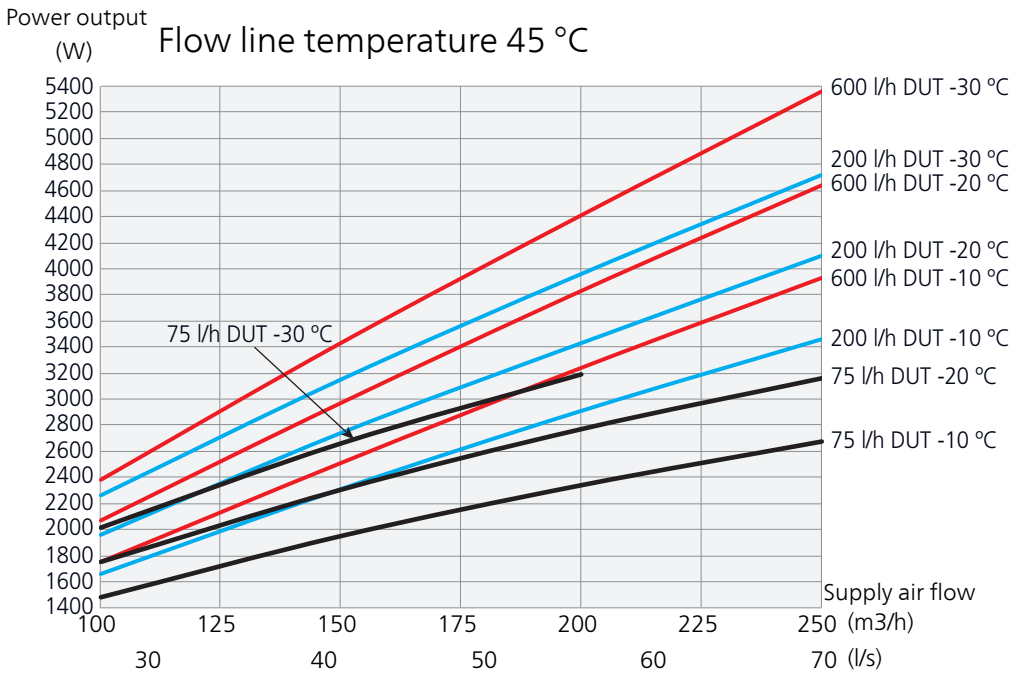
A water borne climate system with a volume of at least 20 litres of circulating water must be present for installation of SAM 40 to be possible. For the correct function of SAM 40 the total volume of the climate system (excluding the internal volume in F750) must exceed 40 litres of circulating water. This means that, if the volume of the climate system does not exceed 40 litres of circulating water, installation of volume vessel (NIBE UKV) is necessary.

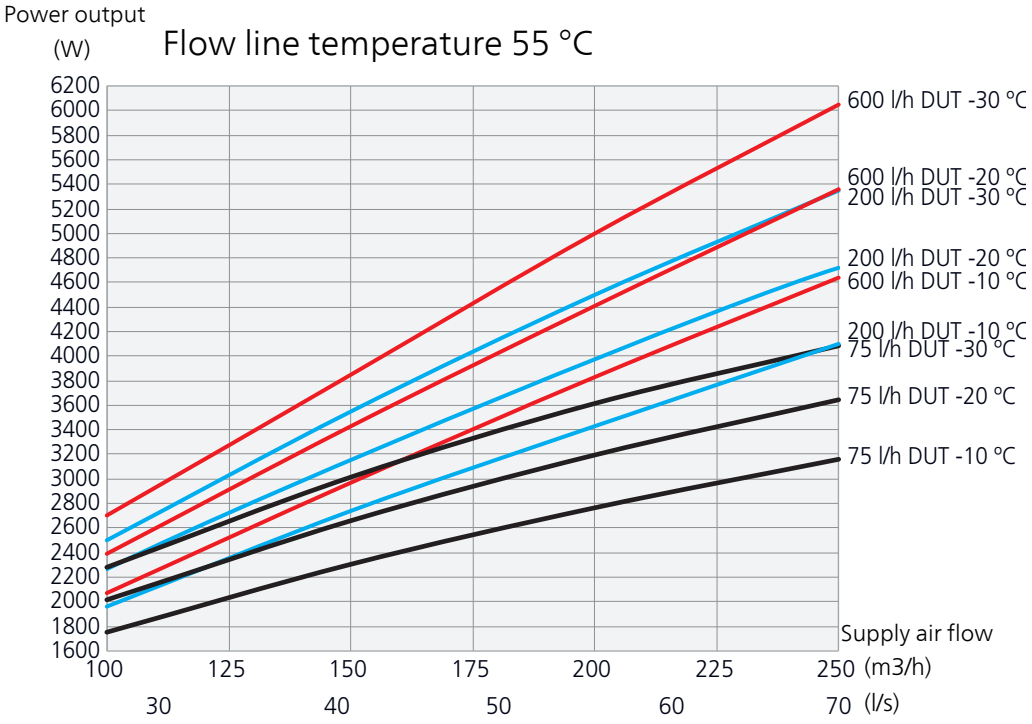
Dimensioning the system

1. Work from the water temperature at DUT (DVUT).
2. Work from the current supply air flow.
3. Work from the desired supply air temperature, then calculate the output that SAM 40 must give at DUT.
4. Determine the water flow across SAM 40 from the correct output diagram. NOTE! For supply temperatures that are not in one of the diagrams, an estimate (linear interpolation) can be carried out.
5. Work from the projected pressure drop (at the projected flow) in the water borne system, climate system 1.
6. Check in the pressure drop diagram that the working point is inside the grey working area.
7. Check that the pump capacity from F750 is sufficient for both the heating system and SAM 40.

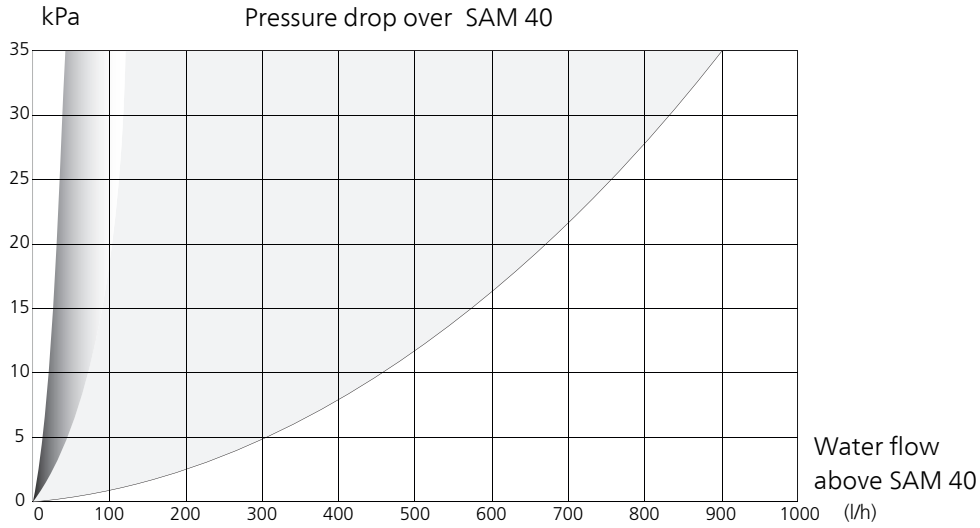
Output transfer to the supply air






Power output
(W)
Flow line temperature 55 °C
6200
6000
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
3800
3600
3400
3200
3000
2800
2600
2400
2200
2000
1800
1600
600 l/h DUT -30 °C
600 l/h DUT -20 °C
200 l/h DUT -30 °C
200 l/h DUT -20 °C
600 l/h DUT -10 °C
200 l/h DUT -10 °C
75 l/h DUT -30 °C
75 l/h DUT -20 °C
75 l/h DUT -10 °C
Supply air flow
100
125
150
175
200
225
250
(m3/h)
30
40
50
60
70
(l/s)

Pressure drop diagram SAM 40



The diagram shows pressure drop across SAM 40 at different water flows. Note that the pressure drop is the same as that which prevails across the climate system 1.

Check that the working point is inside the grey working area. If the working point is inside the darker grey area to the left of the diagram, it can give an oscillating supply air temperature.

NOTE

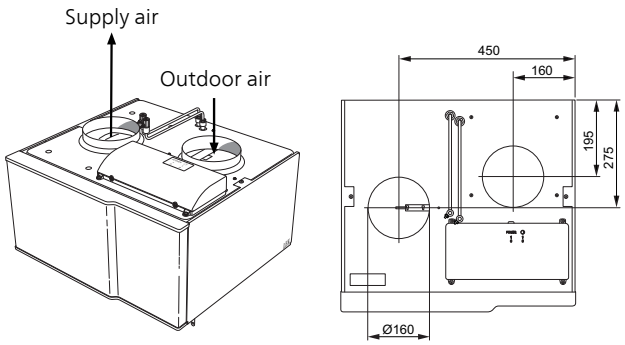
Venting may be necessary on installation and after a period of use. Vent through vent valve (QM20).

General ventilation connection

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

To prevent fan noise being transferred to the supply air devices, it may be a good idea to install a silencer in the duct. This is especially important if there are supply air devices in bedrooms.

Connections must be made via flexible hoses, which must be installed so that they are easy to replace. The outdoor air duct must be provided with diffusion-tight insulation over its entire length. 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 of cross-sectional area in the form of creases, tight bends etc, since this will reduce the ventilation capacity. The air duct system must be a minimum of air tightness class B.



Ventilation flow

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 heat pump's menu system (menu 5.1.5).

Adjusting ventilation

To obtain the necessary air exchange in every room of the house, the exhaust air device and the supply air device must be correctly positioned and adjusted and the fans in the heat pump and supply air module adjusted.

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

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

5 Electrical connections

General

All electrical equipment is connected at the factory.

- Disconnect SAM 40 before insulation testing the house wiring.
- For the supply air module wiring diagram, see page 24.
- Signal cables to external connections must not be laid close to high current cables.
- 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**
>
> Electrical installation and service must be carried out under the supervision of a qualified electrician. Electrical installation and wiring must be carried out in accordance with the stipulations in force.

Connections

Connecting to F750

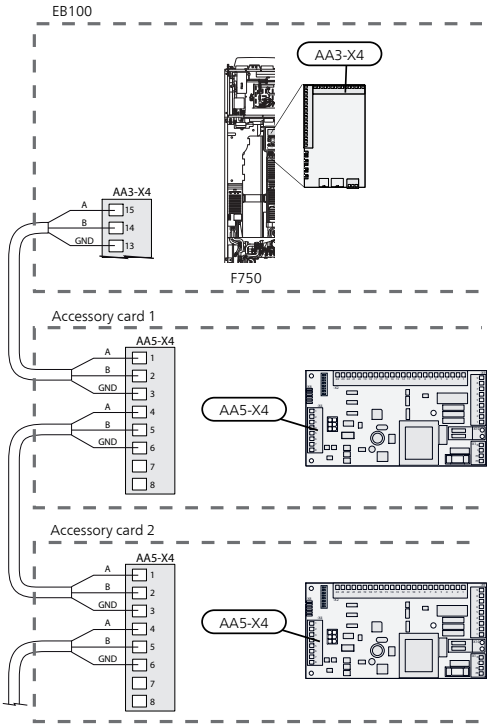
This section describes the electrical connection for controlling SAM 40 from NIBE F750.

The heat pump switch must be in the "⏻" position and the switch on SAM 40 in position 0, before any work is carried out.

1. Ensure that the products are completely disconnected from the power source. Remove the front hatch and protective cover to the input card on the heat pump according to the instructions in its Installer's manual.
2. Connect cable W102 to position X4 on the input board in the heat pump, according to the electrical wiring diagram on page 24. Use the cable lead-in in the heat pump when routing cables.

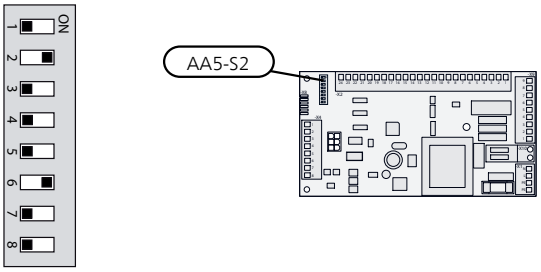
   If several accessories are to be connected or are already installed, the adjacent wiring diagram must be followed.

   The first accessory board must be connected directly to the heat pump's terminal block AA3-X4. The following boards must be connected in series to the previous board.
3. Fix external cable routing.
4. Install the protective cover and the service cover according to the heat pump Installation manual.
5. Connect plug W101.



DIP switch

The DIP-switch (S2) on the accessory board (AA5) is set in the factory as below.



6 Commissioning and adjusting

Preparations

1. Check that the switch (SF1) for F750 is in position "⏻".
2. Check that the filling valves (QM10) and (QM11) in the heat pump are fully closed.

Caution

Check the miniature circuit-breaker (FA1) in the heat pump. It may have tripped during transportation.

Connecting to heating medium system

1. Connect SAM 40 according to the outline diagram on page 8.
2. Fill with water using the filler valve (QM11) in F750.
3. Vent the heating medium system with the vent valves (QM20) above SAM 40, and the vent valves in F750 and fill if necessary using the filler valve (QM11) in F750.

Start-up and inspection

Start-up

NOTE

There must be water in the climate system before the switch in F750 is set to "I".

1. Set switch (SF1) onSAM 40 in position "1".
2. Set the heat pump's switch () to "I".
3. Follow the instructions in the start guide in the heat pump display. If the start guide does not start when you start the heat pump, start it manually in menu 5.7.

Commissioning

The first time the heat pump is started a start guide is started. The start guide instructions state what needs to carried out at the first start together with a run through of the heat pump's basic settings.

The start guide ensures that the start-up is carried out correctly and cannot be bypassed. The start guide can be started later in menu 5.7.

Caution

As long as the start guide is active, no function in the installation will start automatically.

The guide will appear at each installation re-start until it is deselected on the last page.

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 -system settings

Activating/deactivating of accessories.

Select: "ext sup air md"

Caution

This accessory may require a program software update in your F750.

The heat pump software must be version 3585R2 or later.

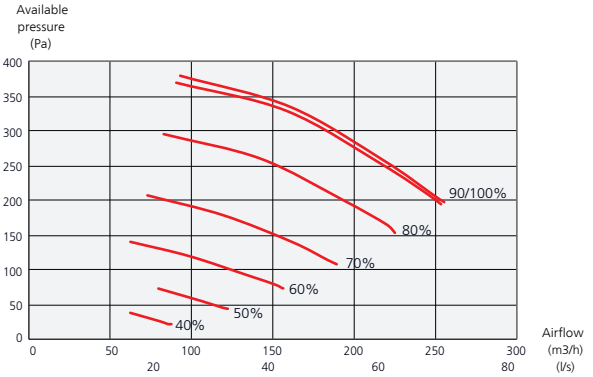
Setting the ventilation

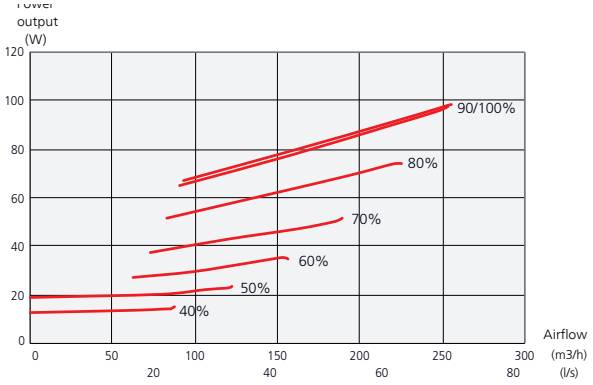
Ventilation must be set according to applicable standards. The supply air flow is adjusted so that it is 80% of the exhaust air flow. The setting is made in menu 5.1.5.

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

NOTE

Order a ventilation adjustment to complete the setting.

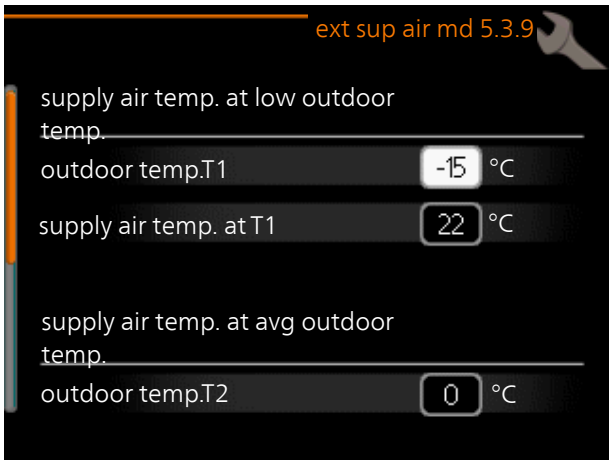




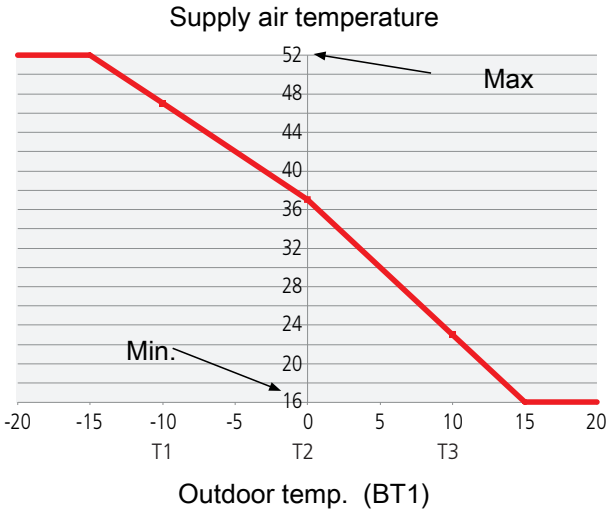
Setting of supply air temperature

Set the supply air temperature in menu 5.3.9 (ext sup air md).

Note that when changing the supply air temperature, the settings for other parts of the climate system need to be adjusted.



At outdoor temperatures that lie between the stated points in the diagram below, the supply air temperature can be calculated linearly. The angle of the graph continues outside the stated points.



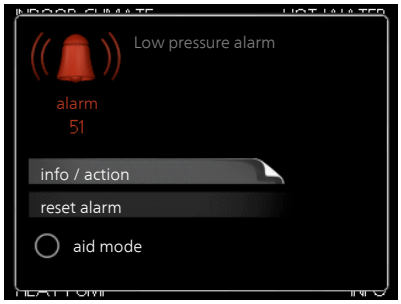
7 Disturbances in comfort

In most cases, the heat pump F750 notes operational interference (operational interference can lead to disturbance in comfort) and indicates this with alarms and shows action instructions in the display.

Info-menu (F750)

All the heat pump measurement values are gathered under menu 3.1 in the heat pump menu system. Looking through the values in this menu can often simplify finding the source of the fault.

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 heat pump cannot remedy itself. In the display, by turning the control knob and pressing the OK button, you can see the type of alarm it is and reset it. You can also choose to set the heat pump to 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 19).

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. This can mean that the heat pump's compressor is not running. In this case the immersion heater produces heat and/or hot water.

NOTE

To select aid mode an alarm action must be selected in the menu 5.1.4.

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 heat pump is running or that the supply cable to SAM 40 is connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The heat pump's miniature circuit breaker (FA1).
- The heat pump's temperature limiter (FD1).
- Correctly set load monitor (if installed).

Low hot water temperature or a lack of hot water

- The heat pump has temporarily prioritised supply air ventilation to prevent too low temperatures in the supply air coil.

Low room temperature

- Incorrect value set in supply air automatic control system.
  - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.
- Air in the heating medium system.
  - Vent the heating medium system via its vent valve (QM20).

High room temperature

- Incorrect value set in supply air automatic control system.
  - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

Low or a lack of ventilation

- The ventilation is not adjusted.
  - Order/implement ventilation adjustment.
- Filter (HQ12) blocked.
  - Clean or replace the filter.
- Supply air device closed, blocked or throttled down too much.
  - Check and clean the supply air device.

High or distracting ventilation

- The ventilation is not adjusted.
  - Order/implement ventilation adjustment.
- Filter (HQ12) blocked.
  - Clean or replace the filter.

Low supply air temperature

- Incorrect value set in supply air automatic control system.
  - Enter menu 5.3.9 (ext sup air md) and reduce the setting for the supply air temperature.
- Air in the heating medium system.
  - Vent the heating medium system via its vent valve (QM20).

High supply air temperature

- Incorrect value set in supply air automatic control system.
  - Enter menu 5.3.9 (ext sup air md) and adjust the setting for the supply air temperature.

8 Accessories

Brackets

Wall mounting of SAM 40.
Part no. 067 083

Buffer vessel UKV

UKV 40

Part no. 088 470

Top cabinet

Top cabinet for concealing the ventilation ducts.

245 mm

Part no. 089 756

345 mm

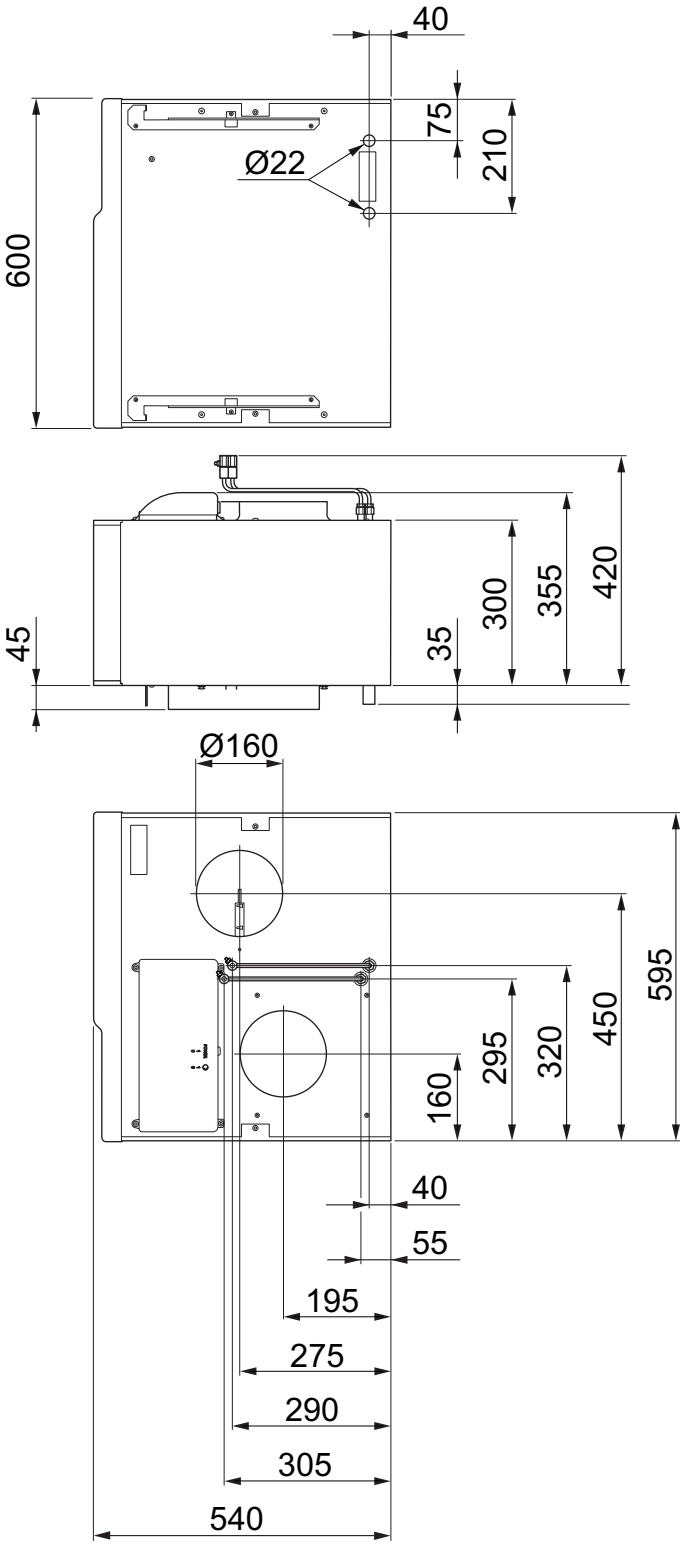
Part no. 089 757

395-645 mm

Part no. 089 758

9 Technical data

Dimensions and setting-out coordinates



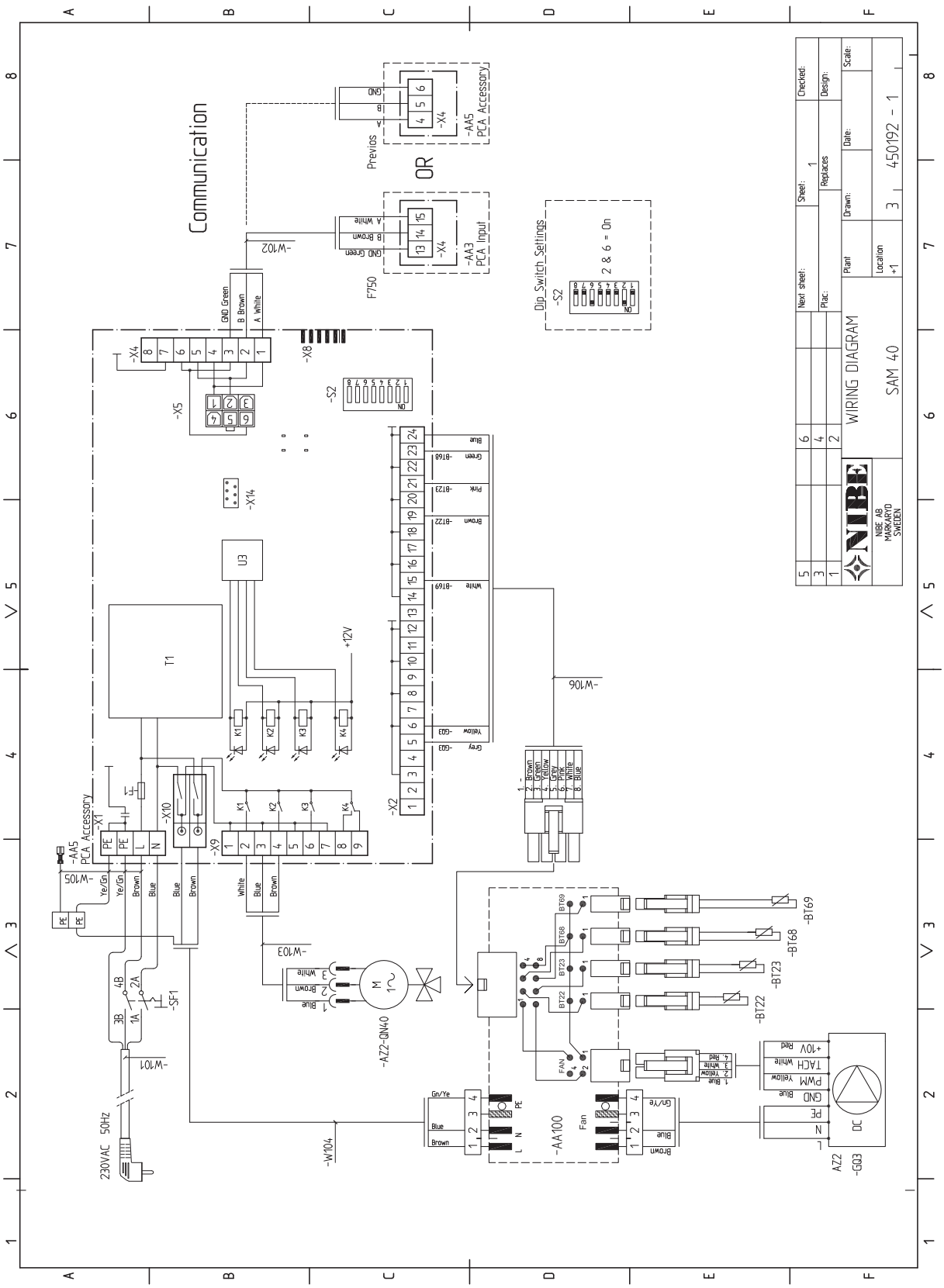
Technical specifications

Electrical data		
Supply voltage	V	230 V 50 Hz
Drive output actuator motor	W	1.5
Driving power fan	W	175
Enclosure class		IP21
Heating medium circuit		
Min pressure	MPa/bar	0.05/0.5
Max pressure	MPa/bar	0.25/2.5
Ventilation		
Max airflow	m^3/h	300
Sound power level according to EN 12,102		
Sound power level ($L_{w(A)}$))[1]	dB (A)	45-50
Sound pressure levels		
Sound pressure level in the boiler room ($L_{(PA)}$)[2]	dB (A)	41-46
Pipe connections		
Heating medium ext Ø	mm	22
Hot water ext Ø	mm	22
Ventilation Ø	mm	160
Dimensions and weight		
Width	mm	600
Depth	mm	556
Height	mm	396
Weight	kg	31
Part No.		067 147

[1]The value varies with the selected fan curve. For more detailed sound data including sound to channels visit www.nibe.eu.

[2] The value can vary with the room's damping capacity. These values apply with a damping of 4 dB.

Electrical circuit diagram



10 Item register

Item register

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