



# NEMBUS 210





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## 1. GENERAL SAFETY INSTRUCTIONS



### CAUTION

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.

The following safety instructions must be followed to prevent injuries or damages:

- Before you begin with the installation, operation, maintenance and repair of the ventilation system, read these operating and installation instructions carefully.
- Installation, repairs and electrical work may only be carried out by qualified specialists.
- When installing, commissioning and repairing the ventilation system, you must take into account and obey all necessary legal and national requirements (accident prevention provisions and the generally acknowledged rules of technology).
- While the ventilation system is operating, all covers must be closed.
- If you use a fireplace, whether or not it is dependent on indoor air, you must consult the chimney sweep responsible for the district.
- Keep these operating and installation instructions in a safe place or leave them on the ventilation system, because important information for operation is included in the instructions.
- Liability for damages that arise due to improper storage, installation, operation or repair, insufficient maintenance or unintended use is excluded.
- We reserve the right to make technical modifications.

## 2. GENERAL INSTRUCTIONS

### 2.1. INTENDED USE

The ventilation system NEMBUS 210 is intended for controlled ventilation and venting of single-family houses.

The unit assures a continuous and balanced ventilation system, extracting moist stale air from the wet rooms and at the same time introducing a tempered and filtered fresh air to the habitable rooms.

The unit contains as a standard filters in the supply and extract airflows to clean the incoming air and protect the heat exchanger.

### 2.2. IMPROPER USE

Any other use of the ventilation system NEMBUS 210 not described under "intended use" is prohibited.

Furthermore, the ventilation system NEMBUS 210 may not be installed in a room below +12°C.

The ventilation system NEMBUS 210 may not be operated without outdoor air filter and extract air filter.

It should only be turned off for maintenance and repair work.

Central ventilation systems are, designed for continuous operation. Unscheduled shutdown of the ventilation system can lead to formation of condensate inside the piping network and to damages to the ventilation system. For this reason, when shutting down the system for longer periods, the outdoor air and extract air lines must be sealed off.

The ventilation system NEMBUS 210 is not suitable for drying construction.

### 2.3. WARRANTY

The unit supplied by S&P is warranted 24 months, parts only, starting from the invoicing date.

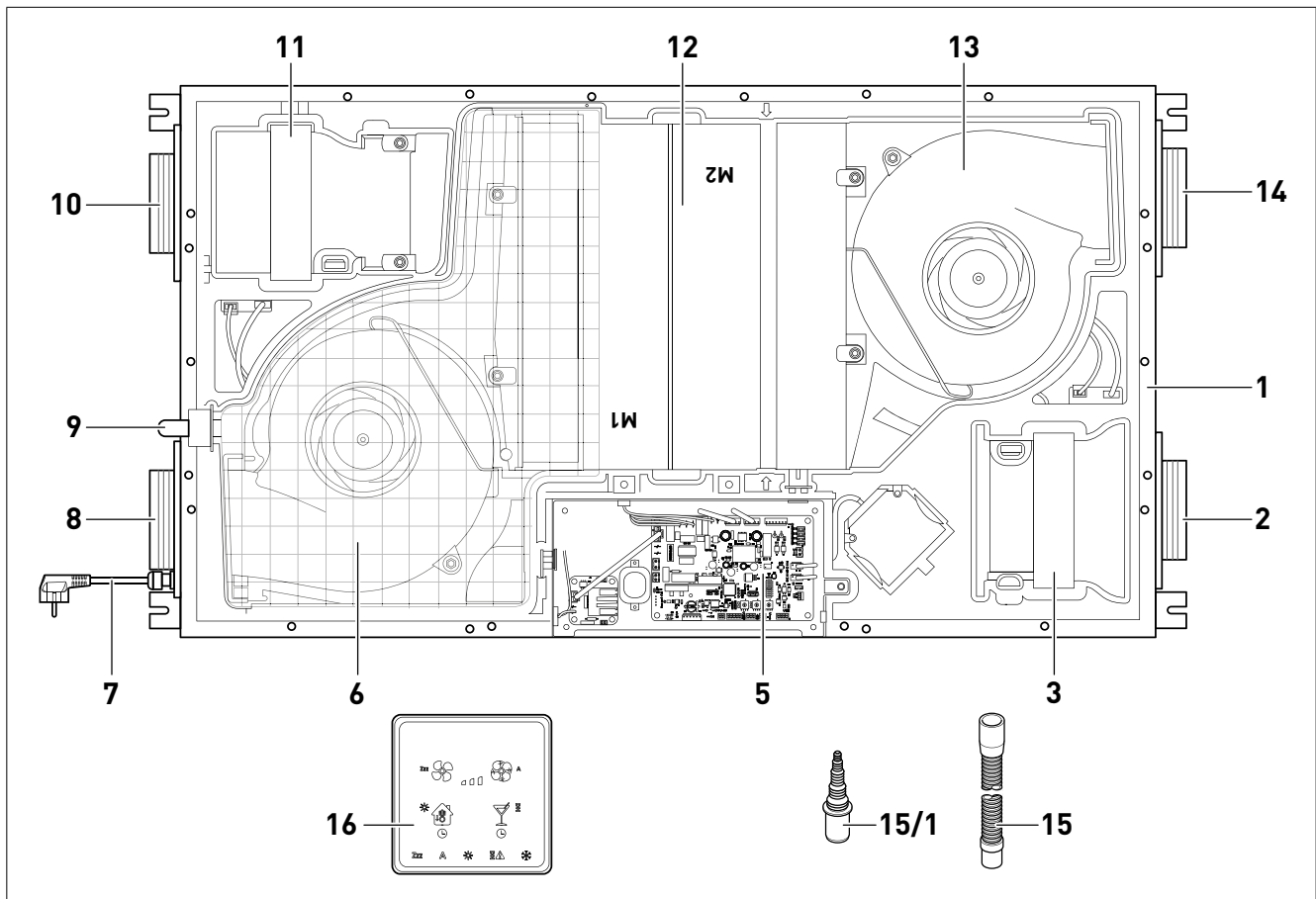
S&P agrees to replace the parts or the unit whose operation is recognized defective by our departments except for all damages and interests or penalties such as operating losses, commercial prejudice, or other immaterial or indirect damages.

The following are not covered by our warranty: defects resulting from an abnormal usage or a usage not conforming to the recommendations of our manuals; faults observed as a consequence to normal wear; incidents caused by negligence, lack of monitoring, or servicing; faults due to the incorrect installation of the devices or to bad storage conditions before mounting.

In any case, S&P will not be responsible for transformed unit, repaired even partially.

### 3. COMPONENTS / ITEMS DELIVERED

#### 3.1. COMPONENTS NEMBUS 210



- |    |  |      |   |
|----|--|------|---|
| 1  | Ventilation system NEMBUS 210              | 11   | Filter (outdoor air) – ISO Coarse 65% (G4)<br>Optional: ISO ePM1 70% (F7) |
| 2  | Connection for extract air (ETA)           | 12   | Heat exchanger  |
| 3  | Filter (extract air) – ISO Coarse 65% (G4) | 13   | Supply air fan  |
| 5  | Main circuit boards                        | 14   | Connection for supply air (SUP)   |
| 6  | Extract air fan                            | 15   | Flexible duct DN19/23, 150 mm   |
| 7  | Cable for power supply                     | 15/1 | connection nipple for flexible connecting tube<br>to DN32                 |
| 8  | Connection for extract air (EHA)           | 16   | Control panel, including 5 m cable  |
| 9  | Connection for condensate DN20             |      |   |
| 10 | Connection for outdoor air (ODA)           |      |   |

### 3.2. ACCESSORIES

Item no.	Description
5800018800	NEMBUS-VOC VOC-Sensor
5800017800	SABIK-NEMBUS-SF Servoflow (constant airflow kit)
5800018200	NEMBUS210-PH (Pre heater)
5800016200	SPCM Communications module
5800015700	DSI (dry siphon)

### 3.3. REPLACEMENT PARTS

Item no.	Description
R153120101	NEMBUS 210-M1 scroll/ventilator unit
R153120007	NEMBUS 210-M2 scroll/ventilator unit
R153120016	NEMBUS 210-PL main PCB
R153120023	NEMBUS 210-FA Filter cover
R153120037	NEMBUS 210-TFF humidity/ temperature sensor
R153120009	NEMBUS 210-HRPTC Preheater module w/o PCB
R153139302	NEMBUS 210-WT Heat exchanger
R153139052	SABIK-NEMBUS-HRE Preheater PCB
R153139024	SABIK-NEMBUS-FB Remote control

## 4. TECHNICAL DATA

### 4.1. CONDITIONS FOR INSTALLATION

Ambient temperature installation site	+12°C to +40°C
Minimum outdoor air temperature (Including preheating radiator [optional accessory])	-15°C
Environmental conditions	Non-saline, no aggressive chemicals, no risk of explosion

### 4.2. DEVICE DATA

Weight	32 kg
Material	Powder coated sheet metal
Connection for condensate	DN20
Supply voltage	230 V AV, 50/60 Hz Safety plug
Max. power input	$P_{max.} = 82 \text{ W}$ , $I_{max.} 0.8 \text{ A}$
Nominal airflow rate (extract air)	160 m <sup>3</sup> /h at 100 Pa
Speed regulation	Four speeds
Direct-current fans	2 pieces, backwardcurved impeller DN 190 EC
Counterflow heat exchanger	Plastic
Filter	Filter quality extract air side: • ISO Coarse 65% (G4) Filter quality supply air side: • ISO Coarse 65% (G4) • Optional: ISOePM1 70% (F7)
Control panel	With cables
Weekly timer	Four pre-set programmes
Protection class	IP21

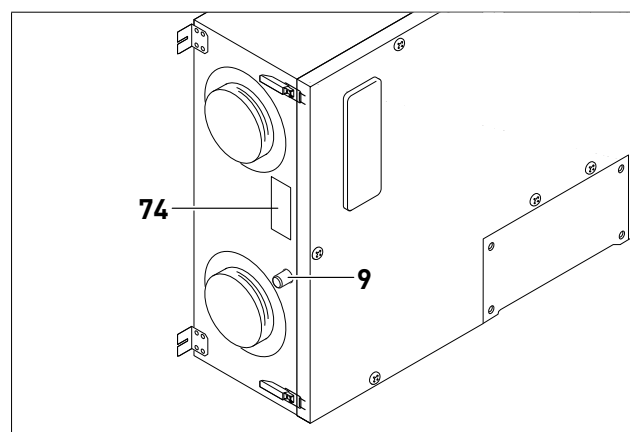
### 4.3. EFFICIENCY

EN 13141-7	PHI
83.4%	82.2%

### 4.4. SPEEDS

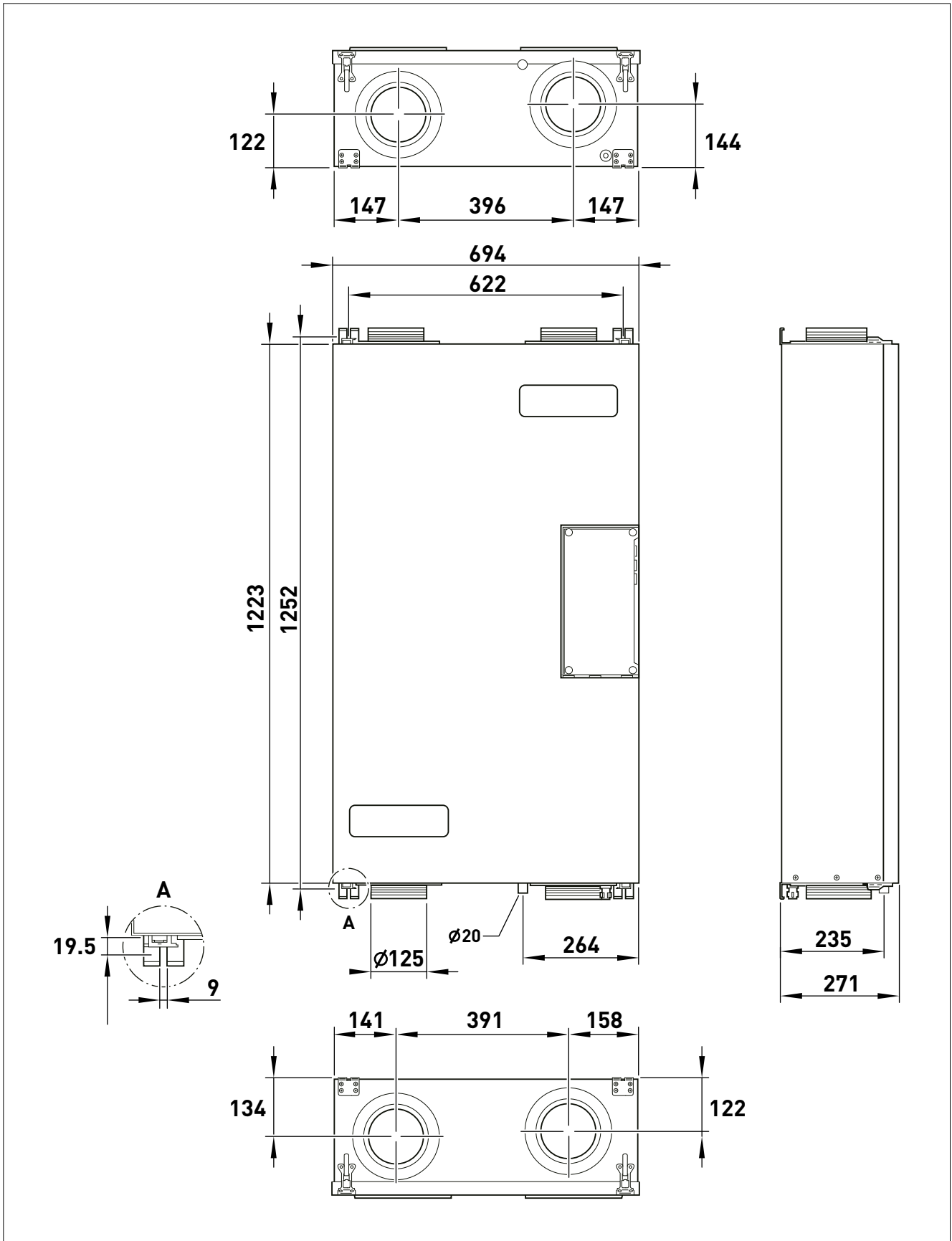
	Factory setting
Fan speed V1	Humidity protection (40%)
Fan speed V2	Reduced ventilation (70%)
Fan speed V3	Nominal air (100%)
Intensive ventilation	Intensive ventilation (130%)

### 4.5. SERIAL NUMBER



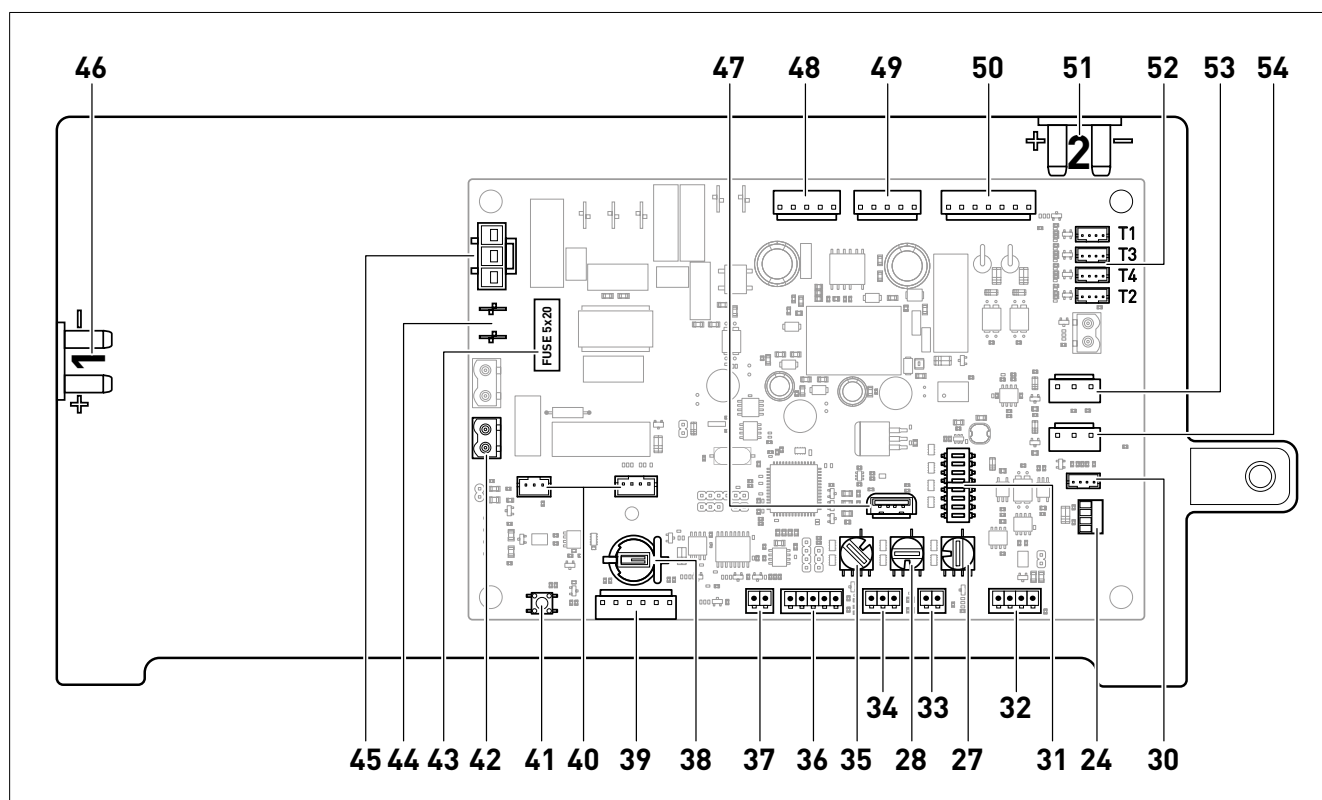
The serial number is located on the nameplate next to the condensate connection (9).

#### 4.6. DIMENSIONS





#### 4.7. DIAGRAM MAIN CIRCUIT BOARD



- |   |   |
|---|---|
| <b>30</b> Connection VOC sensor (optional accessory)  | <b>39</b> Connection preheating battery (optional accessory)  |
| <b>24</b> Connection control panel  | <b>40</b> Connection ServoFlow Kit (optional accessory)   |
| <b>31</b> Dipswitches for adjusting activating/adjusting the unit parameters  | <b>41</b> Reset (factory setting)   |
| <b>32</b> Modbus RTU connection / Connection for communication module SPCM (optional accessory)                               | <b>42</b> Potential-free contact  |
| <b>27</b> Potentiometer for adjusting the extract air volume of the unit (factory setting Position 4)                         | <b>43</b> Microfuse F5L250V   |
| <b>33</b> External boost contact  | <b>44</b> Harmonics filters   |
| <b>28</b> Potentiometer for adjustment of the ratio of flow rates between supply and extract air (factory setting Position 0) | <b>45</b> Voltage supply preheating battery   |
| <b>34</b> Connection 0-10 V signal (optional accessory)   | <b>46</b> Connection differential pressure gauge for adjustment of extract airflow rate               |
| <b>35</b> Potentiometer for target setting of humidity sensor or VOC sensor (optional accessory) (factory setting Position A) | <b>47</b> USB connection for software updates   |
| <b>36</b> Connection pressure sensor for constant pressure mode   | <b>48</b> Voltage supply M1   |
| <b>37</b> Contact EMERGENCY SHUTDOWN  | <b>49</b> Voltage supply M2   |
| <b>38</b> Button cell type CR1220 for storing time  | <b>50</b> Connection summer bypass  |
|   | <b>51</b> Connection differential pressure gauge for adjustment of conditions flow rates (supply air) |
|   | <b>52</b> Connection temperature/humidity sensors   |
|   | <b>53</b> Control signals M2  |
|   | <b>54</b> Control signals M1  |

## 5. INSTALLATION (SPECIALISTS)



### CAUTION

The ventilation system may only be installed by qualified specialists, otherwise there is risk of injury or damages.



### CAUTION

In order to protect the system from dirt and humidity, all openings must be sealed, e.g. using a construction protector, until commissioning.

### NOTE

The following representations of the ventilation system are schematic drawings. For all maintenance tasks, the device is installed immovably on the ceiling or wall.

### 5.1. INSTRUCTIONS ON INSTALLATION

- The ventilation system can be installed on the ceiling or on the wall.
- As far as construction, the shell must be finished and the entire wall structure of the interior and exterior walls must be completed.
- During construction, the core drill holes in the exterior wall for the outdoor air and outgoing air lines must be made.
- The ventilation system can be installed in dry rooms above +12°C, for example in the utility room.

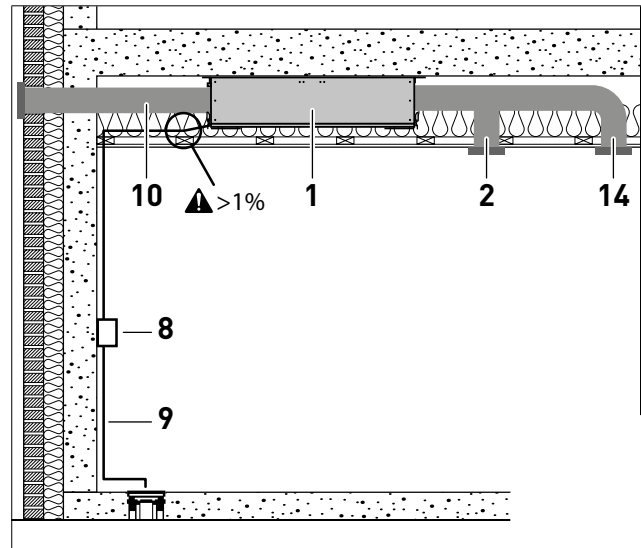
### NOTE

If the temperature in the installation area drops below +12°C, then in individual cases condensate may form on the device casing.

- The ventilation system is placed so that the outdoor air and outgoing air lines can be conducted out of the building by the shortest path.
- The ventilation system must be installed with noise coupling.
- The ventilation system must be easily accessible for all maintenance and repair work. During construction, a sufficiently large inspection door must be provided for this, see page 13.
- Start operation of the ventilation system only after completion of all installation tasks.

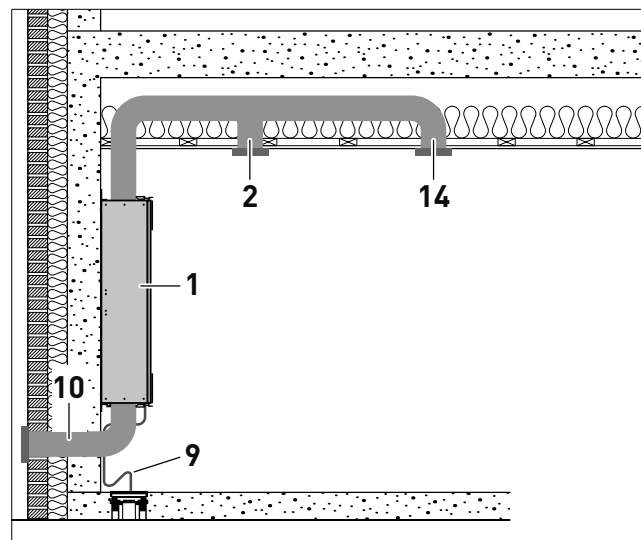
## 5.2. INSTALLING VENTILATION SYSTEM NEMBUS 210

### 5.2.1. Installation position ceiling installation



- 1 Ventilation system NEMBUS 210
- 2 Extract ductwork
- 8 Dry siphon (optional accessory)
- 9 Condensate duct
- 10 Outdoor air duct work
- 14 Supply air duct work

### 5.2.2. Installation position wall installation

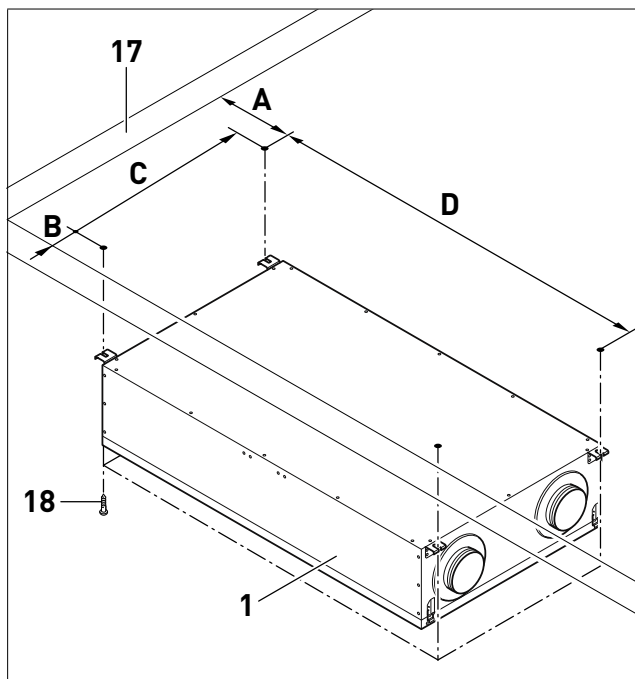


- 1 Ventilation system NEMBUS 210
- 2 Extract ductwork
- 9 Condensate duct
- 10 Outdoor air duct work
- 14 Supply air duct work

### NOTE

The outdoor air and extract air connection must be always be connected on the bottom in the wall mounted units of the NEMBUS 210 (1).

### 5.2.3. Ceiling installation

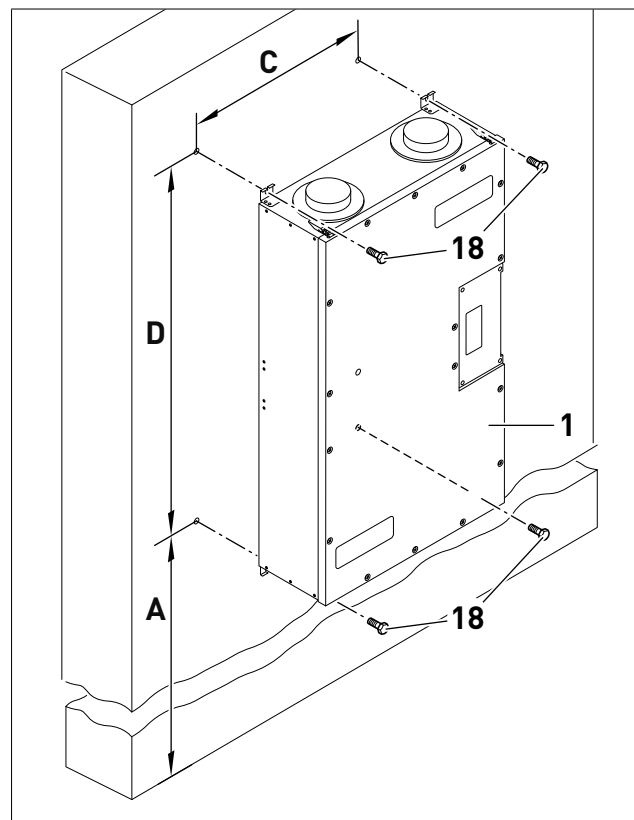


1. Drill holes.
  - A** min. 400 mm
  - B** min. 200 mm
  - C** 625 mm
  - D** 1253 mm
2. Position ventilation system (1) with the outside air and extract air side toward the exterior wall (17) and fasten with screws (18).

#### NOTE

Screws (18) are not included in items delivered. Select screws (18) with appropriate dowels for the brickwork.

### 5.2.4. Wall installation



1. Drill holes.
  - A** 390 mm (including space needed for condensate connection)
  - C** 625 mm
  - D** 1253 mm
2. Fasten ventilation system (1) with screws (18).

#### NOTE

Screws (18) are not included in items delivered. Select screws (18) with appropriate dowels for the brickwork.

### 5.2.5. Installation of outdoor air and extract air ducts

**NOTE**

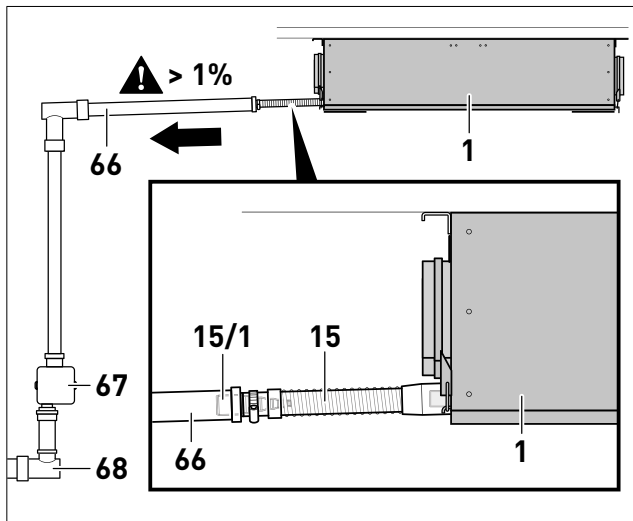
It is indispensable install insulated duct on the outdoor air and extract air in order to avoid condensation.

### 5.2.6. Connect condensate duct

**NOTE**

The following description is a suggestion for installation of the condensate duct.

#### Ceiling installation

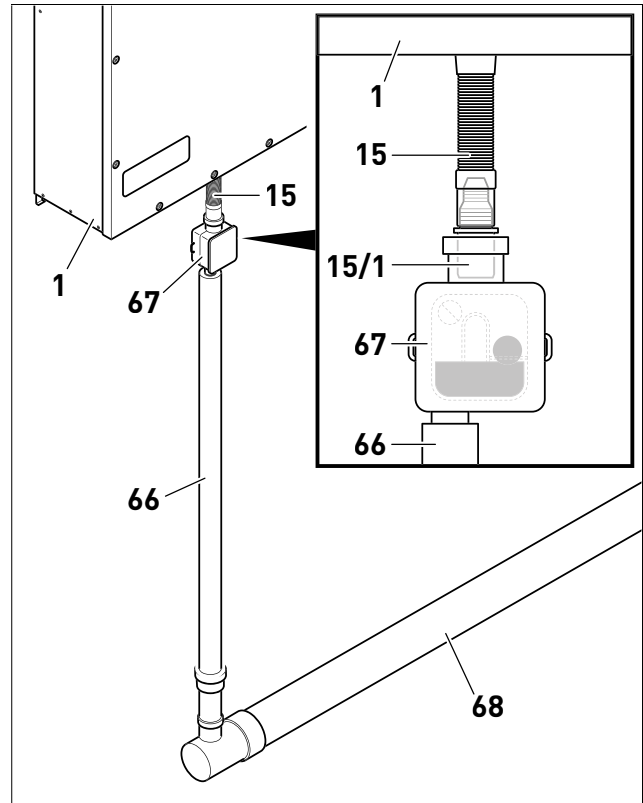


**CAUTION**

When installing the condensate line, a gradient  $> 1\%$  must necessarily be observed.

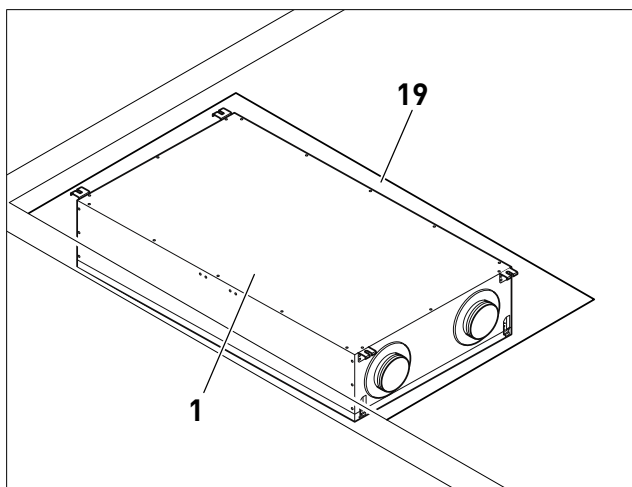
1. Fasten flexible connection tube (15) with connection end DN23 onto the ventilation system (1) with a standard hose clamp, e.g. 12-20 mm.
2. Attach standard waste pipe DN32 (66) to the connection nipple (15/1).
3. Insert the flexible connection hose (15) into the shortened connection nipple (15/1), and fasten with a standard hose clamp, e.g. 23-35 mm.
4. Connect standard waste pipe DN32 (66) with dry siphon (67, reference 5800015700 DSI) and insert it into the waste water line (68).

#### Wall installation



1. Fasten flexible connection hose (15) with the connecting end DN23 onto the ventilation system (1) with the standard hose clamp, e.g., 12-20 mm.
2. Insert dry siphon (optional) (67) with connection nipple (15/1) into the flexible connection hose (15), and fasten with the standard hose clamp, e.g., 23-35 mm.
3. Connect standard waste pipe DN32 (66) with the dry siphon (optional) (67) and insert into the waste water line (68).

### 5.2.7. Inspection opening (created during construction)



During construction an inspection opening must be foreseen for maintenance and repair work (19).

The inspection opening (19) must be made centrally for the ventilation system (1). The minimum size of the inspection opening should be 750 x 1400 mm.

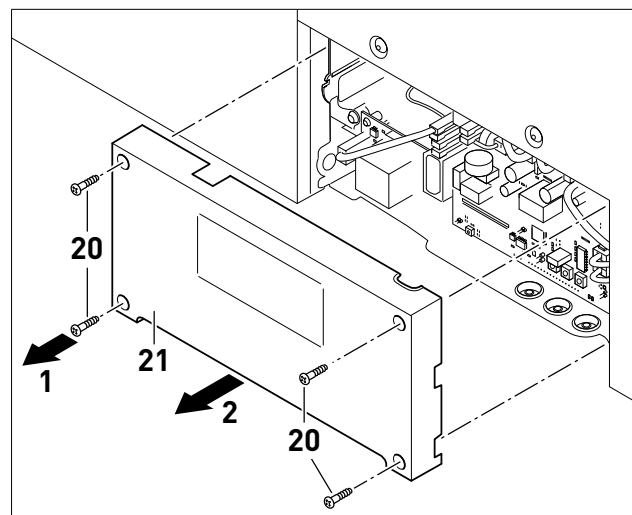
#### NOTE

When installing the ventilation system on the wall, the procedure for the inspection opening is analogous.

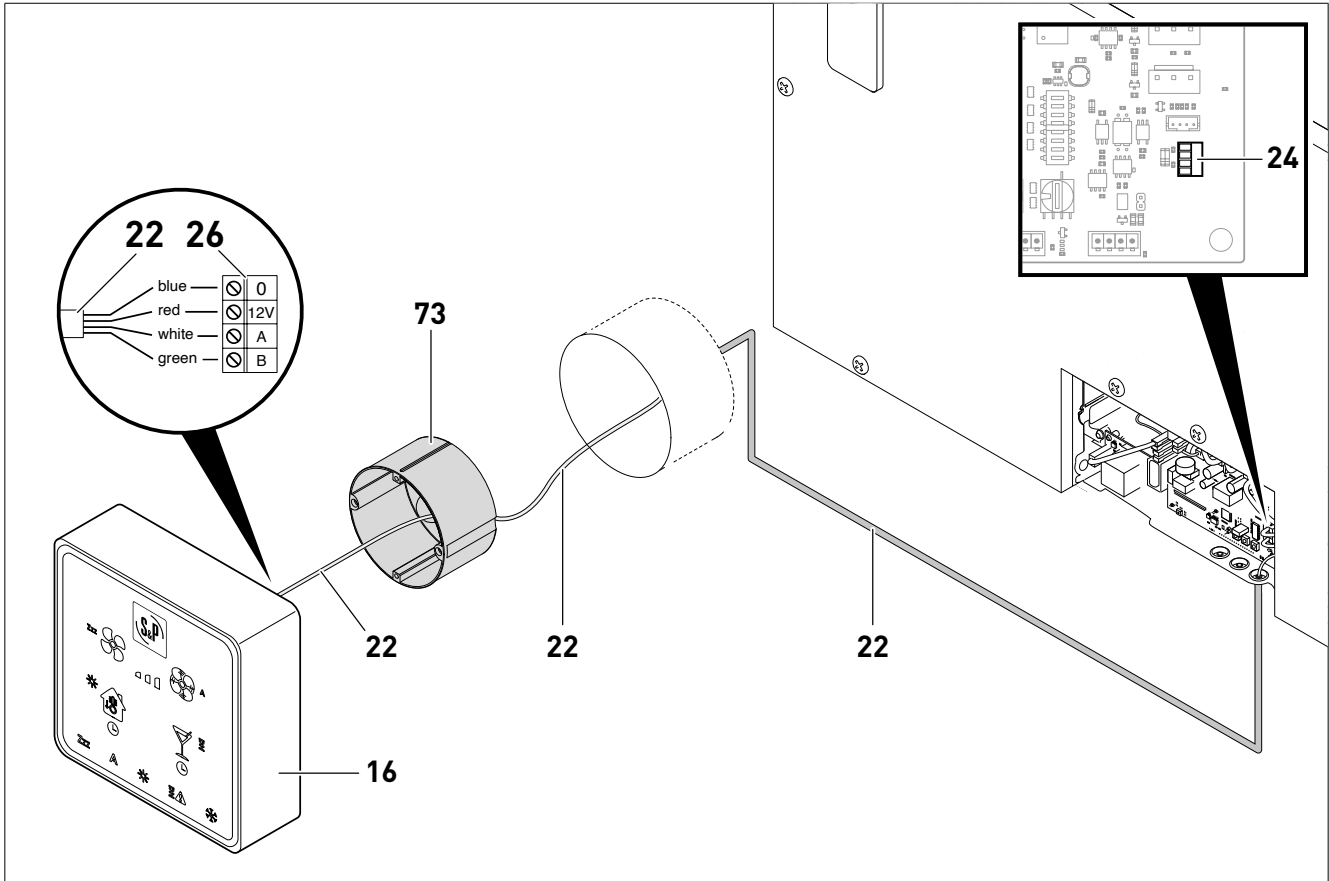
### 5.3. CONNECTION CONTROL PANEL NEMBUS-FB

#### NOTE

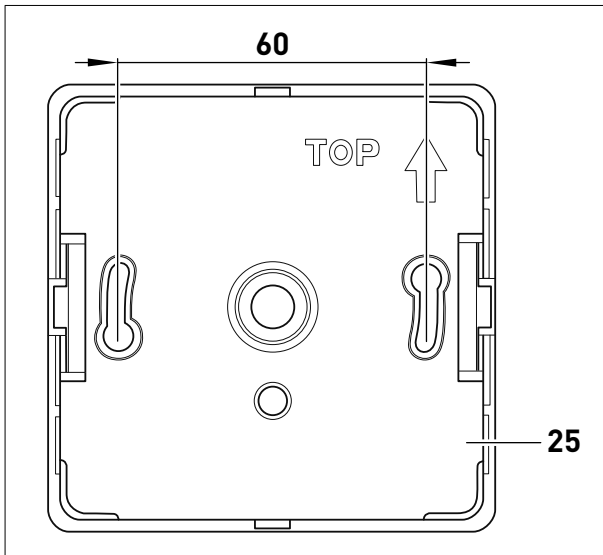
The control panel can be installed on the wall (surface-mounted). Maximum cable length is 30 m (recommended cable type: twisted pair shielded cable 4x0,22 mm<sup>2</sup>) to connect with the remote control.



1. Remove screws Torx 10 (20) (Arrow 1).
2. Remove cover (21) (Arrow 2).



3. Connect cable [22] from the control panel [16] to the connection [24].



4. Drill holes for cover of control panel [25] at the intended installation location.
5. Conduct cable [22] from the wall opening into the flush-mounted box [73].

**NOTE**

Flush-mounted box [73] is not included in the items delivered and must be provided on construction.

6. Insert flush-mounted box [73] in wall opening.
7. Connect cable [22] to plug [26].
8. Insert control panel [16] into flush-mounted box [73] and screw.

**NOTE**

No screws are included in the delivered parts. Select screws with dowels appropriate for the brickwork.

9. Connect ventilation system to power supply.

## 6. COMMISSIONING (SPECIALISTS)



### CAUTION

Only qualified specialists may commission the ventilation system, otherwise there is risk of injury or damage.

### 6.1. INSTRUCTIONS FOR COMMISSIONING

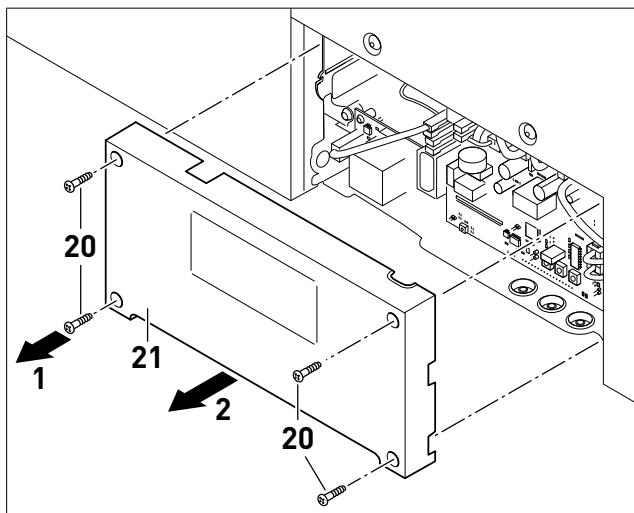
- Before commissioning, the system including all air lines must be checked for possible pollution residues or foreign bodies and cleaned.
- All electrical safety features are properly connected and configured and ready for operation.

### 6.2. ADJUSTING FLOW RATES

The flow rates can be set according to curves or according to differential pressure measured at the differential pressure taps.

The condensate duct must be installed before adjusting the flow rates. Check that the siphon has been filled with water or that there is a dry siphon installed (optional accessory - 5800015700). There must be a water seal at the condensate connection. Check this and secure it.

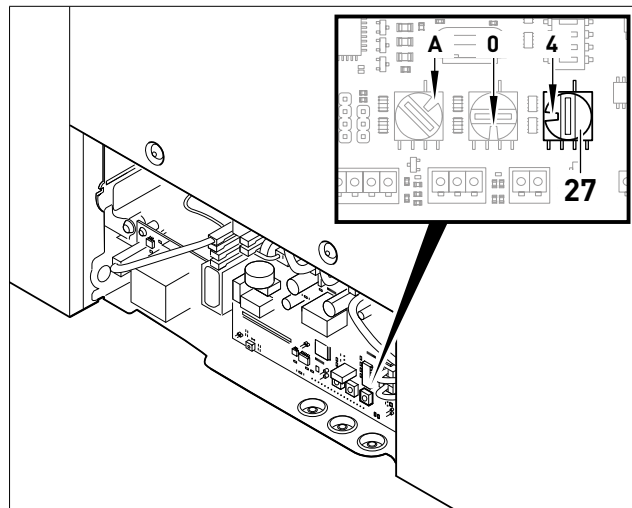
#### 6.2.1. Set nominal airflow rate (extract air) according to curves



1. Remove screws Torx 10 (20) (Arrow 1).
2. Remove cover (21) (Arrow 2).
3. Set up power supply of the ventilation system.
4. Turn on fan speed V3 on the control panel, see page 30.

### NOTE

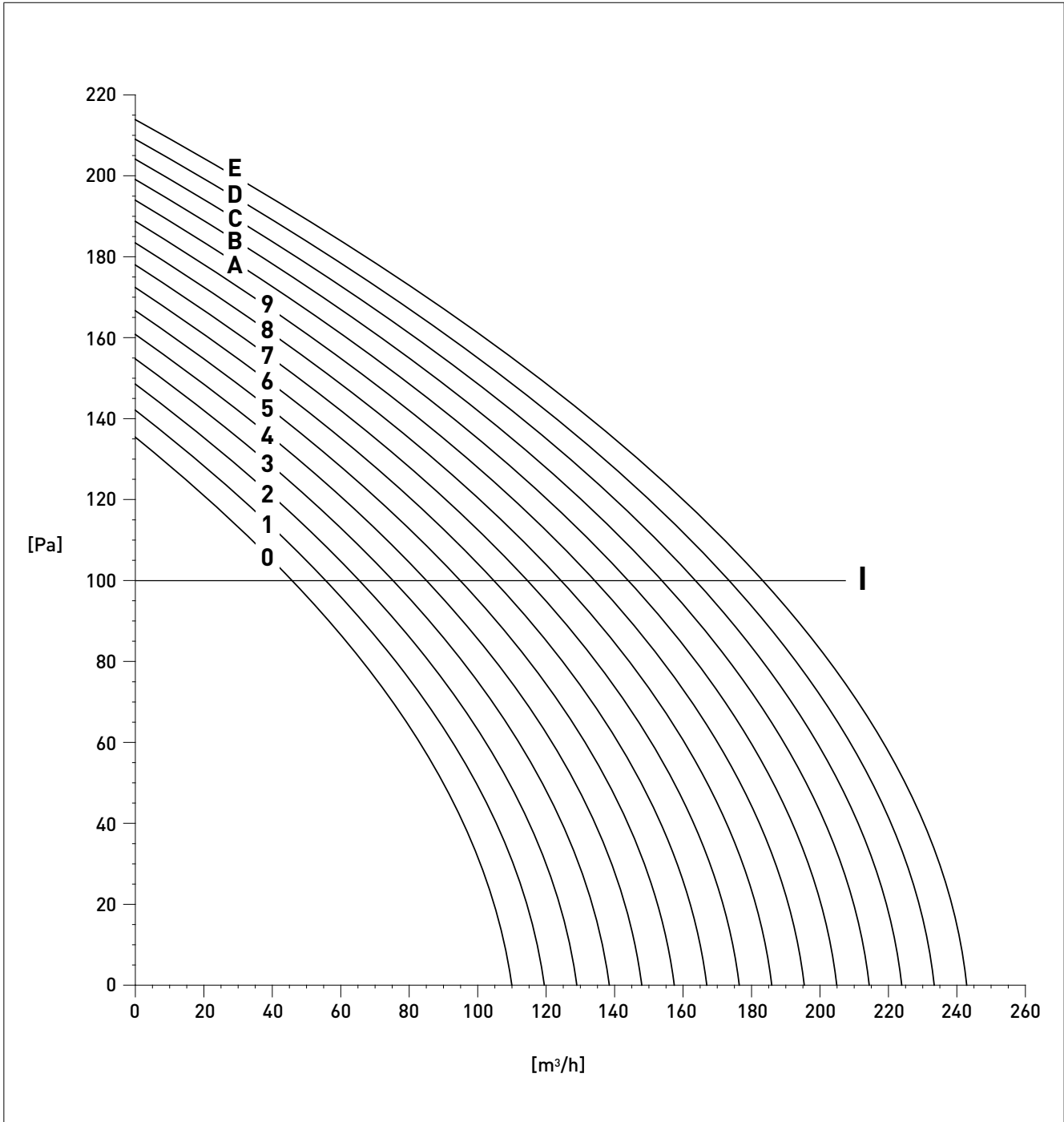
The below curves and adjustments refers always on adjustments on speed V3!



5. The nominal airflow volume (extract air) can be set in accordance with the specifications using the curves with the potentiometer (27), see diagram on page 16.

In the factory setting, the potentiometer (27) is at Position 4. It must be set to the value of the curve that is closest to the intersection point between the nominal airflow rate needs and static pressure lost. Then, the extract and supply airflows must be checked and if needed a readjustment must be made with the potentiometer (27) (extract air) and the potentiometer (28) (supply air).

As an alternative, the flow rates can be set by measuring the differential pressure or by the constant airflow module ServoFlow (optional accessory).



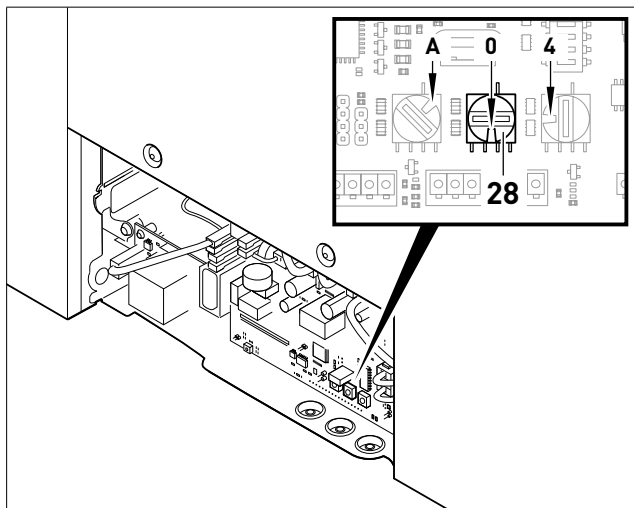
- [Pa]** Pressure loss
- [m³/h]** Nominal flow rate (extract air)
- I** System operating pressure



### Adjustment flow rate

The airflow balance between supply and extract air can be adjusted. The supply airflow rate is adapted on a percentage basis to the extract airflow rate at the potentiometer (28), see table below.

S&P recommends a slight underpressure in the house e.g. less supply airflow than extract airflow.



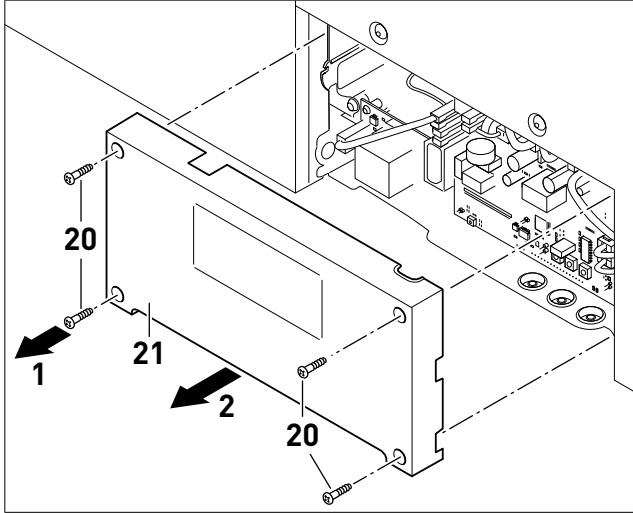
Set potentiometer (28) to the required value (factory setting Position 0).

Position potentiometer (28)	8	9	A	B	C	D	E	F	0	1	2	3	4	5	6	7
Ratio supply air/extract air	-32%	-28%	-24%	-20%	-16%	-12%	-8%	-4%	0	+4%	+8%	+12%	+16%	+20%	+24%	+28%



### 6.2.2. Adjusting flow rate with differential pressure gauge

S&P recommends a slight underpressure in the house e.g. less supply airflow than extract airflow.

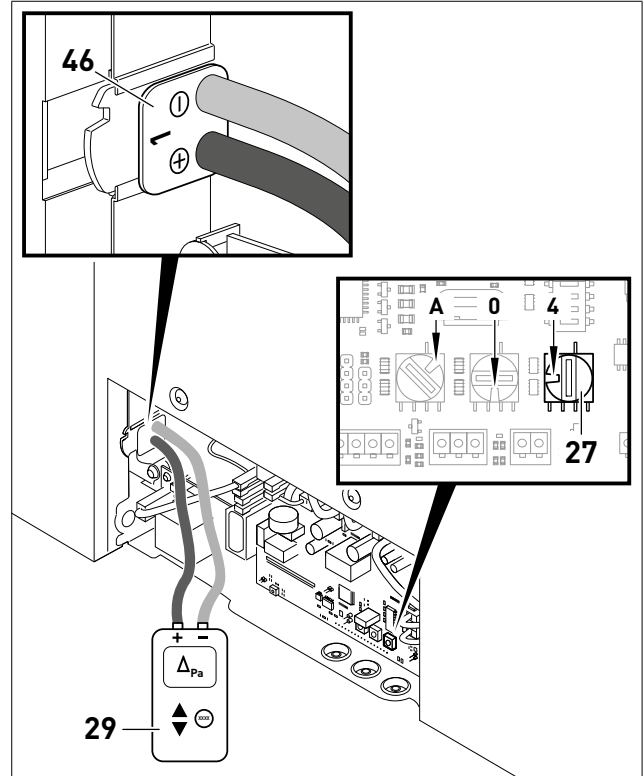


1. Lose screws Torx 10 [20] (Arrow 1).
2. Remove cover [21] (Arrow 2).

#### NOTE

The first step is always to set the airflow rate for extract air.

3. Set up power supply for the ventilation system.
4. Turn on fan speed V3 on the control panel, see page 30.



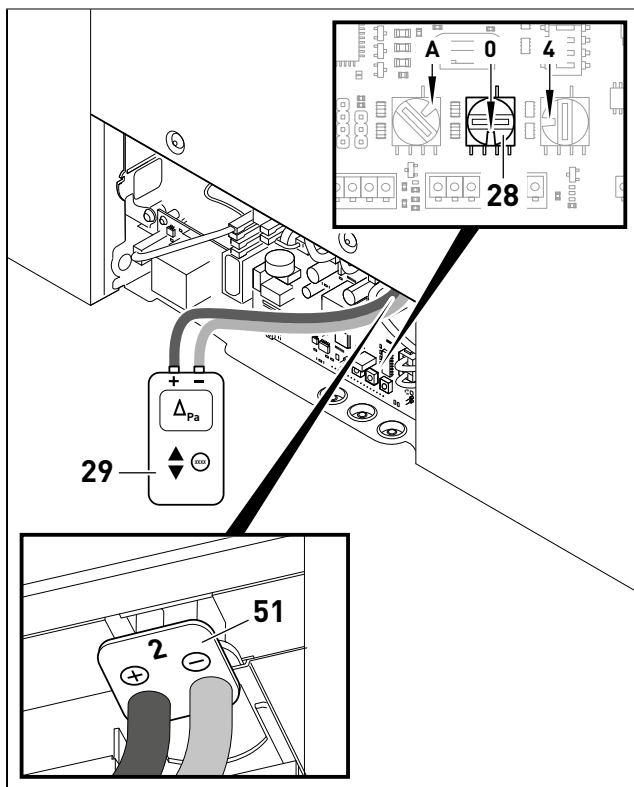
5. Connect differential pressure gauge [29] to the differential pressure connecting piece 1 [46] and take a reading of the differential pressure [Pa]. Pay attention to the correct connection of + and - (+/+ and -/-).
6. Turn potentiometer [27] until the desired differential pressure (= airflow rate) is displayed on the differential pressure gauge [29]. Take value from the following table.

#### Example:

1. The desired airflow rate (extract air) is 110 m<sup>3</sup>/h.
2. Look for the value 110 in the table.
3. Turn potentiometer [27] until 22 Pa is displayed on the differential pressure gauge [29].

Nominal airflow rate (extract air) [m <sup>3</sup> /h]	Differential pressure connecting piece 1/ potentiometer [27] [Pa]
90	15-16
100	18-20
110	22-23
120	25-28
130	31-34
140	37-39
150	41-43
160	45-47

### Adjust supply flow rate



1. Connect differential pressure gauge (29) at the differential pressure socket 2 (51), and take differential pressure reading [Pa]. Be careful with the correct connection of + and - (+/+ and -/-).
2. Turn the potentiometer (28) until the desired differential pressure is displayed on the differential pressure gauge (29). You can take the value from the table below.

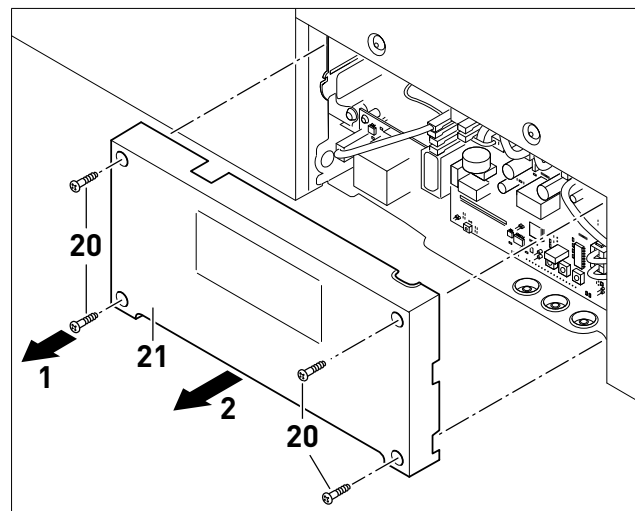
#### Example:

1. The desired supply airflow rate is 105 m<sup>3</sup>/h.
2. Look for the value 105 in the table.
3. Turn the potentiometer (28) until the differential pressure gauge (29) displays 6.6 Pa.

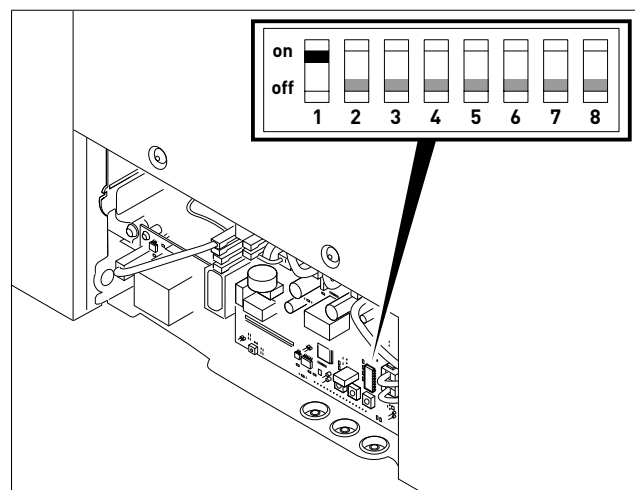
Supply airflow rate [m <sup>3</sup> /h]	With preheater. Differential pressure connecting piece 2 / potentiometer (28) [Pa]
90	10-11
100	12-13
110	14-15
120	16-17
130	19-20
140	23-25
150	27-29
160	31-33

### 6.3. ENABLING/DISABLING HUMIDITY SENSOR FOR AUTOMATIC MODE

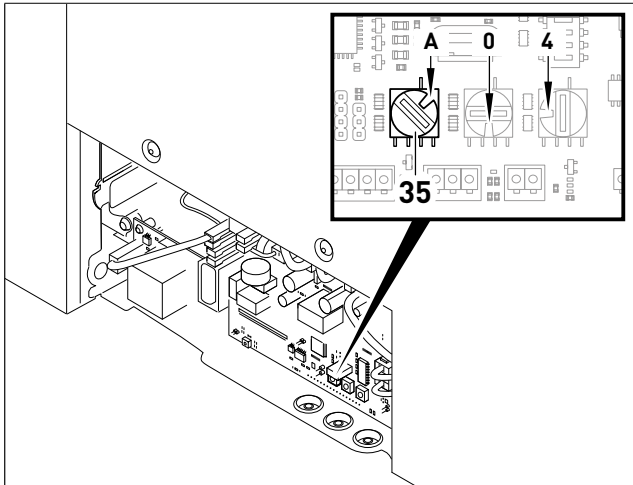
In the automatic mode, the ventilation system regulates the speed using the value set for relative humidity in the extract air. To this end, the humidity sensor must be activated (factory setting: humidity sensor activated).



1. Disconnect power supply from ventilation system.
2. Remove screws Torx 10 (20) (Arrow 1).
3. Remove covering (21) (Arrow 2).



4. Enable (factory setting): Set DIP switch 1 to "on"  
Disable: Set DIP switch 1 to "off"



5. Adjust potentiometer (35) according to the extract air humidity set point, see table below (factory setting Position A).


The upper target value for extract air humidity can be adjusted using the potentiometer (35) between 60-90% (factory setting 80%, Position A).

The lower target value is permanently set to 45%. If the humidity is in the range set, the device adjusts the speed proportionally according to the humidity. If the humidity is lower than 45% the unit will run in the lowest speed (humidity protection, V1). When the humidity exceeds the upper target value the unit will run on speed V3 (nominal airflow).

Extract air humidity (%)	Position potentiometer (35)
60	0
62	1
64	2
66	3
68	4
70	5
72	6
74	7
76	8
78	9
80	A (Factory setting)
82	B
84	C
86	D
88	E
90	F

6. Screw on cover (21) firmly with screws Torx 10 (20).

7. Set up power supply for ventilation system.

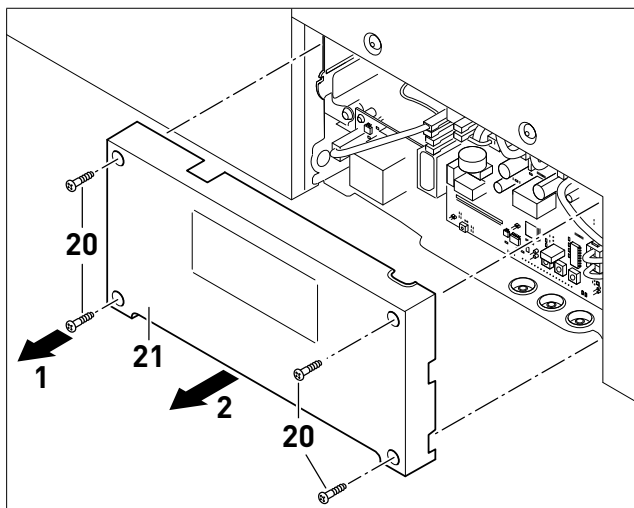
8.  In order to set the ventilation system to the humidity -controlled mode, keep symbol pressed for 5 seconds. When the automatic mode (humidity control) is activated, the A symbol lights up on the bottom of the control panel.

#### 6.4. ENABLING/DISABLING VOC SENSOR (OPTIONAL ACCESSORY) FOR AUTOMATIC MODE

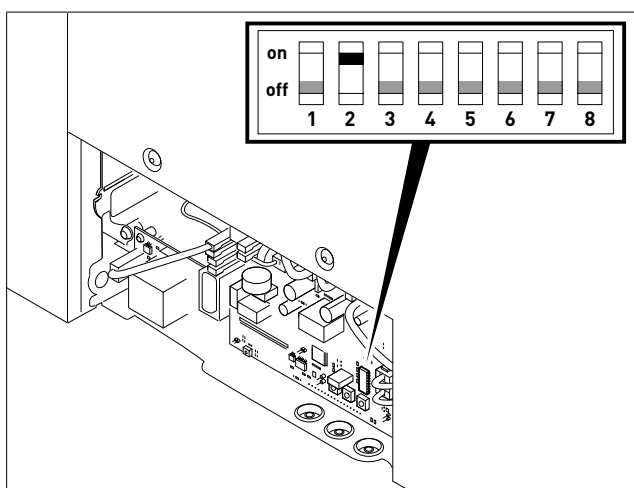
In automatic mode, the ventilation system regulates the speed in dependence of the concentration of pollutants measured in the extract air. For this purpose, a VOC sensor NEMBUS-VOC (optional accessory) must be installed, see separate operating and installation instructions. The VOC upper target value is set using the potentiometer (35) and can be set from 1100 to 2000 ppm.

The lower target value of 450 ppm is permanently programmed. The upper target value has been pre-set to 1700 ppm at the factory.

If the upper target value is exceeded, then the ventilation system runs with nominal air (V3). If the system falls down of the lower target value, then the system runs in the humidity protection speed (lowest speed, V1).



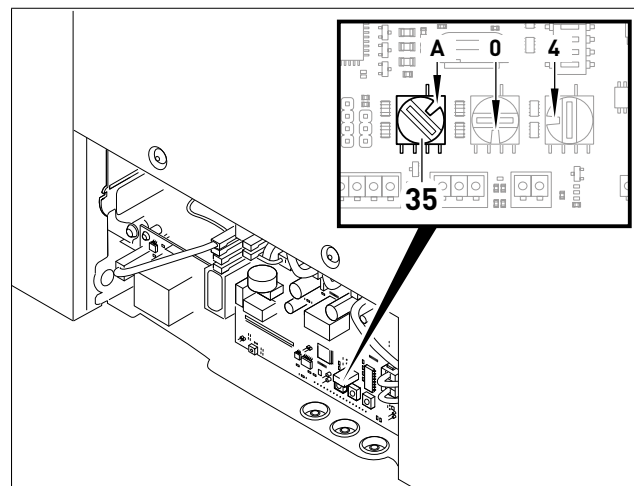
1. Disconnect power supply from ventilation system.
2. Remove screws Torx 10 [20] (Arrow 1).
3. Remove cover [21] (Arrow 2).



4. Enable: Set DIP switch 1 to "on"  
Disable: Set DIP switch 1 to "off"


**NOTE**

If several modes are activated, then the mode with the highest priority is carried out. Position of the potentiometer (35) is always identical for both functions, humidity and VOC.



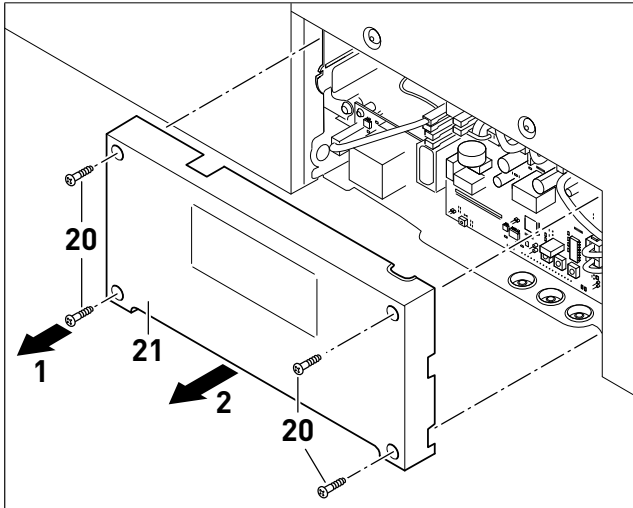
5. Adjust the potentiometer (35) according to the target value of the maximum concentration of pollutants in the extract air, see the following table (factory setting Position A).

Pollutant concentration (VOC) (ppm)	Position potentiometer (35)
1100	0
1160	1
1220	2
1280	3
1340	4
1400	5
1460	6
1520	7
1580	8
1640	9
1700	A (Factory setting)
1760	B
1820	C
1880	D
1940	E
2000	F

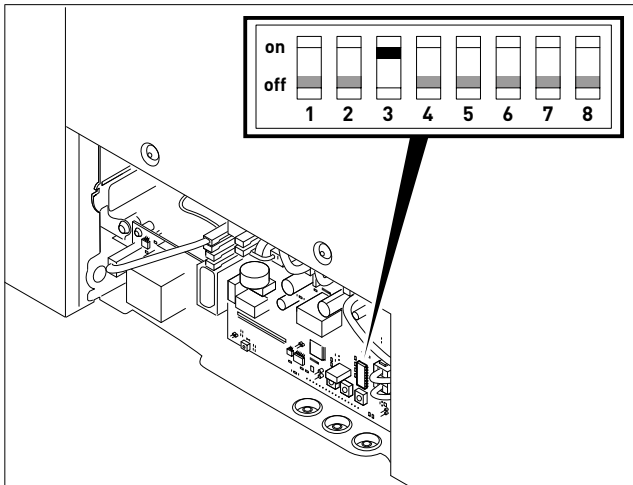
6. Screw on cover (21) firmly with screws Torx 10 (20).
7. Set up power supply for ventilation system.
8.  In order to set the ventilation system to the VOC mode, keep the symbol pressed for 5 seconds.  
When the automatic mode (VOC mode) is activated, the A symbol on the bottom of the control unit lights up.

## 6.5. ENABLING/DISABLING 0-10V INPUT (external sensor) FOR AUTOMATIC MODE

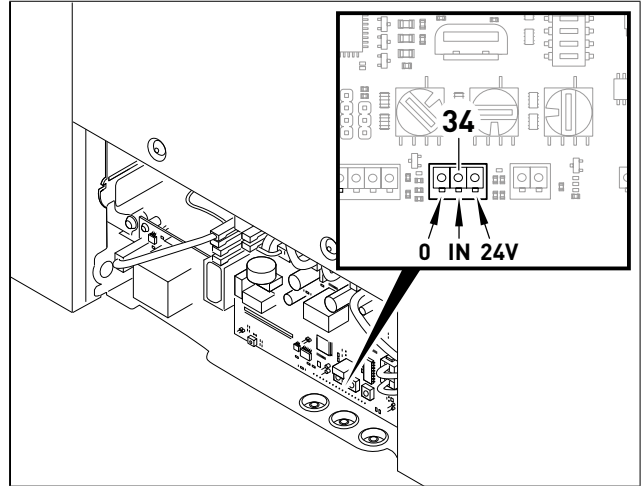
In automatic mode, the air volume in the ventilation system is regulated by an external 0-10 V signal. The input signal 0 V corresponds to the humidity protection flow rate. The input signal 10 V corresponds to the nominal airflow rate.




1. Disconnect power supply from the ventilation system.
2. Remove screws Torx 10 [20] (Arrow 1).
3. Remove cover [21] (Arrow 2).



4. Set DIP switch 3 to "on."

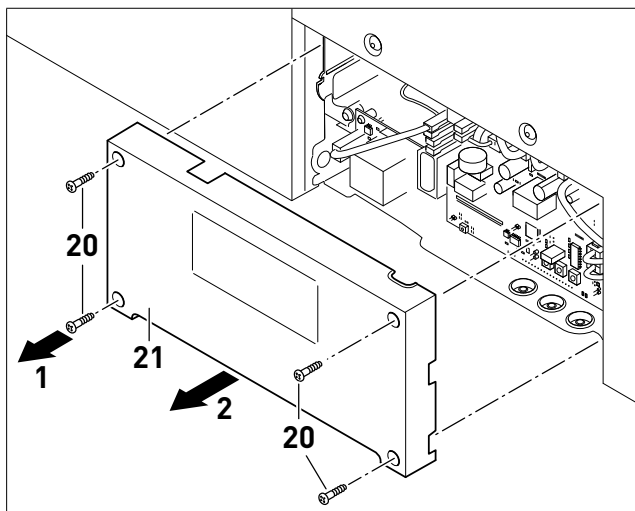


5. Connect external sensor (e.g. CO<sub>2</sub>, humidity, VOC) or control signal 0-10 V from an external control to the connection point [34].
6. Screw on cover [21] firmly with screws Torx 10 [20].
7. Set up power supply for ventilation system.
8.  In order to set the ventilation system to the 0-10 V signal-controlled mode, keep the symbol pressed for 5 seconds. When the automatic mode (0-10 V-controlled mode) is activated, the A symbol on the bottom of the control unit lights up.

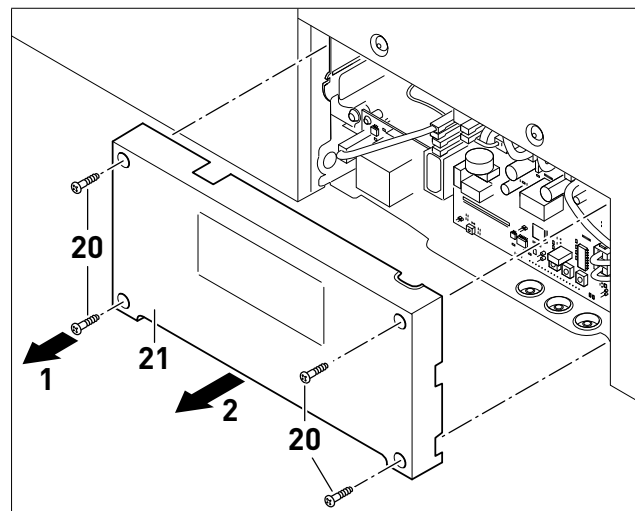
## 6.6. ACTIVATING FIREPLACE MODE

To avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances, the fireplace mode must be activated. When activating, S&P recommends that you also install a pre-heater NEMBUS 210-PH (optional accessory) in order to ensure continuous operation of the device.

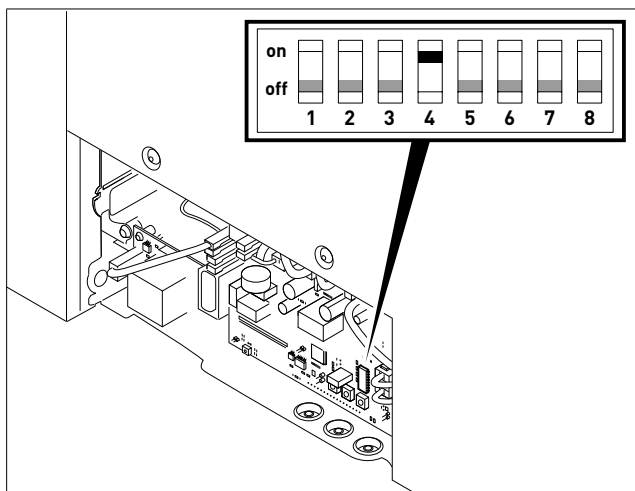
If there is risk of freezing, then the ventilation system is shut down through the fireplace mode for 2 hours. When this time has elapsed, the device switches itself on and checks the conditions. If the conditions have not changed, the device shuts down again for 2 hours. This cycle repeats itself until conditions for continuous operation have been re-established.



1. Disconnect power supply from the ventilation system.
2. Remove screws Torx 10 [20] (Arrow 1).
3. Remove cover [21] (Arrow 2).



1. Disconnect power supply from the ventilation system.
2. Remove screws Torx 10 [20] (Arrow 1).
3. Remove cover [21] (Arrow 2).



4. Set DIP switch 4 to "on."
5. Screw on cover [21] firmly with screws Torx 10 [20].
6. Set up power supply for ventilation system.

### 6.7. EMERGENCY SHUTDOWN CONTACT

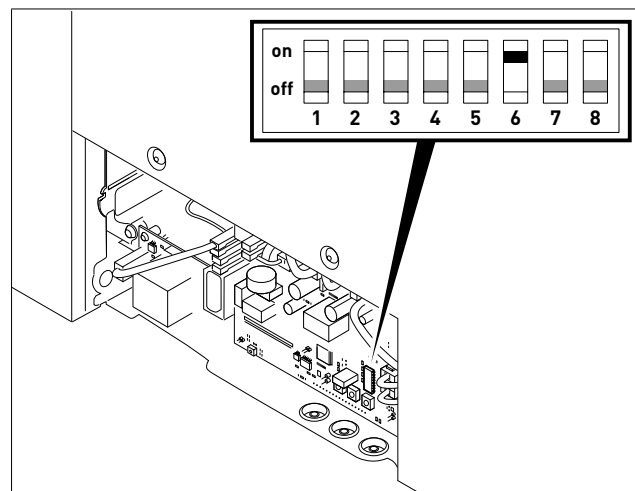
This contact can be used to shut down the ventilation system in an emergency case.

#### NOTE

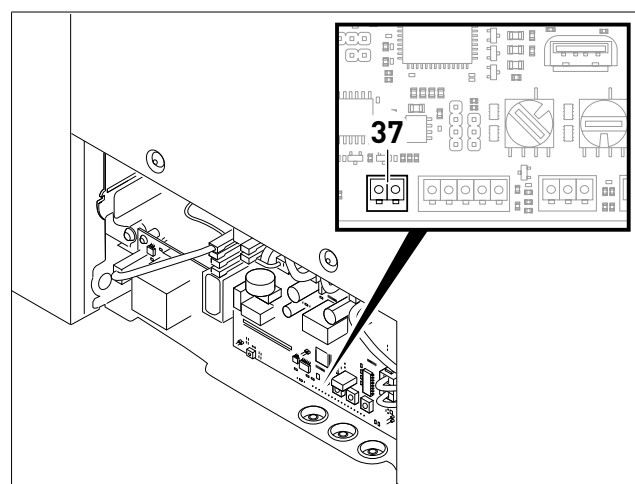
As soon the system has been triggered using this contact, the units has to be reset disconnecting the unit from the power supply.

The switching function that must be set must be adapted to the components to be connected (normally open contact/normally closed contact). The contact is set using the DIP switch 6, as follows.

Factory setting: "off" = normally open contact.



4. Reset DIP switch 6 to "on" = normally closed contact.

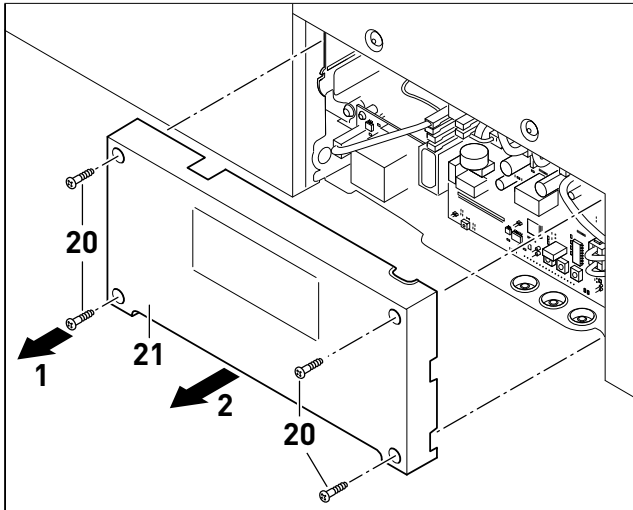


5. Connect components to be connected (smoke alarm, etc.) to the connection point [37].
6. Screw on cover [21] firmly with screws Torx 10 [20].
7. Set up power supply for ventilation system.

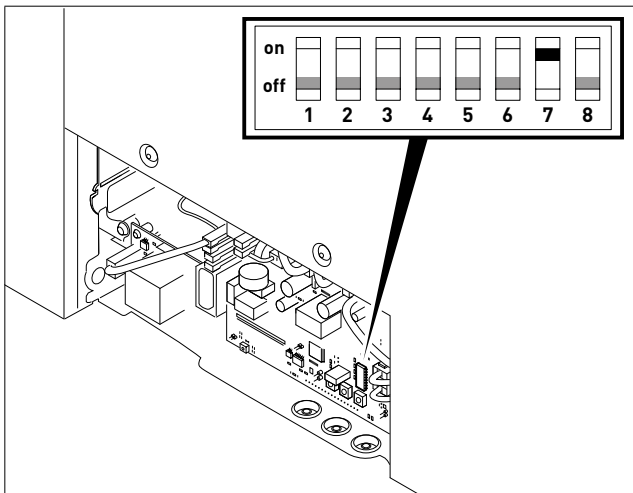
## 6.8. ACTIVATING FAN SPEED BOOST VENTILATION

This contact can be used for activating the fan speed intensive ventilation (boost 130%, V4) using an external switch. You can use DIP switch 7 to set whether the contact functions as normally open contact or normally closed contact.

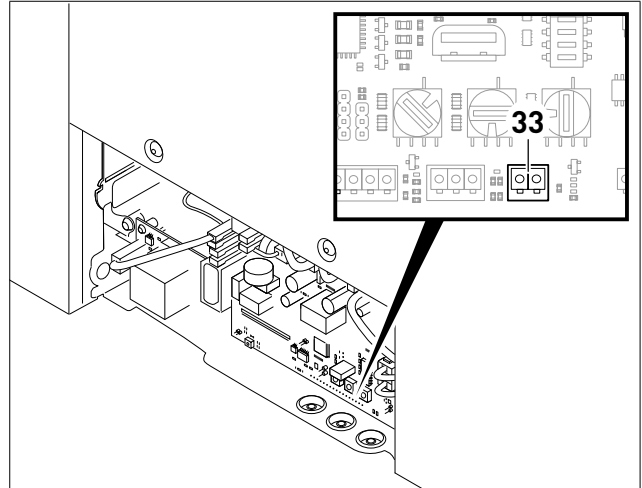
Factory setting: "off" = normally open contact.



1. Disconnect power supply from ventilation system.
2. Remove screws Torx 10 (20) (Arrow 1).
3. Remove covering (21) (Arrow 2).



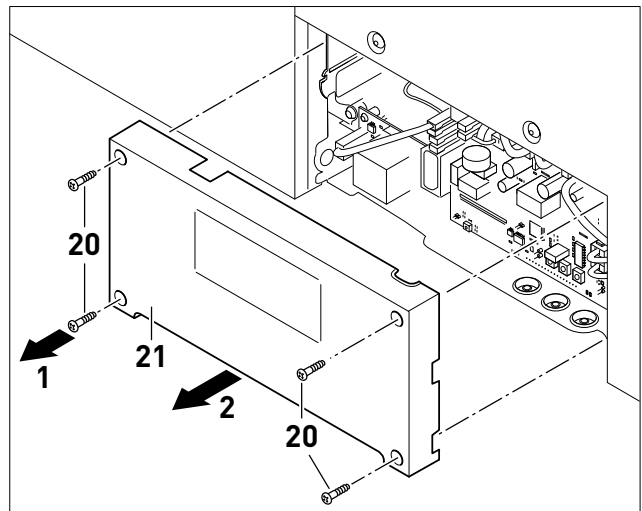
4. Reset DIP switch 7 to "on" = normally closed contact.



5. Connect switch at connection point (33).
6. Screw on cover (21) firmly with screws Torx 10 (20).
7. Set up power supply for ventilation system.

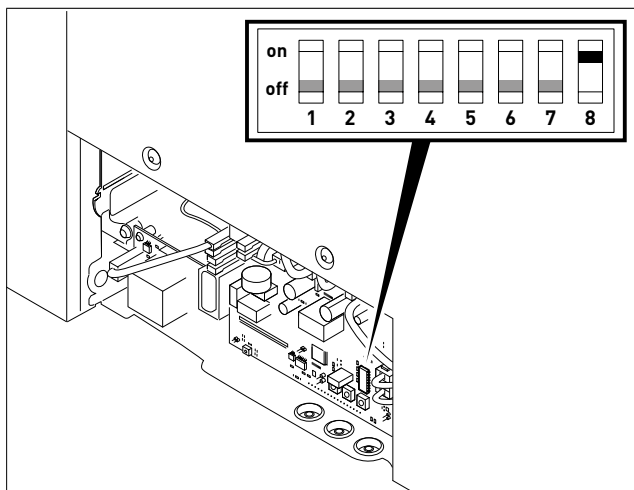
## 6.9. ACTIVATING WEEKLY PROGRAMME

In automatic mode the ventilation system regulates the speed using the weekly programme that has been set, see page 26.



1. Disconnect power supply from ventilation system.
2. Remove screws Torx 10 (20) (Arrow 1).
3. Remove cover (21) (Arrow 2).





4. Set DIP switch 8 to "on."


**NOTE**

When using the weekly programme 3, see page 27, one of the sensors must be activated:

- Set humidity sensor (integrated as standard) = DIP switch 1 to "on."
- Set VOC sensor (optional accessory) = DIP switch 2 to "on."
- Set 0-10 V entrance (external signal) = DIP switch 3 to "on."

5. Screw on cover (21) firmly with screws Torx 10 (20).

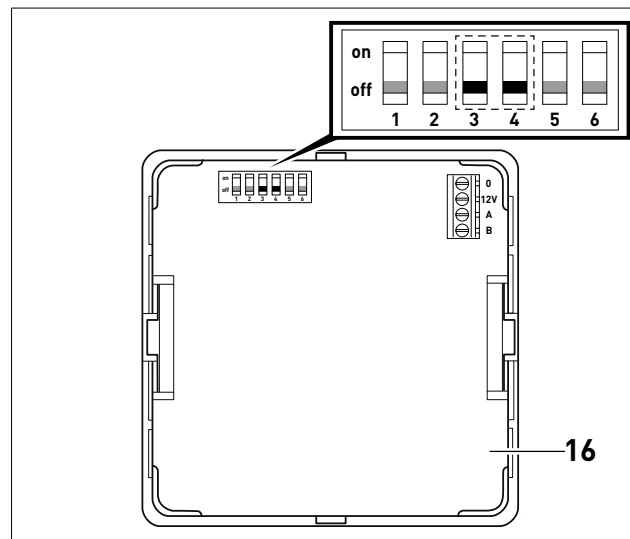
6. Set up power supply for ventilation system.

7.  So that the ventilation system runs with the weekly programme that has been set, keep the symbol pressed for 5 seconds. When the automatic mode is activated (weekly programme), the A symbol lights up below on the control panel.

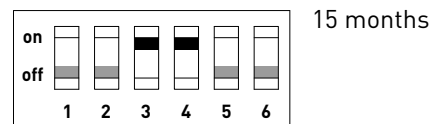
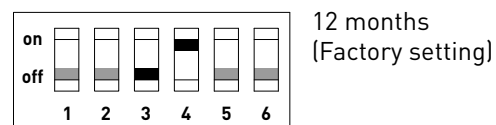
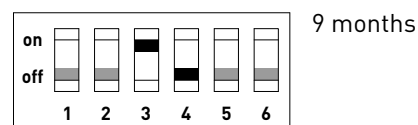
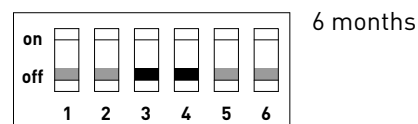
## 7. INDIVIDUAL USER SETTINGS

### 7.1. SETTING TIMER FOR FILTER ALARM

The factory setting for the timer for the filter alarm is 12 months. Changing the filter is highly dependent on the pollution of the outdoor air (e.g. pollen count, construction site activity). The timer for the filter alarm can be set to 6 months, 9 months or 15 months.



1. Remove back cover of control panel (16).
2. Set DIP switch 3 and 4 to desired timer.

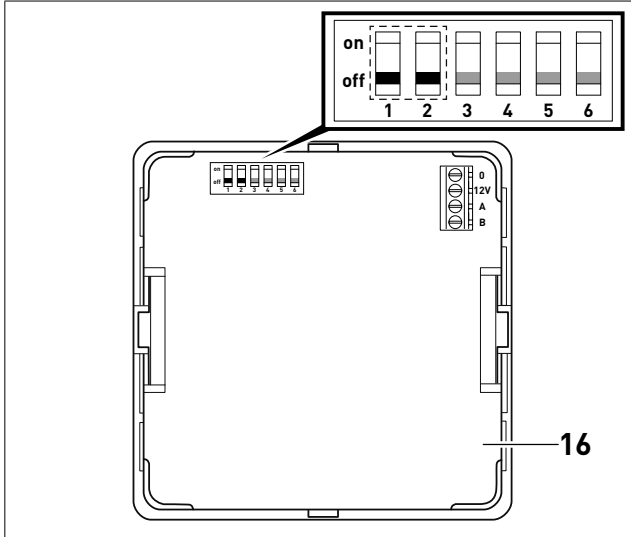




## 7.2. SETTING WEEKLY PROGRAMME

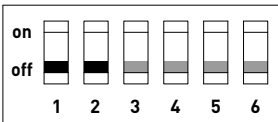
A weekly programme for setting of fan speeds can be set using the DIP switch on the back of the control panel. A total of four weekly programmes are available. The factory setting is weekly programme 1.

Regulation of the ventilation system using a weekly programme must be activated on the DIP switch 8 on the main circuit board, see page 24.



1. Remove back cover of control panel (16), see page 14.
2. Adjust DIP switch 1 and 2 to the desired weekly programme.

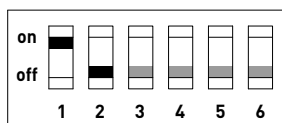
### Weekly programme 1 (factory setting)



		Monday-Friday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
4																									
3																									
2																									
1																									

		Saturday-Sunday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
4																									
3																									
2																									
1																									

### Weekly programme 2



		Monday-Friday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4																									
3																									
2																									
1																									

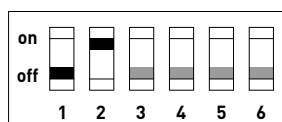
		Saturday-Sunday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4																									
3																									
2																									
1																									

### Weekly programme 3

#### NOTE

For Weekly Programme 3, one of the following sensors must be activated:

- Humidity sensor, see page 19.
- VOC sensor (optional accessory), see page 20.
- 0-10 V Signal (optional accessory), see page 22.

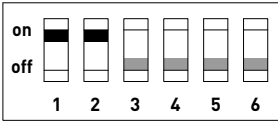


		Monday-Friday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4																									
3							Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	
2																									
1																									

		Saturday-Sunday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
4																									
3							Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	Sensor	
2																									
1																									



**Weekly programme 4**

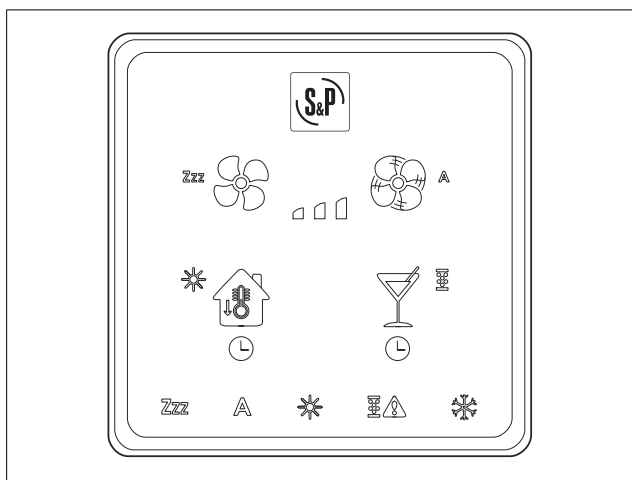


		Monday-Friday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	- 1	- 2	- 3	- 4	- 5	- 6	- 7	- 8	- 9	- 1	- 11	- 12	- 13	- 14	- 15	- 16	- 17	- 18	- 19	- 20	- 21	- 22	- 23	- 24	
4																									
3																									
2																									
1																									

		Saturday-Sunday																							
Time / Speed	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
	- 1	- 2	- 3	- 4	- 5	- 6	- 7	- 8	- 9	- 1	- 11	- 12	- 13	- 14	- 15	- 16	- 17	- 18	- 19	- 20	- 21	- 22	- 23	- 24	
4																									
3																									
2																									
1																									

## 8. OPERATION (USERS)

### 8.1. CONTROL PANEL NEMBUS FB



	Touch for 1 second			
			Boost speed	
			Summer bypass active for 8 hours	
	Touch for 5 seconds		Ventilation system stops for 1 hour	
			In automatic mode, the ventilation system is regulated using an activated sensor or an activated weekly programme.	
			Reset filter alarm	
			Summer mode activated	
			Anti-freeze activated	



## 8.2. SETTING FAN SPEED BY HAND

If needed, fan speeds can be reduced or increased by hand. The number of LEDs illuminated corresponds to the fan speed set.



Press down symbol for reducing fan speed for about 1 second.



Press down symbol to increase the fan speed for about 1 second.



Fan speed V1 = humidity protection



Fan speed V2 = reduced ventilation



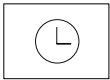
Fan speed V3 = nominal ventilation

## 8.3. TURN ON/OFF BOOST VENTILATION

The ventilation system can be turned on to the fan speed boost ventilation, as needed, e.g., if many people are gathering in the house.



Press symbol for about 1 second to enable the boost. To disable the boost press the button 1 second again.



The symbol is lit during intensive ventilation.

## 8.4. TURN ON/OFF SUMMER BYPASS

The summer bypass serves to bypass the heat exchanger so that the cooler outdoor air is not heated. When outdoor temperatures are lower, e.g. in spring or fall, the ventilation system can be used without heat recovery so that the cooler outdoor air is conducted into the building. The summer bypass can be activated for 8 hours by hand. Then the system switches to the fan speed most recently selected or to the weekly programme set, see Setting weekly programme, page 26.

The following conditions have to be fulfilled to open/close the bypass automatically:

### Activation conditions:

(Outdoor temperature > 13°C) & (Indoor temperature > 23°C) & (Indoor temp. – Outdoor temp. > 3°C)

### Deactivation conditions:

(Outdoor temperature ≤ 13°C) OR (Indoor temperature ≤ 23°C) OR (Indoor temp. – Outdoor temp. ≤ 3°C)

## 8.5. TURNING SLEEP MODE ON/OFF

When the sleep mode is activated, the ventilation system shuts off for one hour. After this, it turns on again to the most recent setting.



Press symbol for about 5 seconds. The ventilation system turns off for one hour.



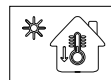
When the sleep mode has been turned on, the symbol is lit.

## 8.6. TURNING SUMMER MODE ON/OFF

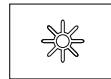
When outdoor temperatures are cooler, e.g., at night, the supply air fan can be switched off. The outdoor air must then reach the house through open windows without heat recovery.

The summer mode can only be switched on when the outdoor air temperature is above +13°C. If the outdoor air temperature drops below this value, then the summer mode is switched off again automatically.

After 2 hours, the temperatures are checked. For this purpose, the supply air fan starts up again for 5 minutes. If the outdoor temperature continues to exceed +13°C, then the function continues until it is turned off by hand or until the temperature drops below +13°C.



Press symbol for about 5 seconds.



The symbol lights up when the summer mode is turned on.

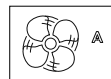
## 8.7. TURNING AUTOMATIC MODE ON/OFF

Once the automatic mode has been activated, the ventilation system can be controlled using one of the following options:

- Control of sensor
  - Activated humidity sensor, see page 19,
  - Activated VOC sensor (optional accessory), see page 20 or
  - activated 0-10 V signal (optional accessory), see page 22.
- Weekly programme set, see page 26.
- Combination of sensor control and setting of weekly programme 3, see page 26.

### NOTE

A combination with a sensor is only possible with the weekly programme 3.



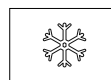
Press symbol for about 5 seconds.



When automatic modes is on, the symbol is lit.

## 8.8. ANTI-FREEZE FEATURE

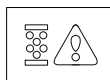
Without installing an optional pre-heater module, the anti-freeze feature serves to protect the ventilation system from freezing. In this process, the air intake fan switches itself off.



The symbol is lit while the anti-freeze feature is activated.

## 8.9. RESET FILTER ALARM

After each time the filter is replaced, the filter alarm must be reset.



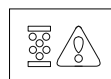
The symbol is lit, when the pre-set timer for the filter replacement is exceeded. The filter must be replaced, see page 35. If the filter is not changed within 60 days, then the ventilation system shuts down automatically.

### NOTE

At the factory, the timer for the filter alarm was set at 12 months. Replacing of the filter is highly dependent on the pollution of the outdoor air (pollen count, construction site activity). The timer for the filter alarm can be adjusted to 6 months, 9 months or 15 months, see page 25.



Press symbol for about 5 seconds. The filter alarm is reset.



The light on the symbol goes out.

## 9. REDUCED LIST OF MODBUS REGISTERS

NEMBUS device has a RS485 communication port located on position 32 in the main circuit board (see page 9). The Slave Address by default is 1, if few units are connected in the Modbus network, the address of each one must

be different from the others. The communication parameters must be the same for all units connected on the same network. For more information regarding the communication parameters see the table of Holding Registers below:

DISCRETE INPUTS (Read only)					
Modbus Address	Register	Values	Description	Default	Data type
10001	Active alarms	0	No alarm active		Single Bit
		1	At least one alarm active		Single Bit
10002	Filter alarm	0	Alarm off		Single Bit
		1	Alarm on		Single Bit
10007	Temperature sensor (extract air) status	0	Correct		Single Bit
		1	Error		Single Bit
10008	Temperature sensor (exhaust air) status	0	Correct		Single Bit
		1	Error		Single Bit
10009	Temperature sensor (outdoor air) status	0	Correct		Single Bit
		1	Error		Single Bit
10010	Temperature sensor (supply air) status	0	Correct		Single Bit
		1	Error		Single Bit
10011	Extract air fan status	0	Correct		Single Bit
		1	Error		Single Bit
10012	Supply air fan status	0	Correct		Single Bit
		1	Error		Single Bit
10016	Automatic by-pass	0	Not active		Single Bit
		1	Active		Single Bit
10029	Boost contact status	0	Not active		Single Bit
		1	Active		Single Bit
10030	Boost status	0	Boost active		Single Bit
		1	Boost not active		Single Bit

OUTPUT COILS (Read/Write)					
Modbus Address	Register	Values	Description	Default	Data type
1	Reset filter alarm	0	Do not reset	0	Single Bit
		1	Do reset		Single Bit
8	Manual by-pass	0	Not active	0	Single Bit
		1	Active		Single Bit
9	Allow automatic by-pass	0	Do not allow	1	Single Bit
		1	Allow		Single Bit
10	Summer mode status	0	Off	0	Single Bit
		1	On		Single Bit
17	Manual boost	0	Off	0	Single Bit
		1	On		Single Bit
18	Snooze mode (unit stops for 1h)	0	Off	0	Single Bit
		1	On		Single Bit
26	Working mode	0	Manual	0	Single Bit
		1	Automatic		Single Bit



<b>INPUT REGISTERS (Read only)</b>					
<b>Modbus Address</b>	<b>Register</b>	<b>Values</b>	<b>Description</b>	<b>Default</b>	<b>Data type</b>
30005	Communication error	0	No error		16 bit word
		1	Remote controller		16 bit word
		4	Modbus RTU		16 bit word
30006	Defrost status	0	Not active		16 bit word
		1	Active (fireplace defrost)		16 bit word
		2	Active (with pre-heater)		16 bit word
		3	Active (unbalanced airflows)		16 bit word
30026	Extract air temperature	-500...+600 d°C	d°C		16 bit word
30027	Exhaust air temperature	-500...+600 d°C	d°C		16 bit word
30028	Outdoor air temperature	-500...+600 d°C	d°C		16 bit word
30029	Supply air temperature	-500...+600 d°C	d°C		16 bit word
30030	Relative humidity extract air	0-100%	%		16 bit word
30031	Relative humidity exhaust air	0-100%	%		16 bit word
30032	Relative humidity outdoor air	0-100%	%		16 bit word
30033	Relative humidity supply air	0-100%	%		16 bit word
30060	Control voltage extract motor	0-100	dV		16 bit word
30061	Control voltage supply motor	0-100	dV		16 bit word
30062	RPM extract motor	0-5000 rpm	rpm		16 bit word
30063	RPM supply motor	0-5000 rpm	rpm		16 bit word
30064	Bypass damper position	0	Closed		16 bit word
		1	Open		16 bit word
		2	Error		16 bit word
30091	Actual working mode	0	Snooze mode		16 bit word
		1	Low speed		16 bit word
		2	Medium speed		16 bit word
		3	High speed		16 bit word
		4	Boost		16 bit word
		5	Auto mode (humidity sensor)		16 bit word
		6	Auto mode (VOC sensor)		16 bit word
		7	Auto mode (0-10V control)		16 bit word
		8	Boost in auto mode		16 bit word
		9	Weekly program 1		16 bit word
		10	Weekly program 2		16 bit word
		11	Weekly program 3		16 bit word
12	Weekly program 4		16 bit word		

<b>HOLDING REGISTERS (Read/Write)</b>					
<b>Modbus Address</b>	<b>Register</b>	<b>Values</b>	<b>Description</b>	<b>Default</b>	<b>Data type</b>
40001	Modbus slave address	1-247		1	16 bit word
40002	Baudrate	48	4800	192	16 bit word
		96	9600		16 bit word
		192	19200		16 bit word
		384	38400		16 bit word
40003	Modbus parity	0	EVEN	0	16 bit word
		1	ODD		16 bit word
		2	No parity (2 stop bits)		16 bit word
40049	Day	1-31	Day (clock)	Set from factory	16 bit word
40050	Month	1-12	Month (clock)	Set from factory	16 bit word
40051	Year	2016-2100	Year (clock)	Set from factory	16 bit word
40052	Hour	0-23	Hour (Clock)	Set from factory	16 bit word
40053	Minutes	0-59	Minutes (Clock)	Set from factory	16 bit word
40054	Seconds	0-59	Seconds (Clock)	Set from factory	16 bit word
40057	Manual by-pass timer	1-8 h	Manual by-pass timer	8 h	16 bit word
40064	Min ODA for by-pass	120...200 d°C	Minimum outdoor temperature for by-pass activation	130 d°C	16 bit word
40066	Min ETA for by-pass	210-300 d°C	Minimum extract temperature for by-pass activation	230 d°C	16 bit word



HOLDING REGISTERS (Read/Write)					
Modbus Address	Register	Values	Description	Default	Data type
40068	Min ETA-ODA for by-pass	30-60 d°C	Minimum difference between ETA-ODA for by-pass	30 d°C	16 bit word
40133	Selected airflow	0	Manual (low airflow)	0	16 bit word
		1	Manual (medium airflow)		16 bit word
		2	Manual (nominal airflow)		16 bit word
		3	Auto		16 bit word
		4	Snooze		16 bit word

## 10. REPAIRING FAULTS


### 10.1. MALFUNCTIONS

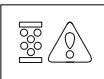
Malfunction	
The air supplied into the living space is cold.	
Cause	Remedy
The air cools down in the ducts.	<ul style="list-style-type: none"> <li>• Check installation and operation of the system.</li> <li>• Check insulation of outdoor and outgoing air lines.</li> </ul>
Supply air fan and extract air fan are not properly balanced.	<ul style="list-style-type: none"> <li>• Adjust airflow rates using a differential pressure gage (see page 18).</li> </ul>

Malfunction	
<ul style="list-style-type: none"> <li>• The ventilation system no longer works.</li> <li>• The fans do not rotate.</li> <li>• The control panel does not work.</li> </ul>	
Cause	Remedy
The mains voltage is interrupted.	<ul style="list-style-type: none"> <li>• Set up the mains voltage again.</li> </ul>
A fuse has burned out in the ventilation system.	<ul style="list-style-type: none"> <li>• Call in customer service of the specialised company, check fuse and have it replaced.</li> </ul>

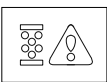
Malfunction	
The ventilation system is loud and vibrates.	
Cause	Remedy
A fan is off-balance.	<ul style="list-style-type: none"> <li>• Request customer service from the specialised company, check fan and, if needed, have it replaced.</li> </ul>

Malfunction	
The ventilation system is dripping.	
Cause	Remedy
The condensate cannot drain.	<ul style="list-style-type: none"> <li>• Call in customer service of the specialised company and check whether condensate line, condensate tray and syphon dryer are in proper working order; have them cleaned.</li> </ul>

Malfunction	
The supply air fan is off.	
Cause	Remedy
Summer mode is on.	<ul style="list-style-type: none"> <li>• Turn off summer mode, if you no longer desire it, see page 30.</li> </ul>
The anti-freeze feature is on.	 <p>Normal operation of the ventilation system. The symbol is lit while anti-freeze feature is activated.</p>

Malfunction	
<ul style="list-style-type: none"> <li>• Calibration of the ServoFlow Kits installed (optional accessory) is not possible.</li> <li>• The LEDs of the fan speeds are blinking.</li> <li>•  The symbol in the control panel blinks 13x red.</li> </ul>	
Cause	Remedy
There is a fault in the device.	<ul style="list-style-type: none"> <li>• Call in customer service of the specialised company.</li> <li>• Check correct connection of the pressure hoses between differential pressure sockets 1 and 2, and also pressure sensors on the ServoFlow Kit.</li> <li>• Check that pressure hoses from the ServoFlow Kit have been laid correctly. The pressure hoses cannot be bent.</li> </ul>
The system pressure is too low.	<ul style="list-style-type: none"> <li>• Call in the customer service of the specialised company and have the correct connection of the air lines checked.</li> </ul>
The system pressure is too high.	<ul style="list-style-type: none"> <li>• Check whether all ventilation grates, valves and air outlets are open.</li> </ul>

## 10.2. ERROR MESSAGES



Error messages are displayed by different modes of blinking of the symbol in the control panel. The period between the blinking sequences is roughly 3 seconds.

Malfunction	Symbol	Consequence
A fire alarm was triggered.	Blinks red 1x	The ventilation system stops.
The extract air fan has had a breakdown.	Blinks red 2x	The ventilation system stops.
The supply air fan has had a breakdown.	Blinks red 3x	The ventilation system stops.
The summer bypass has had a breakdown.	Blinks red 4x	The ventilation system stops.
The ServoFlowKit (optional accessory) has had a breakdown.	Blinks red 5x	The ventilation system stops.
The supply air temperature has dropped below +5°C.	Blinks red 6x	The ventilation system stops. Every 2 hours the ventilation system turns on by itself for 5 minutes in order to check conditions for normal operation.
The temperature sensor outdoor air (T1) has had a breakdown.	Blinks red 7x	The ventilation system stops.
The temperature sensor supply air (T2) has had a breakdown.	Blinks red 8x	The ventilation system stops.
The temperature sensor extract air (T3) has had a breakdown.	Blinks red 9x	The ventilation system stops.
The temperature sensor exhaust air (T4) has had a breakdown.	Blinks red 10x	The ventilation system stops.
The VOC sensor (optional accessory) has had a breakdown.	Blinks red 11x	The ventilation system is running at fan speed V2.
The preheating radiator (optional accessory) has had a breakdown.	Blinks red 12x	The ventilation system stops.
Calibration of the ServoFlow Kits (optional accessory) is not possible.	The red light blinks 13x, the LEDs of the fan speeds blink	The ventilation system stops.
The pre-set timer for filter replacement has been exceeded.	The red light stays lit	For up to 60 days, normal operation continues to be possible. After this, the ventilation system turns off.

## 11. MAINTENANCE (USERS)

### 11.1. CHANGING FILTERS

#### NOTE

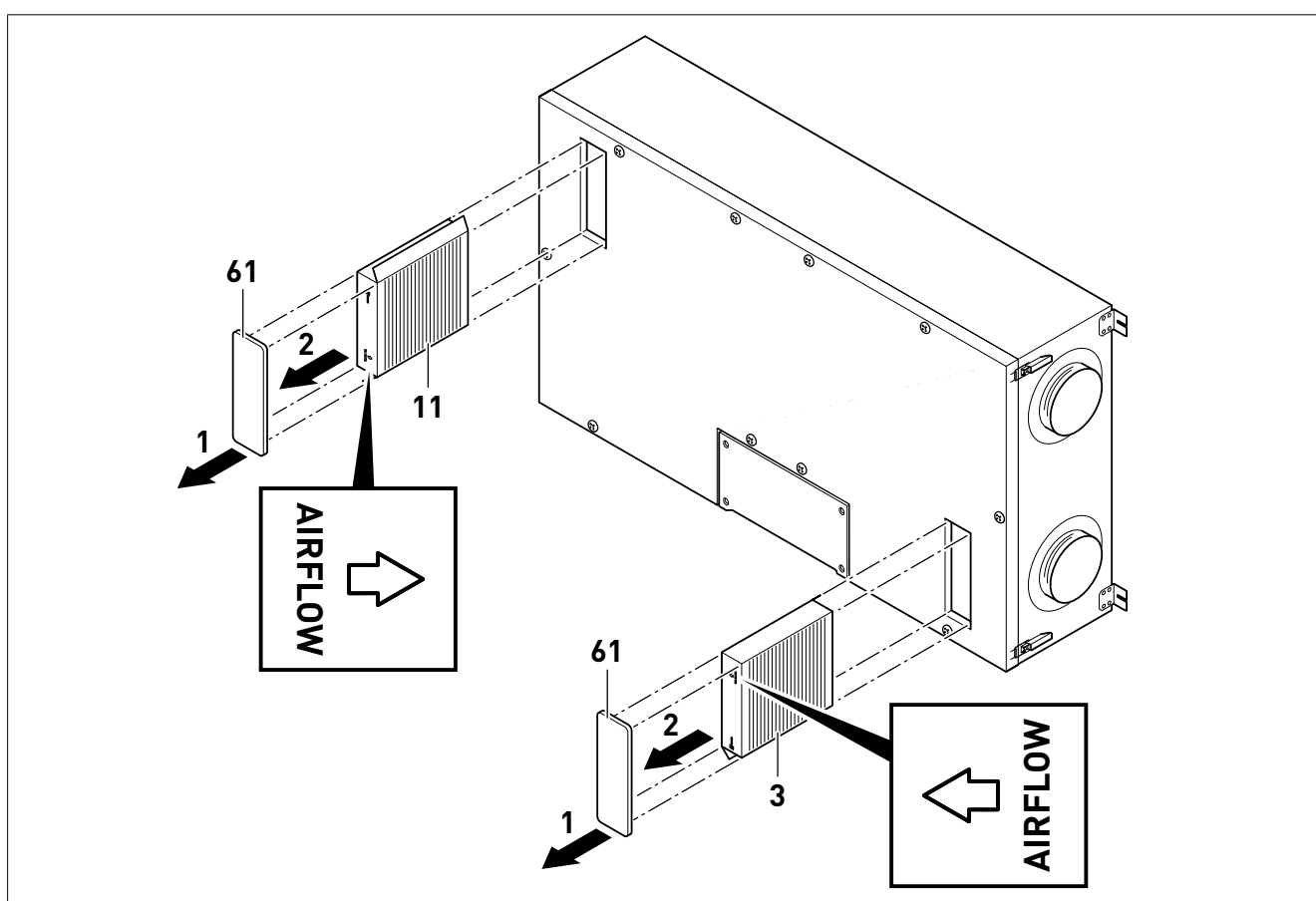
The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.

The period between filter replacements depends on the degree of pollution of the air (e.g., pollen count, construction site activity, fine dust pollution).

The period between filter replacements is set to 12 months at the factory. This interval can be reduced or increased depending on air pollution, see page 25.

After expiry of the period set, the filter alarm on the control panel lights up, see page 31. The filter must be changed within 60 days, and the filter alarm must be reset. If this does not happen, then the device switches itself off. The filters must be changed, and the filter alarm must be reset, see page 31.

The air lines should be checked and cleaned if needed every 5-10 years.



1. Remove covers (61) (Arrow 1).
2. Remove used extract air filter (3) and used outdoor air filter (11) and dispose of them (Arrow 2).
3. Insert new filters. The printed arrows must be turned to the middle of the casing.

#### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.

4. Reset filter alarm, see page 31.



## 12. MAINTENANCE (SPECIALISTS)

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### CAUTION

All maintenance tasks described below for the ventilation system may only be carried out by qualified specialists, otherwise there is risk of injuries or damages.

### 12.1. MAINTENANCE PERIODS

Maintenance tasks	Annually	Every 2 years
Clean ventilation device, see page 37	X	
Clean and fill condensate line, condensate tray and syphon dryer, see page 37	X	
Clean heat exchanger, see page 38		X
Clean fan blade, see page 39	X	

### 12.2. LOGS PREVENTIVE MAINTENANCE

	Yes	No
Are the fans clean and free of corrosion?		
Do the fans produce no vibrations or noise when operating?		
Can the fan blades turn freely when operating?		
Do the lines and insulation show damages?		

## 12.3. CLEANING



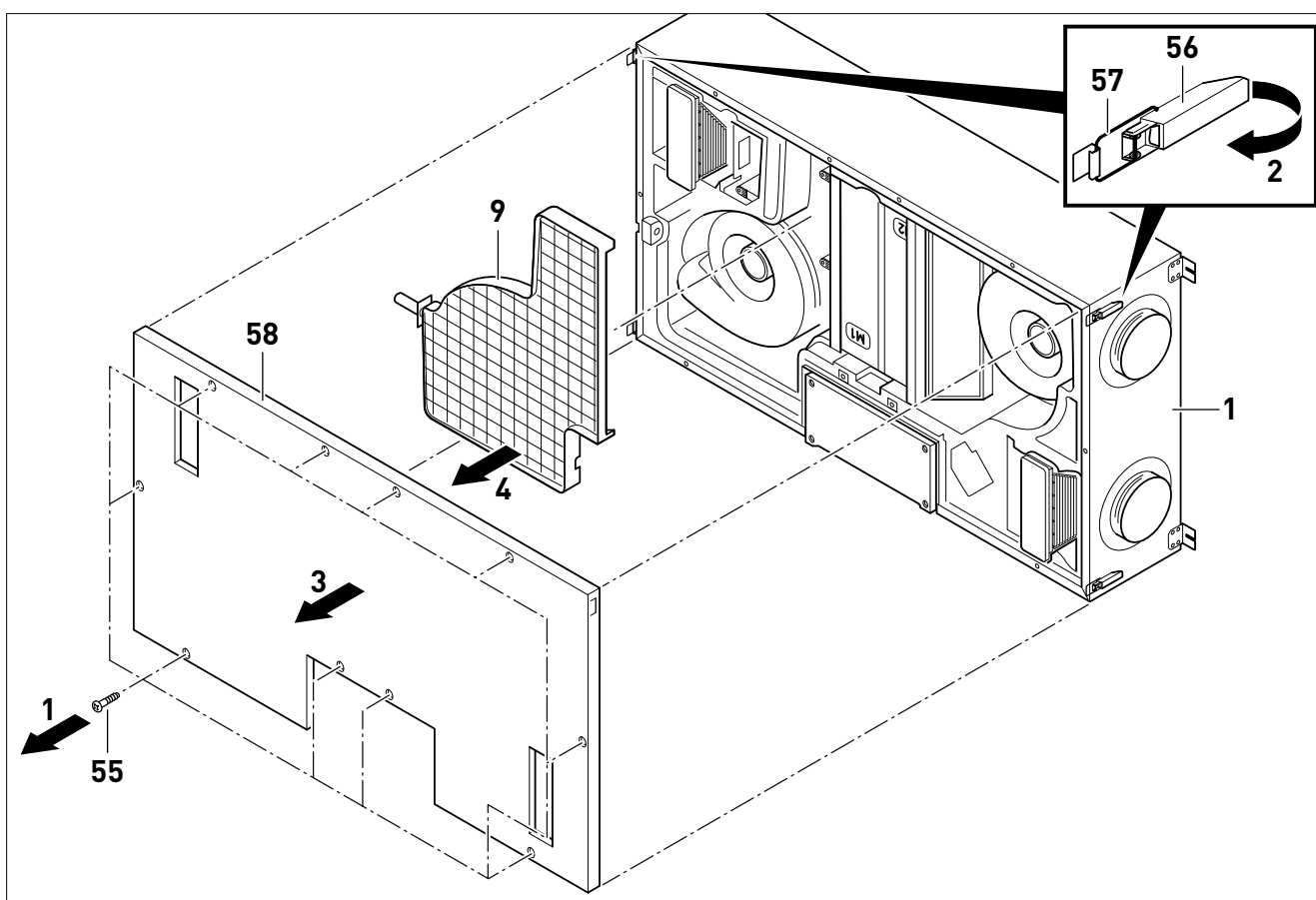
### RISK OF INJURY

Disconnect all poles of the ventilation system from the power network before all cleaning tasks, otherwise there is risk of injury.

### 12.3.1. Cleaning ventilation system

#### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.

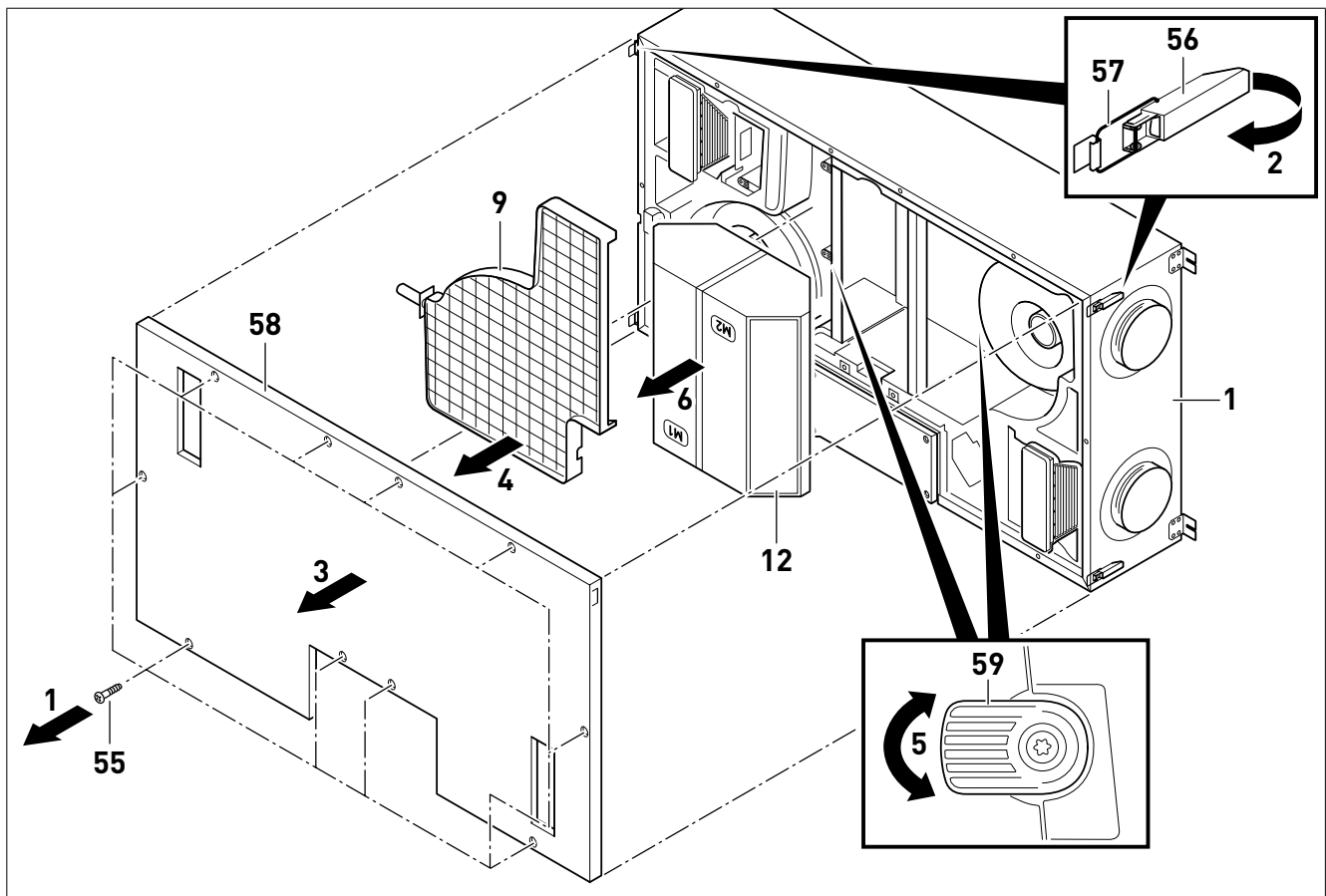


1. Unscrew screws Torx 25 (55) (Arrow 1).
2. Open all locks (56) and unhook brackets (57) (Arrow 2).
3. Remove cover (58) (Arrow 3).
4. Remove condensate line, see page 12.
5. Take out condensate tray (9) (Arrow 4).
6. Clean interior surfaces of the ventilation device (1) and condensate connection including condensate tray (9) with a moist cloth and neutral cleanser.
7. After drying, installation is carried out in the reverse sequence.
8. Reconnect condensate line, see page 12.

### 12.3.2. Cleaning heat exchanger

**NOTE**

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.

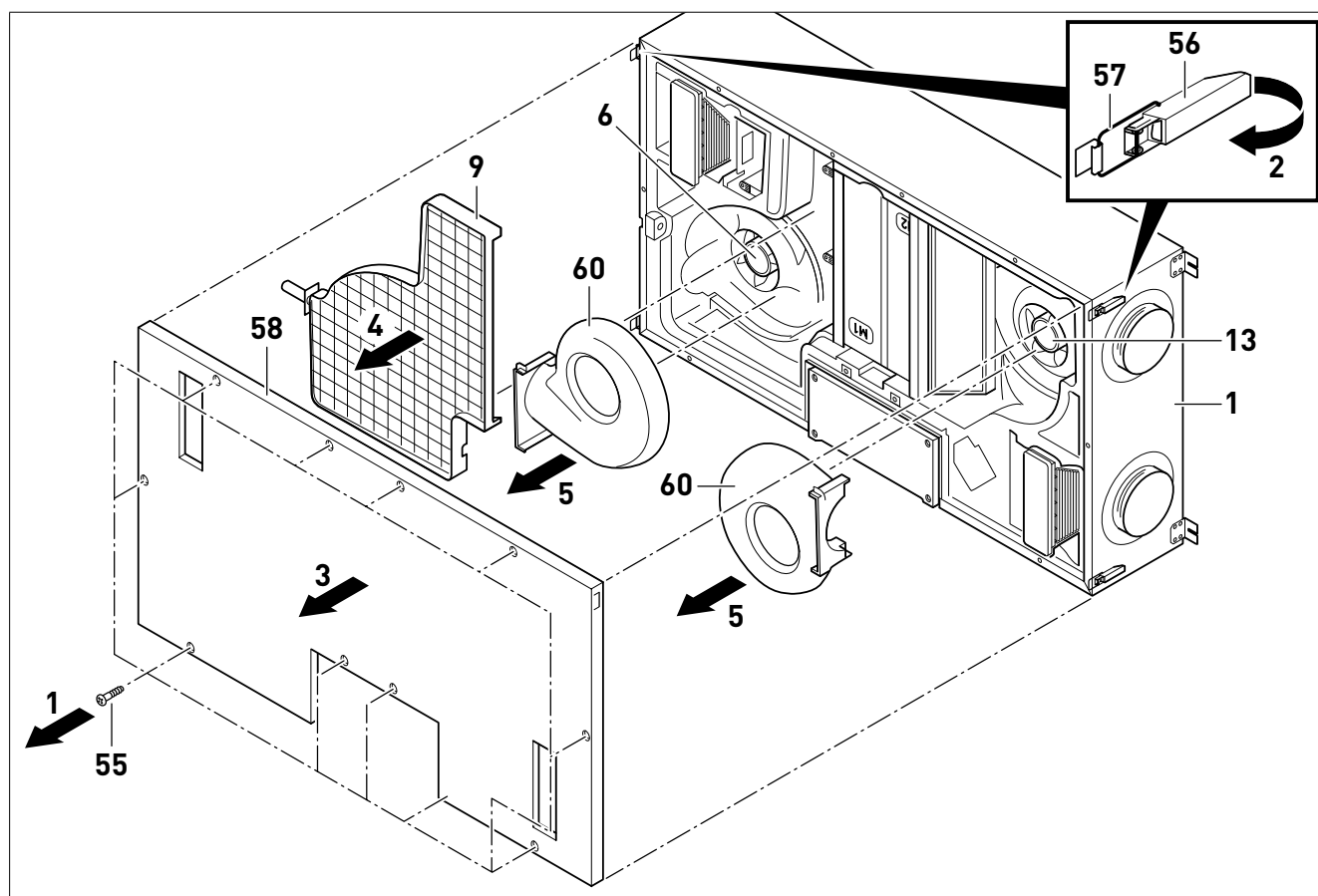


1. Remove screws Torx 25 (55) (Arrow 1).
2. Open all locks (56) and unhook brackets (57) (Arrow 2).
3. Remove cover (58) (Arrow 3).
4. Remove condensate line, see page 12.
5. Take out condensate tray (9) (Arrow 4).
6. Turn quick-release fasteners (59) by roughly 90° to the left or right (Arrow 5).
7. Take out heat exchanger (12) (Arrow 6).
8. Clean the heat exchanger (12) using a mixture of water and soft detergent. Don't use compressed water. Rinse with clear water, and allow all water to drain.
9. After drying, installation is carried out in the reverse sequence. In this process, pay attention to the direction of installation of the heat exchanger (12) (M1/M1, M2/M2).
10. Reconnect condensate line, see page 12.

### 12.3.3. Cleaning fan blade

#### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.



1. Remove screws Torx 25 (55) (Arrow 1).
2. Open all locks (56) and unhook brackets (57) (Arrow 2).
3. Remove cover (58) (Arrow 3).
4. Remove condensate line, see page 12.
5. Take out condensate tray (9) (Arrow 4).
6. Remove covers (60) (Arrow 5).
7. Clean fan blades of the extract air fan (6) and the supply air fan (13) with a brush.
8. The installation takes place in the reverse sequence.
9. Reconnect condensate line, see page 12.

## 13. REPAIRS (SPECIALISTS)



### CAUTION

All repairs to the ventilation system may only be carried out by qualified specialists, otherwise there is risk of injuries or damages.

### 13.1. CHANGE FANS

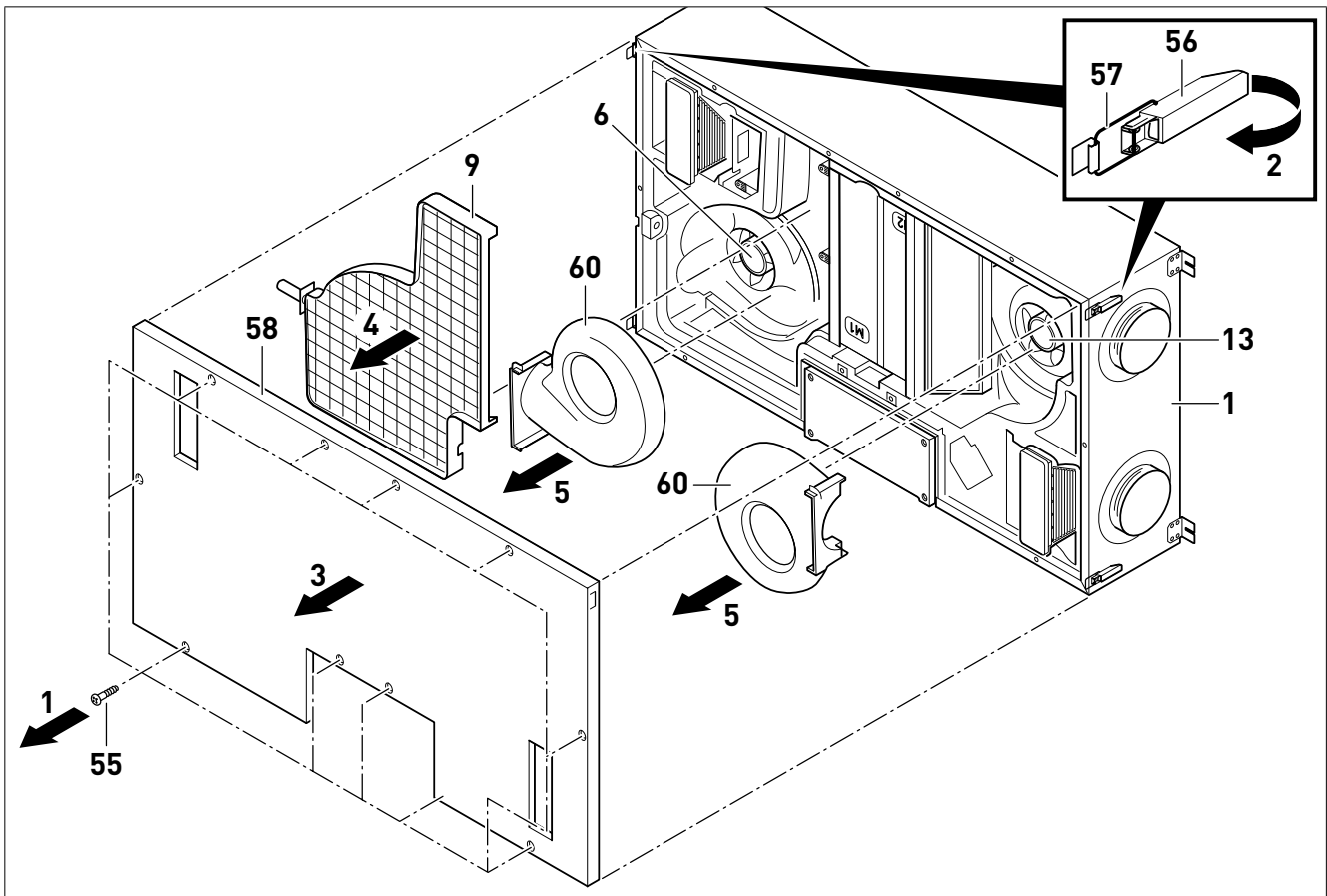
#### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.



### RISK OF INJURY

Before changing fans, disconnect all poles of the ventilation system from the power network, otherwise there is risk of injuries.



1. Remove screws Torx 25 (55) (Arrow 1).

2. Open all locks (56) and unhook brackets (57) (Arrow 2).

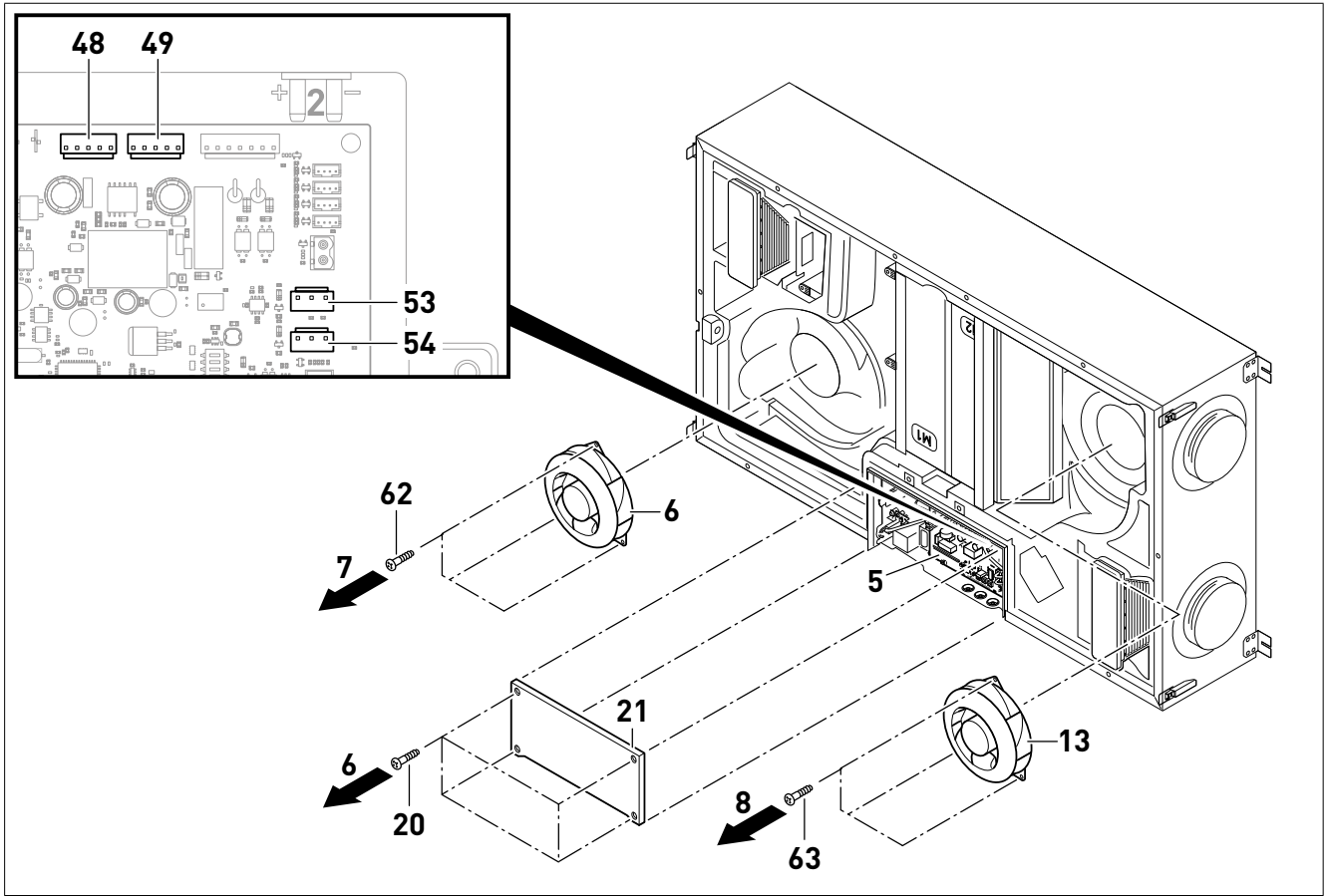
3. Remove cover (58) (Arrow 3).

4. Remove condensate line, see page 12.

5. Take out condensate tray (9) (Arrow 4).

6. Take off covers (60) (Arrow 5).





7. Remove screws Torx 10 (20) and take off cover (21) (Arrow 6).
8. Disconnect voltage supply M1 (48) and M2 (49), as well as control signals M1 (53) and M2 (54) on the main circuit board.
9. Remove screws Torx 30 (62) and replace extract air fan (6) (Arrow 7).
10. Remove screws Torx 30 (63) and replace supply air fan (13) (Arrow 8).
11. The installation takes place in the reverse sequence.
12. Reconnect condensate line, see page 12.

## 13.2. REPLACING HEAT EXCHANGER

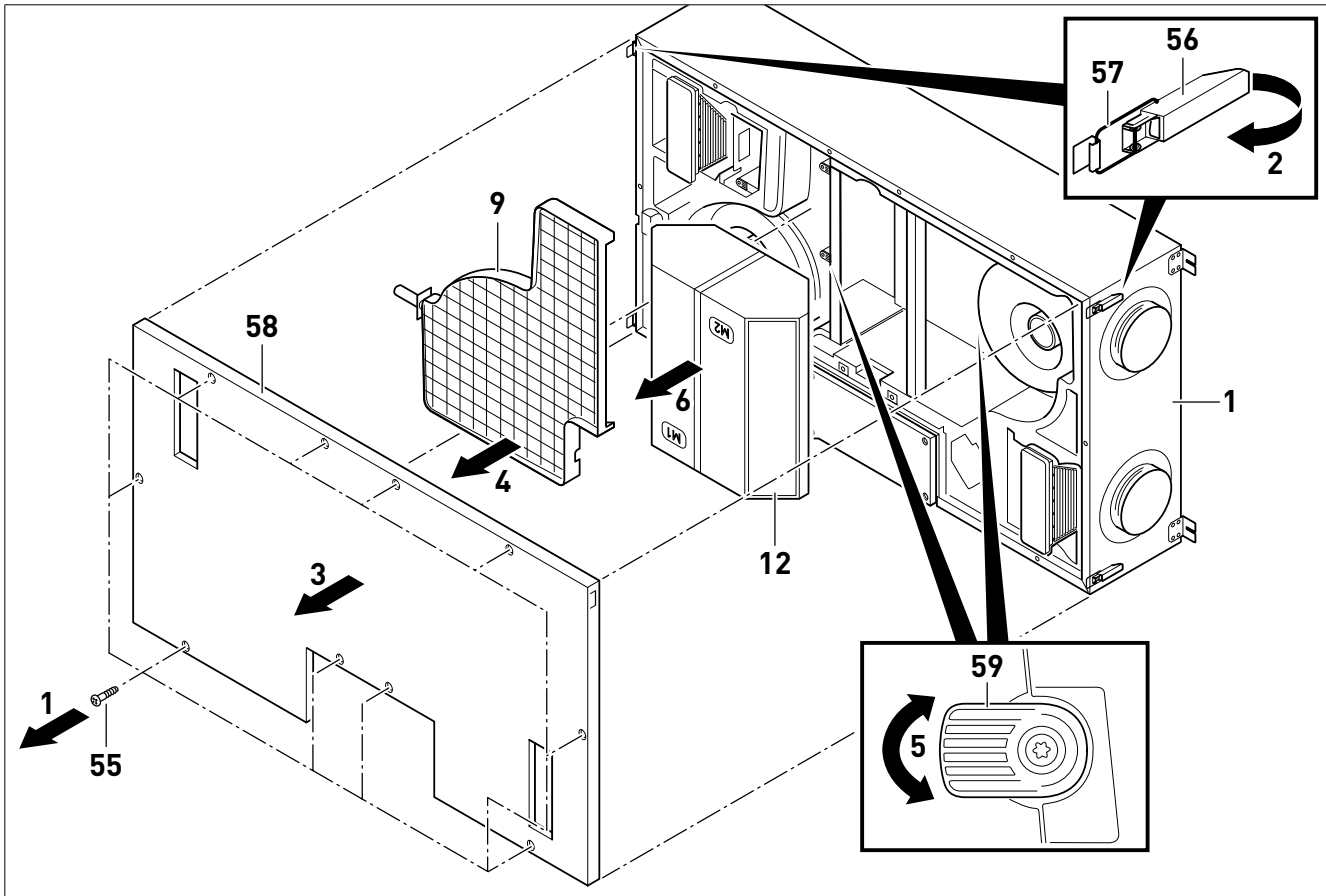
### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.



### RISK OF INJURY

Before replacing the heat exchanger, disconnect all poles of the ventilation system from the power network, otherwise there is risk of injuries.



1. Remove screws Torx 25 (55) (Arrow 1).
2. Open all locks (56) and unhook brackets (57) (Arrow 2).
3. Remove cover (58) (Arrow 3).
4. Remove condensate line, see page 12.
5. Take out condensate tray (9) (Arrow 4).
6. Turn quick-release fasteners (59) by 90° to the left or right (Arrow 5).
7. Take out heat exchanger (12) and replace (Arrow 6). When replacing, pay attention to the direction of installation of the heat exchanger (12) (M1/M1, M2/M2).
8. The installation takes place in the reverse sequence.
9. Reconnect condensate line, see page 12.

### 13.3. REPLACING MAIN CIRCUIT BOARDS

#### NOTE

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.



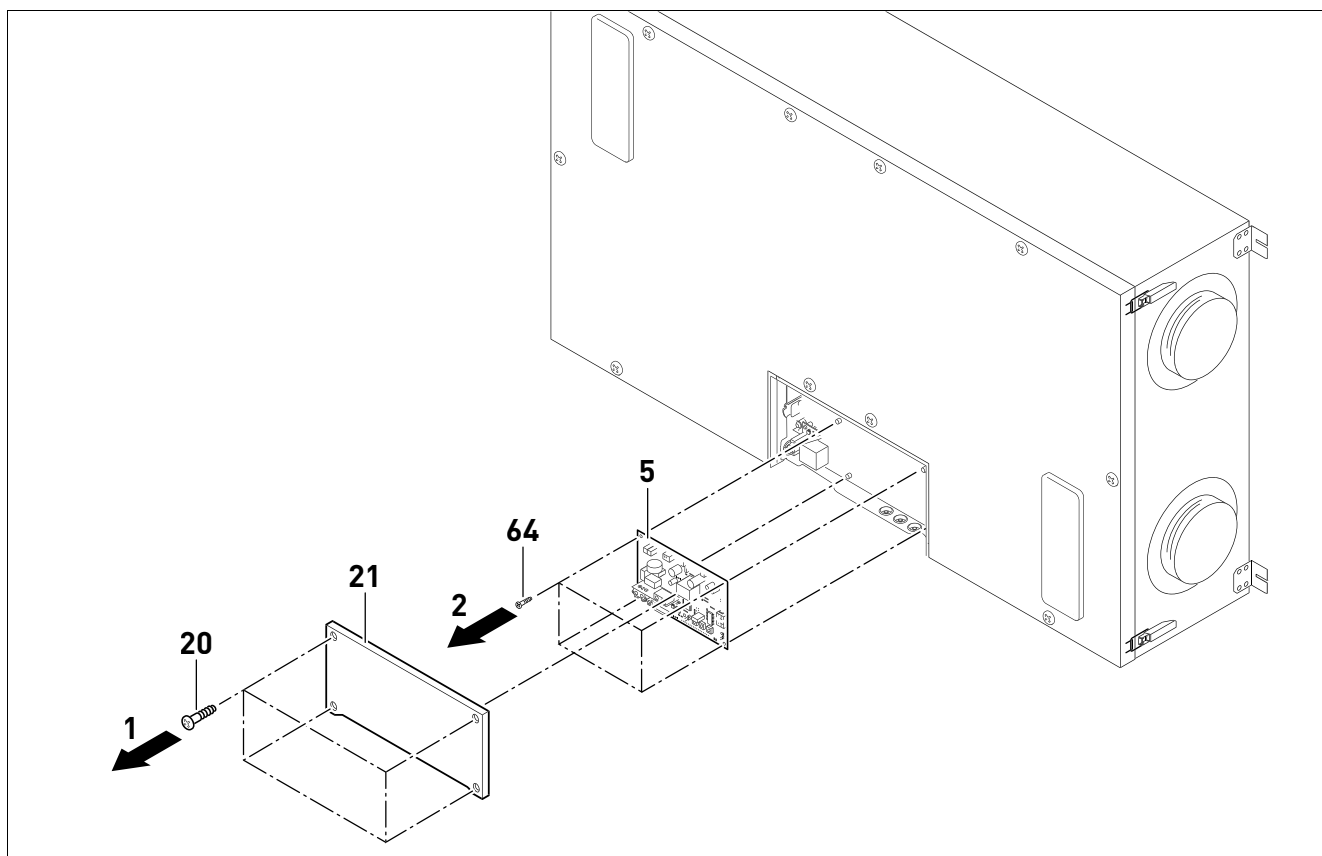
#### RISK OF INJURY

Before replacing the heat exchanger, disconnect all poles of the ventilation system from the power network, otherwise there is risk of injuries.



#### MATERIAL DAMAGES

When replacing the main circuit boards, they must be protected from electrostatic discharge, otherwise there is risk of damages. Avoid electric charge in the body, e.g., by dissipating and earthing of the body.



1. Remove screws Torx 10 (20) and take off cover (21) (Arrow 1).
2. Disconnect all plugs of the main circuit boards (5).
3. Remove screws Torx 10 (64) and replace main circuit boards (5) (Arrow 2).
4. Insert all plugs removed into the main circuit boards (5), see page 9.
5. The installation takes place in the reverse sequence.

### 13.4. REPLACE HUMIDITY/TEMPERATURE SENSOR

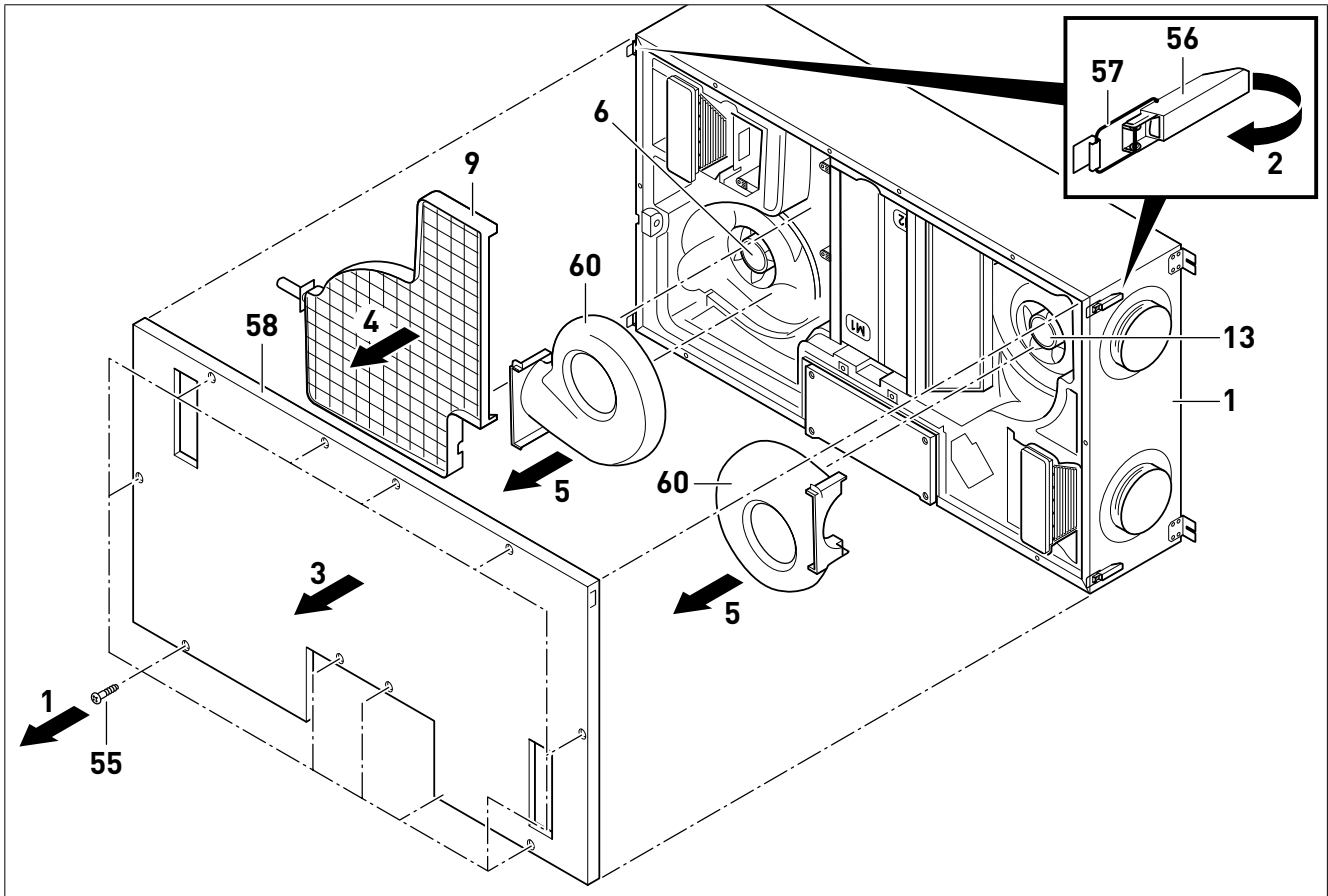
**NOTE**

The following representations of the ventilation system are schematic diagrams. The device is mounted permanently on the ceiling for all maintenance tasks. The installation position shown is not possible.



**RISK OF INJURY**

Before replacing the humidity/temperature sensors, disconnect all poles of the ventilation system from the power grid, otherwise there is risk of injury.



1. Remove screws Torx 25 (55) (Arrow 1).

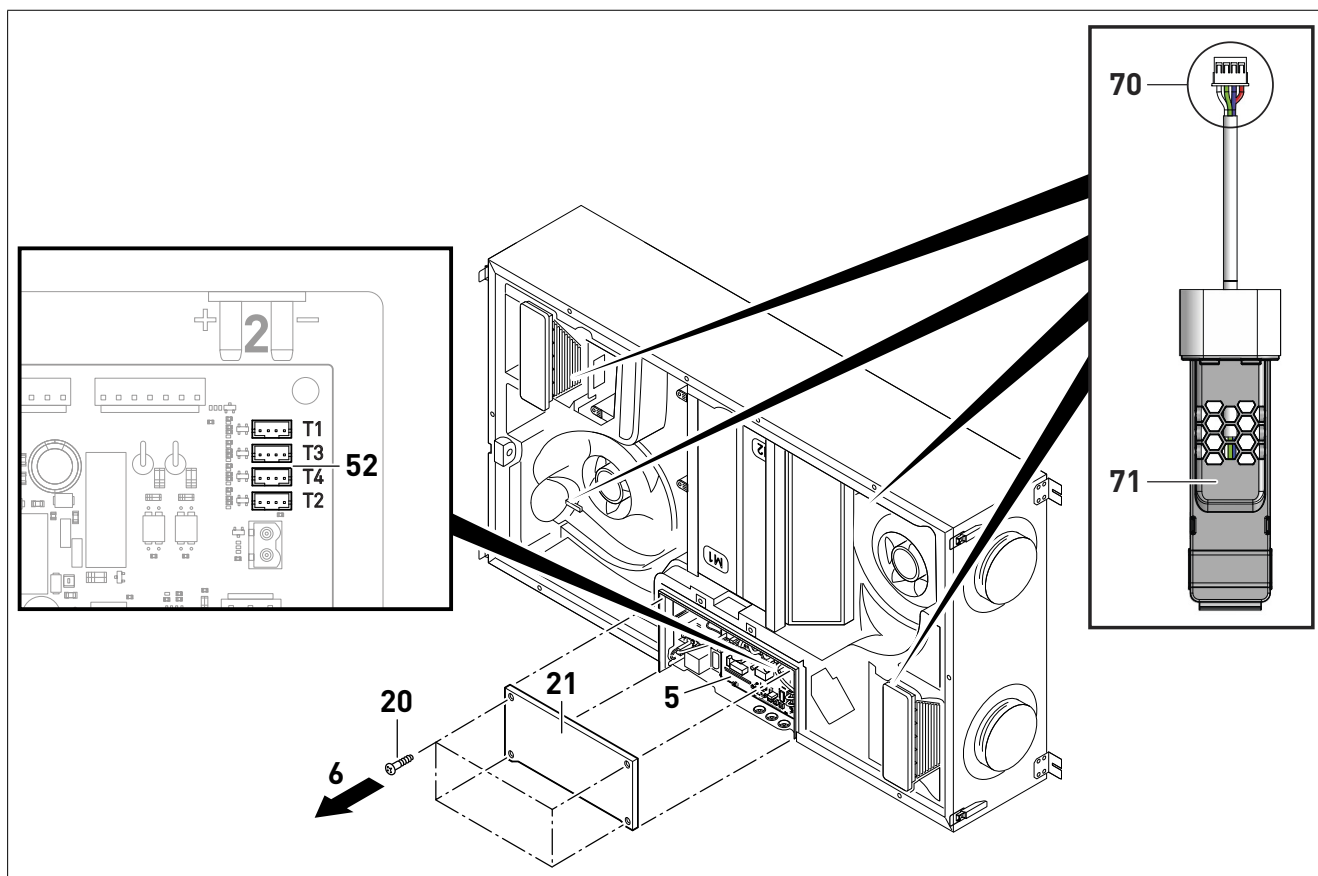
2. Open all locks (56) and unhook brackets (57) (Arrow 2).

3. Remove cover (58) (Arrow 3).

4. Remove condensate line, see page 12.

5. Take out condensate tray (9) (Arrow 4).

6. Take off covers (60) (Arrow 5).



7. Remove screws Torx 10 (20) and take off cover (21) (Arrow 6).
8. Decouple all humidity/temperature sensors from the connection (52) of the main circuit boards (5).
9. Disconnect connection cables (70) from the humidity/temperature sensors (71), and replace humidity/temperature sensors (71).
10. The installation is carried out in the reverse sequence.

## 14. DECOMMISSIONING/DISPOSAL

### 14.1. DECOMMISSIONING WITH DISASSEMBLY

The decommissioning may only be carried out by qualified specialists.

- Disconnect system from voltage.
- Disconnect all poles of the entire system from the power grid.

### 14.2. PACKAGING

The transport and protective packaging is largely made of recyclable materials.


All packaging materials must be disposed of according to local provisions.

### 14.3. USED DEVICES

The ventilation system contains valuable materials and substances that must not be disposed of with the residual waste. The used device can be handed over for reuse to a local recycling company.



## 15. ErP DATA

 <b>Ecodesign</b> <b>Commission regulation (EU) N°1253/2014 of July 2014</b> <b>Information requirements (Annex V)</b> <b>NEMBUS 210</b>	
Trade mark	S&P
Identifier	5153120200
SEC average climate (kWh/(m <sup>2</sup> .an))	-39
SEC class	A
SEC cold climate (kWh/(m <sup>2</sup> .an))	-76
SEC warm climate (kWh/(m <sup>2</sup> .an))	-15
Typology	UVR bidirectional
Type of drive	Variable speed drive
Type of HRC	Recuperative
Thermal efficiency (%)	83
Maximum flow rate (m <sup>3</sup> /h)	230
Electrical power input at maximum flow rate (W)	83
Sound power level (LWA)	46
Reference flow rate (m <sup>3</sup> /s)	0,045
Reference pressure difference (Pa)	50
SPI (W/m <sup>3</sup> /h)	0,226
Control factor	0,85
Control typology	Central demand
Maximum internal leakage for BVU (%)	0,4
Maximum external leakage for BVU and UVU (%)	1,1
Mixing rate for BVU without duct connection (%)	Not applicable
Position of visual filter warning	Remote control
Description of visual filter warning	Pilot light
Instructions to install supply grilles	Not applicable
Instructions to install exhaust grilles	Not applicable
Internet address	<a href="http://www.solerpalau.com">www.solerpalau.com</a>
Airflow sensitivity to pressure variation	Not applicable
Indoor/outdoor air tightness (m <sup>3</sup> /h)	Not applicable
Annual electricity consumption - Average climat (kWh/a)	250
Annual electricity consumption - Warm climat (kWh/a)	205
Annual electricity consumption - Cold climat (kWh/a)	787
Annual heating saved - Average climat (kWh/a)	4451
Annual heating saved - Warm climat (kWh/a)	2013
Annual heating saved - Cold climat (kWh/a)	8707

## 16. PUTTING OUT OF SERVICE AND RECYCLING

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EEC legislation and our consideration of future generations mean that we should always recycle materials where possible; please do not forget to deposit all packaging in the appropriate recycling bins. If your device is also labeled with this symbol, please take it to the nearest Waste Management Plant at the end of its serviceable life.



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