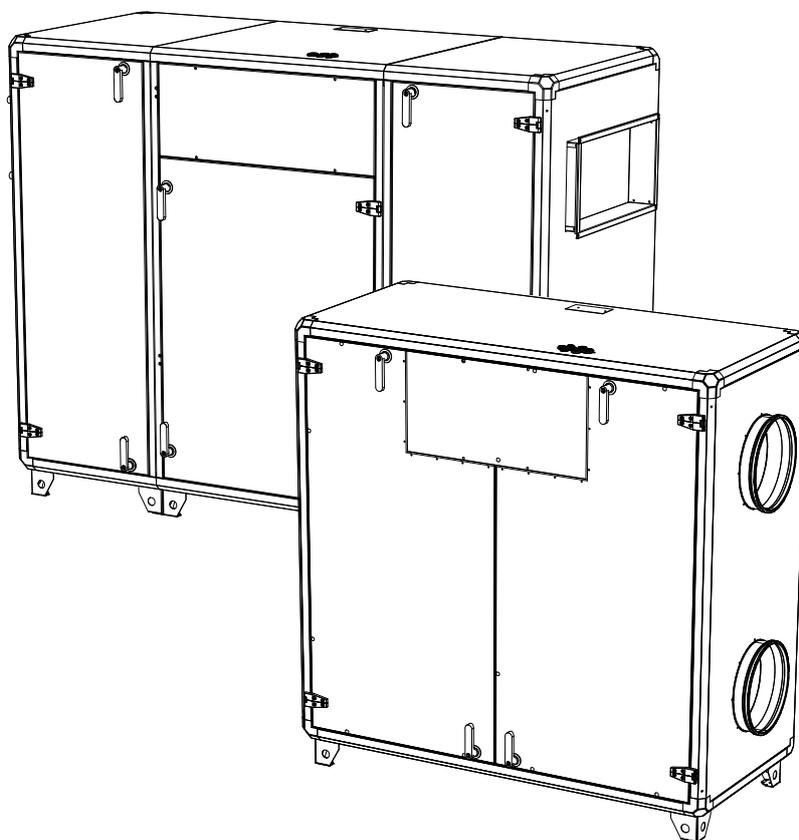


Topvex SC03-11

Compact Air Handling Unit



GB Operation and Maintenance Instructions

Contents

1 Warnings.....	1
2 Product Description.....	2
2.1 Internal components.....	2
2.2 Description of Internal components.....	3
2.2.1 Supply and Extract air Fans.....	3
2.2.2 Supply and Extract air Filters.....	3
2.2.3 Heat Exchanger.....	3
2.2.4 Temperature sensors.....	3
2.2.5 Water heating battery.....	3
2.2.6 Electrical Heater.....	4
2.3 Internal components Electrical connection box.....	5
3 Defrost function.....	6
4 Interface Description.....	6
4.1 Control Panel.....	6
4.1.1 Operating the control panel.....	7
5 Commissioning.....	8
5.1 Before Starting the System.....	8
5.2 Initial setup of the unit.....	8
5.3 Menu overview OPERATOR/SERVICE LEVEL.....	10
5.4 Free cooling description.....	23
6 Maintenance.....	24
6.1 Important.....	24
6.2 Maintenance intervals.....	24
6.3 Maintenance Instructions.....	25
6.3.1 Changing Supply/Extract air filter.....	25
6.3.2 Checking the heat exchanger.....	26
6.3.3 Checking the Fans.....	27
6.3.4 Checking the Hot water heating battery.....	29
6.3.5 Checking the Electrical heating battery.....	29
6.3.6 Cleaning Extract louvres and Inlet diffusers.....	29
6.3.7 Checking the Outdoor air intake.....	29
6.3.8 Checking the Duct system.....	29
6.3.9 Changing the Internal Battery.....	30
6.4 Troubleshooting.....	31
6.4.1 Alarms.....	32
7 Service.....	33

1 Warnings

The following admonitions will be presented in the different sections of the document.

Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

Warning

- Although the Mains supply to the unit has been disconnected there is still risk for injury due to rotating parts that have not come to a complete standstill.
- Beware of sharp edges during maintenance. Use protective clothing.
- This product is not intended to be used by children or people with reduced physical or mental ability or lack of experience and knowledge, if no instruction concerning the use has been given by the person responsible for their safety or that this person is supervising the operation. Children should be supervised so that they can not play with the product.

2 Product Description

2.1 Internal components

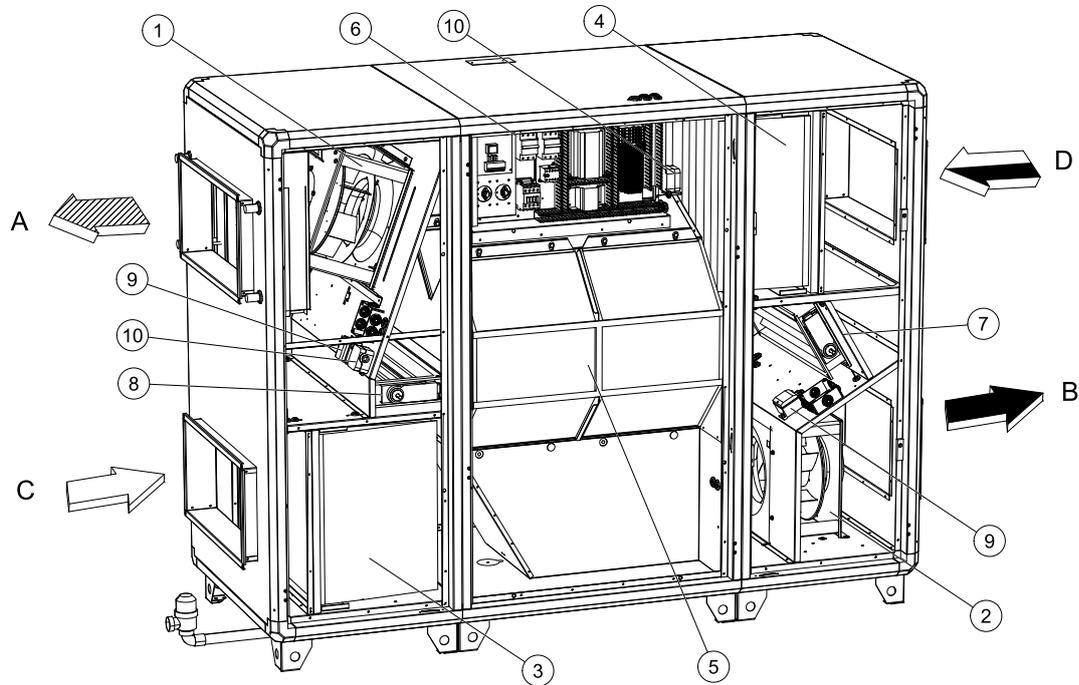


Fig. 1 Internal components with air connections symbols (Drawn as a left hand unit)

Position	Description	Symbol
A	Connection supply air	
B	Connection exhaust air	
C	Connection outdoor air	
D	Connection extract air	
1	Fan supply air	
2	Fan extract air	
3	Filter supply air	
4	Filter extract air	
5	Heat exchanger	
6	Electric compartment	
7	Damper bypass extract air	
8	Damper bypass outdoor air	
9	Pressure transmitter Fans	
10	Pressure guard filter	

2.2 Description of Internal components

2.2.1 Supply and Extract air Fans

The fans have external rotor motors of EC type which can be steplessly controlled individually 0–100%. It is possible to program the speed in 2 steps (normal/reduced) depending on the programming of the week schedule. The motor bearings are life time lubricated and maintenance free. It is possible to remove the fans for cleaning, see chapter 6 for more information.

2.2.1.1 Pressure transmitter Fans

2 pressure transmitters maintain the airflow at a constant level by measuring the differential pressure over the inlet cone of the fan impellers (pos.9 figure 1). The pressure transmitters are installed from factory in all units with CAV control. In VAV units the pressure transmitters will not be mounted in the unit from factory. Instead they will be delivered loosely with the unit to be mounted in the supply and extract air ducts, see “Installation instructions” for more information concerning VAV installations.

2.2.2 Supply and Extract air Filters

The filters are of bag filter type with filter quality F7 for the supply air filter and F5 for the extract air filter. The filters need to be replaced when polluted. New sets of filters can be acquired from your installer or wholesaler.

2.2.2.1 Pressure guard filters

A pressure guard measures the differential pressure over the supply and extract air filters (pos10, figure 1.) When the pressure drop reaches the set value an alarm is triggered in the main regulator. The differential pressure can be set between 40 and 300 Pa. The pressure switch is preset from factory to 240 Pa.

2.2.3 Heat Exchanger

Topvex SC03-11 models are equipped with a highly efficient, counterflow heat exchanger. Required supply air temperature is therefore normally maintained without adding additional heat. The operation of the heat exchanger is automatic and depends on the set temperature.

The heat exchanger is removable for cleaning and maintenance, see chapter 6 for more information.

2.2.4 Temperature sensors

4 temperature sensors (PT1000) are included in the unit from factory:

- Supply air sensor
- Extract air sensor
- Outdoor air sensor
- Exhaust air sensor

In Topvex SC03-11 the supply air sensor is loosely delivered with the unit and needs to be installed in the supply air duct externally from the unit. See Installation instructions for more detailed information.

2.2.5 Water heating battery

In units with built in water heating battery the hot water coil is located next to the supply air connection. The coil material is copper piping with a frame of galvanized sheet steel and aluminium fins. The coil is equipped with venting and immersion sensor for frost protection.

For Topvex SC03-11 units with no installed re-heater battery (None) a hot water heating battery can be mounted in the unit. See “Installation instruction” for correct procedure.

2.2.6 Electrical Heater

In units with built in electrical heater the heating rods are located after the supply air fan in the airflow direction. The material is stainless steel. The electric heating coil has both automatic and manual overheating protection. The manual overheat protection is reset by pushing the red button on the side of the electrical heater frame (figure 2). The power demand of the electric heating coil is controlled by the main regulator, which controls the heat steplessly by a TTC triac control according to the desired supply/extract or room air temperature that is set in the control panel.

Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

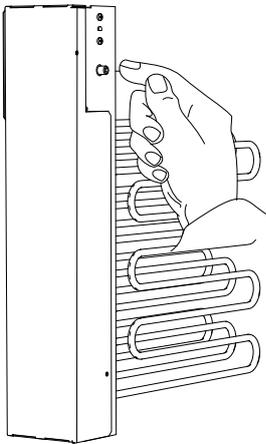


Fig. 2 Reset of the manual over heat protection in Topvex SC03-11.

2.3 Internal components Electrical connection box

Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

Topvex SC03-11 are equipped with a built in regulator and internal wiring (figure 3).

The figure shows the electrical connection box for the Topvex SC03-11 units.

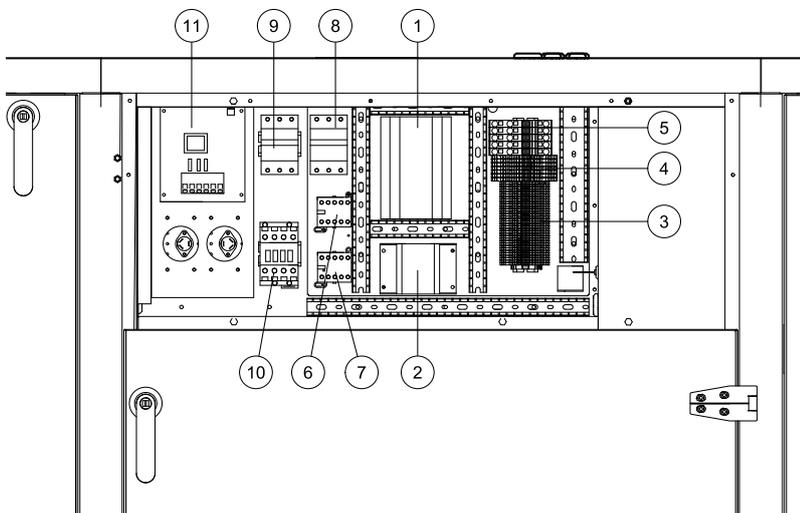


Fig. 3 Electric components

Position	description
1	Regulator E-28
2	Transformer 230/24V AC
3	Terminals for internal and external components
4	Terminals for internal wiring
5	Terminals for mains supply to the unit
6	Contactor (K1)
7	Contactor (K2) On/Off Pump control water (HW units only, not present in EL-units)
8	Automatic fuse
9	Automatic fuse for heater
10	Contactor (K3) for on/off control of EL heater
11	TTC EI heater control

3 Defrost function

The need for defrosting of the heat exchanger block is determined by the outdoor temperature. There are three steps for defrosting based on if you want to keep a balanced airflow or if you can accept an unbalanced airflow during the defrost cycle. The unit can be programmed for how aggressive the defrosting needs to be based on the estimated indoor humidity level. Step 1 and 2 can individually or both be deactivated. Step 3 are always active. See table 1 below for explanations of the different settable levels. The defrost function can also be shut off, chapter 5.3., *Exchanger de-icing*.

1. Reduction of the supply airflow (Unbalanced airflow):

Reduces the supply airflow up to 20% to allow the higher extract airflow to defrost the heat exchanger. Starts, if activated, at a preset outdoor temperature and stays active as long as the outdoor temperature stays below the set point. During this time the supply air fan operates at a constant reduced speed. By even lower outdoor temperatures a by-pass or stop defrosting sequence is started depending on settings.

2. By-pass of the supply airflow (Balanced airflow):

If the outdoor temperature drops further (to a preset level) step 2 runs in cycles. The by-pass damper opens to help reduce the flow of the cold outdoor air through the heat exchanger block. As this cycle is initiated the supply air temperature is permitted to be 4K lower than the setpoint. If the set supply air temperature still can't be maintained both the supply air and exhaust air fan speeds are reduced up to 20% in order to maintain a balanced indoor ventilation condition. If this is not enough to keep the set supply air temperature, a stop defrost sequence will start (step 3).

3. Stop defrosting (Unbalanced airflow):

Stops the supply air fan during a preset number of minutes. In case the electrical heater has been used, ventilation the after heat will start for 30 sec. before the supply air fans stops. After stop defrosting (step 3), step 1 resumes – if not deactivated.

Table 1:

Defrost level	Indoor humidity level ¹	Description
1	Minimum <20%	Office with small amount of plants. Low physical activities. Industrial building with processes that use no water.
2	Low 30%-40%	Office with normal amount of plants. Medium physical activities.
3	Medium 40%-60%	Day care centre. High physical activities.
4	High 60%-80%	Newly constructed buildings that need to dry out.
5 ²	Extreme >80%	Greenhouse.

1. Relative humidity in extract air during cold season

2. If level 5 is not enough it is possible to shorten the time between the defrosts, see chapter 5.3.

4 Interface Description

4.1 Control Panel

The SCP control panel is delivered with a 10 m cable that is connected to the panel and with a fast coupling contact, connected to the Topvex unit. The contact is connected to the **Corrigo** controller in the electrical connection box (pos. 1, figure 3). The cable can be unscrewed in the back of the control panel (figure 4).

4.1.1 Operating the control panel

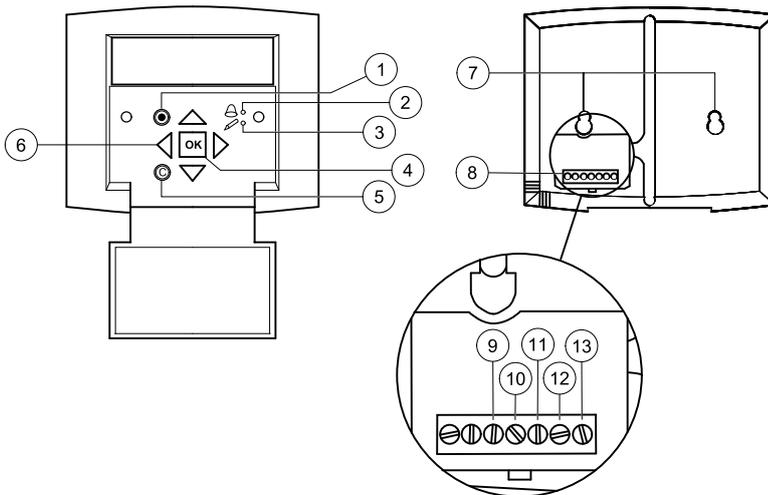


Fig. 4 The control panel

Position	Explanation
1	Alarm button: Gives access to the alarm list.
2	Alarm LED: Indicates alarm by flashing red light.
3	Write LED: Indicates by flashing yellow light that parameters can be set or changed.
4	OK button: Press this button to be able to change or set parameters whenever possible. Also used to move between changeable parameters in one dialogue window frame.
5	Cancel button: Used to abort a change and return to the initial setting.
6	Right/Left & Up/Down buttons: Used to move up, down, left & right in the menu tree. Up/Down buttons are also used to increase or decrease values when setting or changing parameters.
7	Mounting holes.
8	Connection block.
9	Connection to yellow cable.
10	Connection to orange cable.
11	Connection to red cable.
12	Connection to brown cable.
13	Connection to black cable.

4.1.1.1 Navigating the menus

The start display (the display normally shown) is at the root of the menu tree. Pressing DOWN will move you through the menu options. UP will move you back through the options. To enter a higher menu level, use UP or DOWN to place the cursor at the menu you wish to access and press RIGHT. If you have sufficient log on privileges the display will change to the menu you have chosen.

At each level there may be several new menus which you move through using UP/DOWN. Sometimes there are further sub menus linked to a menu or menu item. This is indicated by an arrow symbol at the right-hand side of the display. To enter a menu, press RIGHT again. To step back to previous menu level, use LEFT.

5 Commissioning

5.1 Before Starting the System

When the installation is finished, check that:

- The unit is installed in accordance with the installation instructions
- The unit is correctly wired
- Sound attenuators are installed and that the duct system is correctly connected to the unit
- Outdoor air intake is positioned with sufficient distance to pollution sources (kitchen ventilator exhaust, central vacuum system exhaust or similar)
- All external equipment are connected
- The following data is available:
 - Intended configuration, for example temperature control functions, fan control, external control functions etc.
 - How the unit is supposed to operate according to a weekly schedule (normal and reduced speed)

5.2 Initial setup of the unit

On the first start-up, the controller will start a special program for setting language, supply air temp set point, Time & date and week schedule for normal speed. Use the “OK” button to move between changeable parameters and the UP/DOWN arrows to see the displayed alternatives. Confirm by pressing “OK” once more. Move on down in the menu structure by use of the UP/DOWN arrows.

The following will be displayed:

1

Select language by pressing “OK” and then move between the alternatives with the UP/DOWN buttons. Confirm by pressing “OK”. Move to the next level by pressing the “DOWN” button.

```
Choose Language
English
```

2

Shows the actual extract air temperature

Set the supply air set point. Default is 18°C (logon to service level needed, code 2222, to change default setting)

```
Extract air temp
Actual:..... °C
Setp.: 18 °C
```

3

Check and make sure that correct time and date is displayed, if not change the settings

```
Time: 12.46
Date: 2010-03-12
Weekday: Friday
```

4

Set the week schedule for how it's intended for the unit to operate at normal speed during Monday to Friday. It's possible to set 2 periods per day.

```
Normal speed
Monday → Friday
Per 1: 07:00 - 16:00
Per 2: 00:00 - 00:00
```

5

Set the week schedule for how it's intended for the unit to operate at normal speed during Saturdays and holidays. It's possible to set 2 periods per day.

```
Normal speed
Saturday → Holiday
Per 1: 07:00 - 16:00
Per 2: 00:00 - 00:00
```

6

Set the week schedule for how it's intended for the unit to operate at reduced speed during Monday to Friday. It's possible to set 2 periods per day. Normal speed inactivates reduced speed.

```
Reduced speed
Monday → Friday
Per 1: 00:00 - 24:00
Per 2: 00:00 - 00:00
```

7

Set the week schedule for how it's intended for the unit to operate at reduced speed during Saturdays and holidays. It's possible to set 2 periods per day.

```
Reduced speed
Saturday → Holiday
Per 1: 00:00 - 24:00
Per 2: 00:00 - 00:00
```

8

Select "Yes" or "No"

```
End Wizard
No
```

After finishing the setup the menu system for "Operator level" will be available.

See below menu overviews that display the available menus in the Operator level followed by the "Service level" manual.

To enter Service level use code 2222 in the "Access rights" menu. For operator level use code 1111.

To enter System level use code 3333 in the "Configuration menu".

Note:

To perform more advanced settings please see the separate "General Commissioning Record" on www.systemair.com, online catalogue

5.3 Menu overview OPERATOR/SERVICE LEVEL

Below menu overview shows both the Operator and Service level. The overview of the parts unique to the Service level in below table are marked with grey background color. To logon to the Service level use code **2222** under Access rights.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
TR 03 EL flow 2010-03-15 09:00 System:Stopped Sp:18.0 Act: °C			Start screen headline Can be set to 5 different layouts (Changeable at “system level” under the configuration menu. Standard code from factory to enter system level is 3333.)
→ Running mode	→ Running mode	Running mode Auto	Set Running mode to Auto, On or Off
		Running time SAF: 0.0 h EAF: 0.0 h	Shows the time in hours that the motors have been operating SAF = Supply air fan EAF = Exhaust air fan
	→ Selected functions	Control function Extract air control Fan control Flow control	Shows type of air temperature control the unit is configured for. Shows type of fan speed control the unit is configured for
		Heating: Water Exchanger: Rot. Excha Cooling: Water	Shows type of heating selected Shows type of exchanger selected Shows type of cooling selected
		Free cool active: No	Shows the status of the free cooling function
		Support control Active: No CO2/VOC active Never	Shows the status of the support control function Shows the status of the demand ventilation (CO2/VOC) function
		Fire damper function Not active Operation when alarm Stopped	Shows the status of the fire damper function

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Frost protection Active Cooling recovery No	Shows the status of the frost protection function Shows the status of the cooling recovery function
		External set point Not active	Shows the status of the external set point
	→ Alarm events		Shows all registered alarms along with the time and date they occurred Move down and up in the list by pressing ↑↓
	→ Input/ Output	→ AI	Shows the status of the Analogue inputs
		→ DI	Shows the status of the Digital inputs
		→ UI	Shows status of Universal Analogue inputs Shows status of Universal Digital inputs
		→ AO	Shows the status of the Analogue outputs
		→ DO	Shows the status of the Digital outputs
→ Temperature	Extract air temp Act.: °C Setp: 18.0°C		Shows the configured temperature control (Default is Extract air temp) Shows the actual temperature in the chosen control mode Set the temperature for the chosen control mode
		If cascade control Max/min supply setp. Max: 30°C Min: 12.0°C	Set the maximum and minimum allowed supply air temperature in case of cascade control Logon to service level needed to change settings
	Outdoor temp: °C Supply air temp Actual: °C Setp: 18°C		Shows the actual outdoor air temperature Shows the actual supply air temperature Shows the calculated supply air set point. The exhaust air controller output signal generates the supply air controller's set point value

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	Frost protection Actual: °C		Shows the actual water temperature in the water heating battery. (Only visible for HW units)
	Exhaust air temp Actual: °C		Shows the actual exhaust air temperature.
	Efficiency Exchanger Actual: % Output Exchanger Actual: %		Shows the actual heat recovery efficiency The function calculates the heat exchangers temperature efficiency in % when the output signal to the exchanger is higher than 5% and the outdoor temperature is lower than 10°C. When the control signal is lower than 5% or the outdoor temperature is higher than 10°C the display will show 0%.
→Air Control			This menu option becomes visible if the unit is configured for "Flow control" or "Pressure control"
	Flow control SAF Actual: m ³ /h Setp.: m ³ /h		Shows airflow for the supply air fan (constant airflow control) Only visible if the unit is configured for Flow control
		Flow control SAF Setp 1/1: 1100 m ³ /h Setp 1/2: 550 m ³ /h	Set the normal (1/1) and reduced (1/2) airflow for the supply air fan
		Outdoor comp.Setp. 1 -20°C = 10 m ³ /h 0°C = 0 m ³ /h Act. Comp: 0 m ³ /h	Set the SAF airflow compensation for the settable outdoor temperature. The outdoor compensation is linear and is set using two parameter pairs which give the value of the compensation at two different outdoor temperatures. The compensation can be positive or negative. Shows the actual airflow compensation.
	Flow control EAF Actual: + INF m ³ /h Setp.: m ³ /h		Shows airflow for the extract air fan (constant airflow control) Only visible if the unit is configured for Flow control

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Flow control EAF Setp 1/1: 1100 m ³ /h Setp 1/2: 550 m ³ /h↓	Set the normal (1/1) and reduced (1/2) airflow for the extract air fan
		Outdoor comp.Setp. 1 -20°C = 10 m ³ /h 0°C = 0 m ³ /h Act. Comp: 0 m ³ /h	Set the EAF airflow compensation for the settable outdoor temperature. The outdoor compensation is linear and is set using two parameter pairs which give the value of the compensation at two different outdoor temperatures. The compensation can be positive or negative. Shows the actual airflow compensation.
	Pressure control SAF Actual: Pa Setp.: Pa		Shows the actual external pressure and set point for the supply air fan. Only visible if the unit is configured for "Pressure control" (VAV)
		Pressure control SAF Setp 1/1: 250 Pa Setp 1/2: 100 Pa	Set the external pressure set point for normal speed (1/1) and reduced speed (1/2) for the supply air fan.
		Outdoor comp.Setp. 1 -20°C = 0 Pa 10°C = 0 Pa Act. Comp: 0 Pa	Set the SAF pressure compensation for the settable outdoor temperature. The outdoor compensation is linear and is set using two parameter pairs which give the value of the compensation at two different outdoor temperatures. The compensation can be positive or negative. Shows the actual pressure compensation.
	Pressure control EAF Actual: Pa Setp.: Pa		Shows the actual external pressure and set point for the extract air fan. Only visible if the unit is configured for "Pressure control" (VAV)

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Pressure control EAF Setp 1/1: 250 Pa Setp 1/2: 100 Pa	Set the external pressure set point for normal speed (1/1) and reduced speed (1/2) for the supply air fan.
		Outdoor comp. Setp. 1 -20°C = 0 Pa 10°C = 0 Pa Act. Comp: 0 Pa	Set the EAF pressure compensation for the settable outdoor temperature. The outdoor compensation is linear and is set using two parameter pairs which give the value of the compensation at two different outdoor temperatures. The compensation can be positive or negative. Shows the actual pressure compensation.
→ Time settings	→ Time/Date		Set correct time and date.
	→ Timer normal speed		Set week schedule Monday to Sunday + Holiday for normal speed. Possible to set 2 periods per day. 00:00 24:00 for continuous running. 00:00 00:00 inactivates the period. Note the settings in the commissioning record
	→ Timer reduced speed		Set week schedule Monday to Sunday + Holiday for reduced speed. Possible to set 2 periods per day. 00:00 24:00 for continuous running. 00:00 00:00 inactivates the period. Note the settings in the commissioning record
	→ Extended running	Extended running 60 min Time in ext. running 0 min	Set the time for extended running. Digital inputs can be used to force the unit to start or increase to Normal running although the timer says the running mode should be Off or Reduced. If the running time is set to 0 the unit only runs as long as the digital input is closed. The time the extended running is active is monitored in "Time in ext. Running". It's also possible to set a time here as well in order to shorten the initial set period.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Holidays	Holidays (mm:dd) 1:01-01 – 01-02 2:09-04 – 09-10 3:01-05 – 01-05	Set up to 24 separate possible holiday periods for a full year. A holiday period can be any number of consecutive days from one and upwards. The dates are in the format: MM:DD. When the current date falls within a holiday period, the scheduler will use the settings for the weekday "Holiday".
→ Manual/Auto			In this menu the running mode of all the configured output signals and a number of control functions can be manually controlled. The supply air controller's output signal can be manually set (Manual/Auto) to any value between 0 and 100%. The temperature output signals will change accordingly if they are in Auto mode. It is also possible to manually control each of the temperature output signals individually. Since leaving any of the outputs in manual control will disrupt the normal control, an alarm will be generated as soon as any output is set to a manual mode.
	Supply Temperature contr. Auto Manual set: 0.0		Set the supply air temperature to "Auto", "On" or "Off". Set the output signal between 0-100%. The outputs Y1, Y2 and Y3, if in Auto-mode, will follow the signal according to the set split values.
	SAF: Auto Manual set: 0.0 EAF: Auto Manual set: 0.0		Set the start signal for SAF (supply air fan) & EAF (exhaust air fan) to "Auto, Manual full speed, Manual half speed or Manual
	Heating Auto Manual set: 100.0		Set the heating to Auto, Manual or Off Set the manual output 0-100%

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	Exchanger Auto Manual set: 0.0		<p>Set the exchanger rotor control to Auto, Manual or Off</p> <p>Set the manual output 0-100%</p>
	Cooling Auto Manual set: 0.0		<p>Set the cooling to Auto, Manual or Off</p> <p>Set the manual output 0-100%</p> <hr/> <p>Note:</p> <p>Needs to be activated in order to be visible here</p> <hr/>
	P1-Heating Auto P1-Exchanger Auto		<p>Set the pump control for the heating coil to Auto, On or Off</p> <p>Set the pump control for a possible run around coil to Auto, On or Off</p>
	P1-Cooling Auto		<p>Set the pump control for the cooling coil to Auto, On or Off</p>
	Fire damper Auto		<p>Set the Fire damper to Auto, Open or Close</p> <hr/> <p>Note:</p> <p>Needs to be activated in order to be visible here</p> <p>Configuration of fire damper functions are made at System level</p> <hr/>
	Fresh air damper (Outdoor air damper) Auto		<p>Set the Outdoor air damper to Auto, Open or Close</p>
	Exhaust air damper Auto		<p>Set the Exhaust air damper to Auto, Open or Close</p>
→ Settings			<p>In this menu group the settings for the activated functions are available. Depending on which choices have been made in the configuration menu some of the possible alternatives may not be displayed.</p>

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Control temp	Supply air control P-band: 33.0°C I-time: 100.0 sec	Set P-band and I-time for the Supply air control function <hr/> Note: See Corrigo E ventilation manual for deeper explanation
		Room control P-band: 100.0°C I-time: 300.0 sec	Set P-band and I-time for the Room control function <hr/> Note: See Corrigo E ventilation manual for more info
		Shutdown mode P-band: 100.0°C I-time: 100.0 sec	Set P-band and I-time for the Shutdown function <hr/> Note: See Corrigo E ventilation manual for deeper explanation
		→ Frost protection Active Setp shutdown: 25.0°C P-band active: 5.0°C	P-band active 5° C means that the frost protection controller will start overriding the heating output when the frost protection temperature is less than 5 degrees above the set frost alarm default alarm limit is 7° C
		Fast stop at frost protection alarm Yes	Set the fast stop of the unit in case of frost protection alarm to Yes or No.
	→ Control flow		Alternatively Pressure control if chosen in the configuration of the unit from factory
		Flow control SAF P-band: 10000.0 m ³ /h I-time: 10.0 sec Min. output: 0%	Set P-band, I-time and Min. output for the supply air fan when the unit comes configured as Flow control from factory. Alternatively Pressure control if that configuration is chosen

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Flow control EAF P-band: 10000.0 m ³ /h I-time: 10.0 sec Min. output: 0%	Set P-band, I-time and Min. output for the Extract air fan when the unit comes configured as Flow control from factory. Alternatively Pressure control if that configuration is chosen
	→ Alarm settings	→ Alarm limits	Set the alarm limits and allowed deviations for the different functions
		→ Alarm delays	Set the alarm delays and allowed deviation delays for the different functions
		→ Restore alarm	Reset the service alarm (filter alarm).
	Restore factory settings: No Restore user settings: No		In this menu, it is possible to restore all parameters to their factory settings or to the user settings they were saved as earlier . Select Yes or No
	Save user settings No		The current configuration can be saved in a separate memory area and can later be restored using the previous menu, Restore user settings. Select Yes or No
→ Configuration	→ Inputs/Outputs	AI DI UI AO DO	Set compensations for analogue inputs and assign extra sensors and in/outputs. Set if digital inputs is normally open or normally closed.
	→ Control function	Control function Mode: Extract air control	Set type of temperature control function you want the unit to operate under. Choose between Extract air control, "Room control, Outdoor comp. Supply, Supply air control, Extract/supply air →(possible to switch between the two depending on outdoor temp.), Room/supply air →(possible to switch between the two depending on outdoor temp.),

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Cooling	Water	Set type of cooler used. Water/DX/DX with exchanger control/Not used.
	→ Pump control	P1-Heating P1-Exchanger P1-Cooling	Set pump stop temperatures and delays.
	→ Free cooling	Free cool active: No Outd. temp activation 22°C	Set free cooling active to "Yes or No." Set the lower outdoor day temperature limit for the activation of the free cooling function. The temperature of the previous day needs to be over the set temperature in order activate the free cooling function.
		Outd. temp night High: 15.0°C Low: 5.0°C Room temp min. 18°C	Set the upper outdoor night temperature limit for the activation of the free cooling function Set the lower outdoor night temperature limit for the activation of the free cooling function Set the lower room temperature limit. The temperature needs to be above this value for the free cooling function to stay active
		Hour for start/stop Free cooling Start: 0 Stop: 7	Set the start and stop time for the free cooling function For example Start: 0 and Stop: 6 means that the free cooling sequence is active between 00.00 and 06.00 h.
		Time to block heat output after Free cooling 60 min	Set the delay in minutes from the time where the free cooling sequence has stopped until a possible heating sequence is initiated, i.e. how long a cooler room temperature than set temperature can be accepted
		Fan output when free cooling SAF: 0 % EAF: 0 %	Set the fan speed in percentage of the normal speed for each fan individually during the free cooling sequence

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Outdoor sensor placed in intake channel (intake duct) No	Set if the outdoor sensor is placed in the intake duct or not. Choose between No and Yes Preset is No .
	→ Support control	Support control Active: No EAF running during Support contr.: Yes	When using the control function room control or extract air temperature control, it is possible to utilize support-heating and/or support-cooling. Minimum running time is settable 0...720 minutes. (factory setting 20 minutes). Choose between "Active: Yes or No". (For start and stop temperatures see the "Temperature" menu)
		Min. run time for support ctrl: 60 min	Set the minimum running time in minutes for support control
	→ CO2/VOC Control	CO2/VOC active Never Type: Fan Min. time: 60 min	In applications with varying occupancy the fan speeds can be controlled by the air quality as measured by a CO2/VOC-sensor. See encl. corrigo manual (CD) for det. explanation Set active to Never , Always or If time channel off . Set what should be regulated. Select type Fan Set the min. time the unit is activated by the CO2/VOC demand function
		Activation level 1/2-speed: 800 ppm 1/1-speed: 1000 ppm diff: 160 ppm	Set the activation level at 1/2 speed Set the activation level at 1/1 speed Set allowed diff. value
	→ Fire function	Fire damper function Not active Operation when alarm Stopped	Set fire damper to Normally closed /Normally open/Not active. Set behaviour of the unit when fire alarm is triggered Stopped/Continuous run/Normal run/Only SAF/Only EAF.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Fire alarm input Normally open Damper exercise No	Set if the Fire alarm input is Normally closed/Normally open Set if you want fire damper exercise running No/Yes unit running/Yes unit stopped
		Damper exercise Running time: 90sec Interval in days: 1 Hour for exercise	Set the running time for the damper exercise. Set how often the damper exercise will run. Set the hour for damper exercise, 0-23.
	→ Exchanger de-icing	Exchanger de-icing Yes	Set if exchanger de-icing will be used, Yes/No.
		Setpoint de-icing: -3.0°C Hysteresis: 1.0°C Stoptemp SAF: -10.0°C Min.run time: 5 min	This section is for units with rotating exchangers.
		Exchanger de-icing bypass: Yes Underpressure: Yes Defrost. Level: 3	This section is for units with counterflow exchangers. Set if bypass of the outdoor air is allowed during de-icing, Yes/No. Set if underpressure is allowed in the building during de-icing, Yes/No . Set level of aggression for the defrosting, 1-5.
		Time between de-icing for level 5 20 min	Set the time between the de-icing cycles for level 5 for counterflow exchangers, can be used to have more aggressive de-icing when level 5 is not aggressive enough.
	→ Cooling recovery	Cooling recovery No Cooling limit: 2.0°C	Set the cooling recovery to Yes or No. Set the cooling limit (the difference in temperature between extract air and outdoor air that activates the cooling recovery).

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ External setpoint	External setpoint Not active Min setpoint: 12.0°C Max setpoint: 30.0°C	Set if a external setpoint is used, for example a room controller. Not active/Active. Set min allowed setpoint of the external setpoint. Set max allowed setpoint of the external setpoint.
	→ Step controllers	Step control heating	Not in use.
		Step control cooling Binary steps Start step 1: 10% Stop step 1: 5% Start step 2: 50% Stop step 2: 45% Start step 3: 95% Stop step 3: 90%	Set the level of the cooling output that starts step 1 of the cooling. Set the level of the cooling output that stop step 1 of the cooling. Set the level of the cooling output that starts step 2 of the cooling. Set the level of the cooling output that stop step 2 of the cooling. Set the level of the cooling output that starts step 3 of the cooling. Set the level of the cooling output that stop step 3 of the cooling.
→ Access rights	→ Log on	Log on Enter password xxxx Actual level: None	Log on to service level by entering a 4-digit code. After reaching the desired level go back with "LEFT" arrow (press 2 times) on the control panel. Standard code from factory to enter service level is 2222. Back to operator level: 1111
	→ Log off	Log off No Actual level:None	Log off from system level by changing "No" to "Yes" with the "OK" and "UP/DOWN" buttons Automatic logoff after 6 minutes of inactivity.
	→ Change password	Change password for level:None New password xxxx	Set a new password for the level of your choice. Can only be done once logged on to the service level.

5.4 Free cooling description

This function is used during the warm period to save energy by using cold outdoor air, e.g. during night time, to cool down the building.

Note:

The following is only valid if the free cooling function is set to `Active` in the program menu.

Free cooling is only activated when the following starting conditions are met.

Starting conditions:

- Less than 4 days have passed since the unit was last in running mode
- The outdoor temperature during the previous running period exceeded a set limit (+22°C)
- It is between 00:00 and 07:00:00 in the day (settable)
- The timer outputs for normal speed, Extended running normal and External stop are Off
- A time channel will be On sometime during the recently started 24 hours.

The unit checks the night temperature (indoor and outdoor temperature) during 3 minutes at the set starting hour when the fans are started so that the sensors can perform a temperature measurement. If above conditions are met the free cooling function is started, if not the unit goes back to OFF position.

If the outdoor sensor is not located in the outdoor air inlet duct and a room sensor has been selected, the unit will not start free cooling as long as all the temperatures are not within the start and stop temperature intervals.

Stop conditions:

- Outdoor temp above the set max value (+18°C) or below the set min value (condensation risk, +10°C)
- The room temp/extract air temp is below the set stop value (+18°C)
- One of the timer outputs for normal speed, External stop or Extended running normal is On
- The time has past 07:00:00.

When free cooling is active, the fans run at normal speed or the set value for pressure/flow control and the digital output `Free cooling` is active. The outputs `Y1-Heating`, `Y2-Heat exchanger` and `Y3-Cooling` are shut down. After free cooling has been activated, the heating output is blocked for 60 minutes (configurable time).

6 Maintenance

6.1 Important

Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

Warning

- Although the Mains supply to the unit has been disconnected there is still risk for injury due to rotating parts that have not come to a complete standstill.
- Beware of sharp edges during mounting and maintenance. Use protective clothing.

6.2 Maintenance intervals

The table below shows recommended maintenance intervals for the unit and the installation. To ensure a long operation lifetime for the unit it is important to perform maintenance according to below recommendations and that they are performed according to the operation and maintenance instructions. A thorough and recurrent maintenance is a must for a valid guarantee.

Type of maintenance	Once a year	When necessary
Cleaning the heat exchanger	X	
Cleaning the fans	X	
Cleaning extract louvres and supply air diffusers		X
Cleaning the outdoor air intake	X	
Cleaning the duct system		X ¹

1. Or in accordance with local rules and regulations

6.3 Maintenance Instructions

6.3.1 Changing Supply/Extract air filter

The bag filter cannot be cleaned and must be changed when necessary. New filters can be ordered from Systemair. Operation time between filter changes depends on the air pollution at the installation site. A differential pressure switch indicates when it's time to change the filters. This will trigger an alarm in the control panel.

When this occurs do the following:

1. Replace the filters with new ones as described below
2. Acknowledge the alarm by pressing the red button on the control panel (pos.1 figure 4) followed by OK (pos.4 figure 4)
3. Choose →Acknowledge by pressing OK

The filters are taken out by releasing the filter locking handle as shown in (figure 5) after which the filters can be taken out and replaced (figure 6).

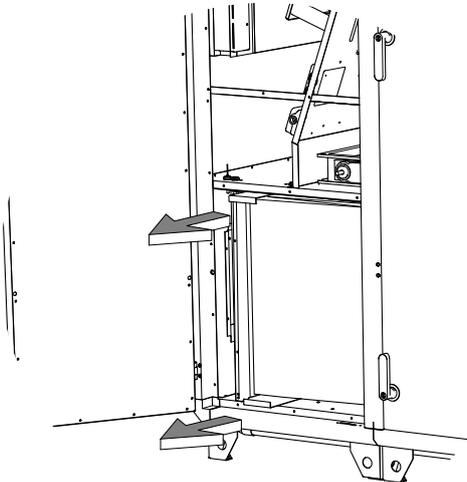


Fig. 5 Releasing the filter locking handle

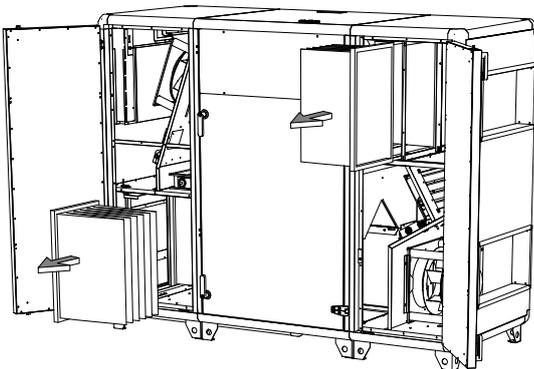


Fig. 6 Changing filters

6.3.2 Checking the heat exchanger

After a long time of use dust may build up in the exchanger and block the airflow. It is important to clean the exchanger regularly (once a year) to maintain high efficiency. The heat exchanger can be taken out of the unit for maintenance step 2. Wash in hot soapy water or use pressure air. Do not use detergent containing ammonia.

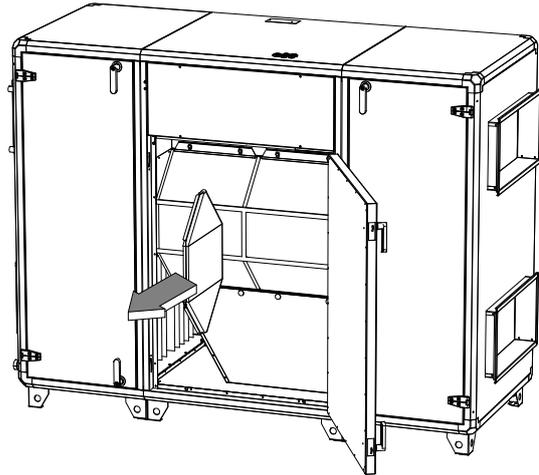


Caution

The heat exchanger is heavy and sensitive for impacts. Handle with care.

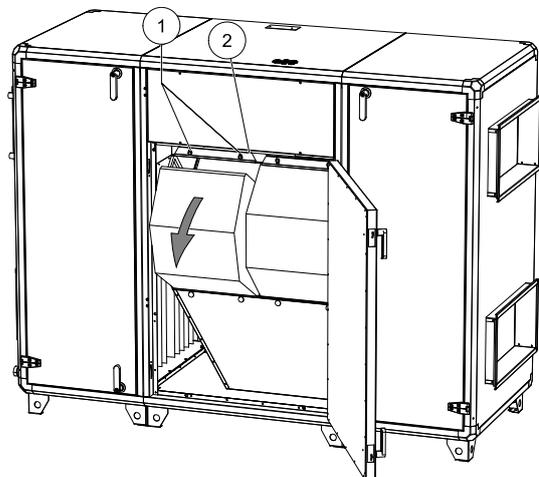
1

Remove the sealing between the exchanger blocks



2

Loosen the 2 bolts (pos.1) on the upper bar (pos.2) and pull the bar slightly upwards. Tilt the exchanger and lift it out.



6.3.3 Checking the Fans

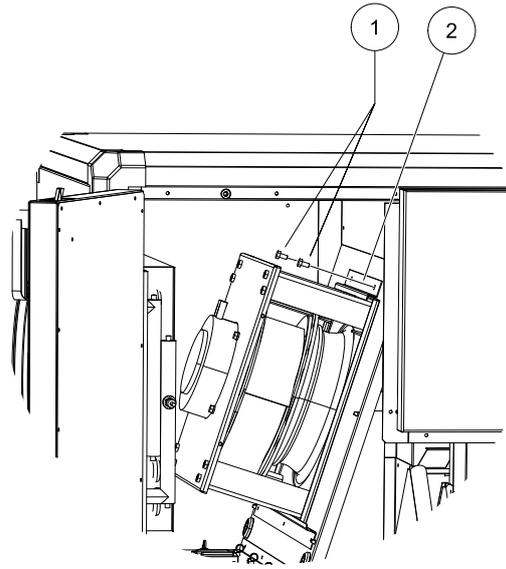
Even if the required maintenance, such as change of filters, is carried out dust and grease may slowly build up inside the fans. This will reduce the efficiency.

The fans can be dismantled by loosening the bolts which attach the rack to the units inner wall section. The complete fan rack can then be pulled out after all the attached fast couplings to the electric wires and the two tubes have been disconnected. The fans may be cleaned with a cloth or a soft brush. Do not use water. White spirit can be used to remove obstinate settlements. Allow drying properly before remounting.

The fan motor bearings are life time lubricated and should not be re-greased.

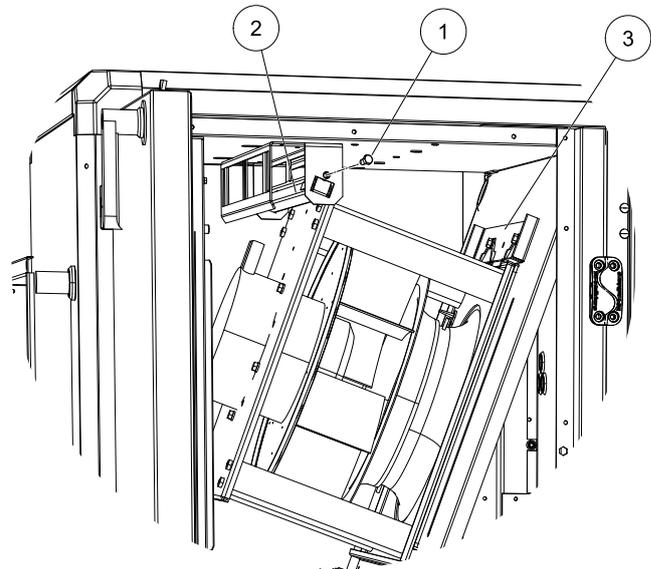
1

On supply air side for size 3-4, loosen the two bolts (pos.1) on the rail (pos.2) to dismount the fan.

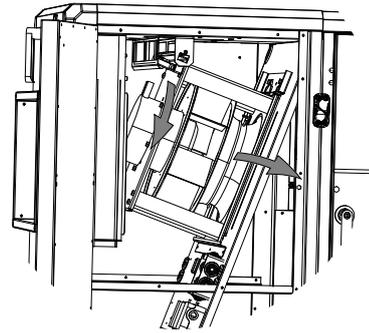


2

For size SC06-11 loosen the bolt (pos.1) in the support rail in the units roof. Pull the level (pos.2) slightly forward and down. Then release the locking handle (pos.3). Be careful, the motor is heavy and moves by its own weight.

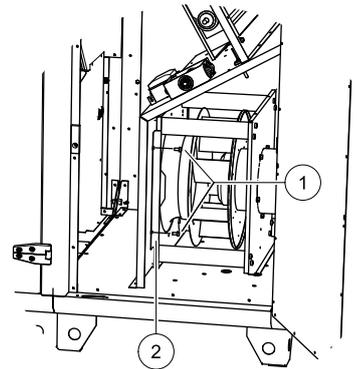


3



4

For the exhaust air side the fans are dismantled by loosening two bolts (pos.1) for size 3-4 and three for size 6-11 and remove the rail (pos.2).



6.3.4 Checking the Hot water heating battery

After long periods of operation (usually several years) dust may have deposited on the surface of the battery. This may reduce batteries capacity. The battery can be cleaned with a pressure washer with misting jets, or with compressed air. Cleaning should be carried out carefully so as not to damage the batteries aluminium fins. Once a year the battery water circuit needs to be vented to maintain the batteries capacity.

6.3.5 Checking the Electrical heating battery

After long period of time dust and pollutants can build up on the heating rods. This can cause unpleasant odors and in the worst case fire. Clean with compressed air, vacuum or brush. The heating power can be measured, in the electrical connection box, before the heating season. By large discrepancies each rod needs to be measured. The automatic safety function needs to be tested and verified.

6.3.6 Cleaning Extract louvres and Inlet diffusers

The system supplies treated outdoor air to the building and extracts the used indoor air via the duct system and diffusers/louvres. Diffusers and louvres are mounted in ceilings/walls in bedroom, living room, wet rooms, WC etc. Remove diffusers and louvres and wash in hot soapy water if required. Diffusers/louvres must be put back with their original settings and positions in order not to unbalance the system.

6.3.7 Checking the Outdoor air intake

Leaves and pollution could plug up the air intake grille and reduce the unit's capacity. Check the air intake grille at least twice a year and clean if necessary.

6.3.8 Checking the Duct system

Dust and grease settlements may build up in the duct system even if filters are changed regularly. This will reduce the efficiency of the installation. The ducts should therefore be cleaned/changed when necessary. Steel ducts can be cleaned by pulling a brush, soaked in hot soapy water through the duct via diffuser/louvre openings or special inspection hatches in the duct system (if fitted).

6.3.9 Changing the Internal Battery

Note:

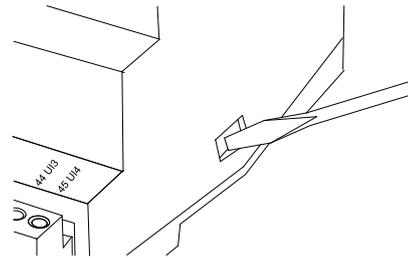
This procedure requires knowledge of proper ESD protection; i.e. an earthed wristband must be used!

When the alarm "Internal Battery" is activated and the battery LED lights up red, the battery for backup of program memory and real-time clock has become too weak. The battery is replaced as described below. A backup capacitor saves the memory and keeps the clock running for at least 10 minutes after the power supply is removed. Therefore, if the battery replacement takes less than 10 minutes, there will be no need to reload the program, and the clock will continue to run normally.

The replacement battery must be of the type CR2032.

1

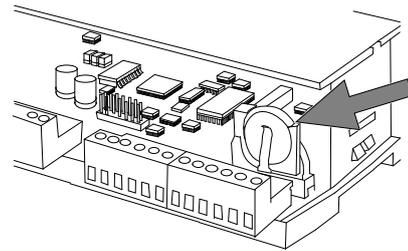
Remove the cover by pressing down the locking torques at the edge of the cover using a small screwdriver, and at the same time pulling the edges outwards.



2

Grip the battery firmly with your fingers and lift it upwards until it rises from its holder.

Press the new battery firmly down into place. Note that to preserve correct polarity, the battery can only be inserted the "right way round".



6.4 Troubleshooting

Should problems occur, please check or correct the following before contacting your service representative. Always check if there are any alarms active in the control panel.

1. Fan(s) do not start

- Check if there are any alarm messages
- Check that the fuses are not defect (pos.8 figure 3)
- Check the settings in the control panel (times, week schedule, auto/manual operation etc.)

2. Reduced airflow

- Check the settings for medium and low fan speed
- Check that the outdoor/exhaust air damper (if used) opens
- Check if filters need changing
- Check if diffusers and louvres need cleaning
- Check diffuser/louvre openings
- Check if fans and exchanger block need cleaning
- Check if the roof hood or air intake is clogged
- Check ducts for visible damage and/or build up of dust/pollution

3. Cold supply air

- Check the control temperature on the control panel
- Check if the overheating thermostat has tripped. If necessary press the red button, on the electrical heater figure 2 with a pointed tool.
- Check if the extract filter must be changed
- Check if the fans have stopped due to overheating. If so the thermal contact might have tripped (shows as `Fan alarm` in the control panel).

4. Noise/vibrations

- Check that the unit is completely leveled
- Clean the fan impellers
- Check that the screws holding the fans are tightened properly

6.4.1 Alarms

The alarm button (pos.1, figure 4) opens the alarm queue. When pressing this button active and non-acknowledged alarms will be displayed in the menu window. The alarm-LED (pos.2, figure 4) is flashing if there are non-acknowledged alarms and steady if the alarms are still active but have been acknowledged. If there are multiple alarms, use UP/DOWN to move between them. An alarm can be acknowledged or blocked by using OK and UP/DOWN. To abort and go back to start menu press cancel and then press LEFT.

See Commissioning record for an overview of possible alarms

7 Service

Before calling your service representative, make a note of the specification and production number from the type label (figure 7)

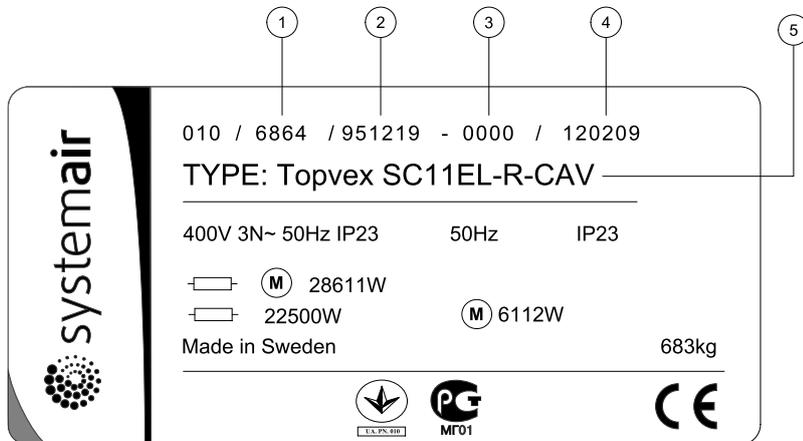


Fig. 7 Type label

Position	Description
1	Item number
2	Production order number
3	Consecutive number
4	Production date
5	Product code (product specification)

Systemair AB reserves the right to make changes and improvements to the contents of this manual without prior notice.



Systemair AB
Industrivägen 3
SE-739 30 Skinnkatteberg, Sweden

Phone +46 222 440 00

Fax +46 222 440 99

www.systemair.com