Topvex SX/C, Topvex TX/C

Air Handling Unit

GB Operation and Maintenance Instructions

Contents

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**
• Keep the doors locked during operation to ensure required level of safety for the unit.
• The unit must be duct connected or in some other way provided with protection so that it is not possible to come in contact with the fans through the duct connections
• Beware of hot surface on the heating battery during maintenance and service.
• The unit is heavy. Be careful during transport and mounting. Risk of injury through pinching. Use protective clothing.
• Beware of sharp edges during mounting and maintenance. Make sure that a proper lifting device is used. Use protective clothing.
• The units electrical connection to the mains supply must be preceded by an all pole circuit breaker with a minimum 3 mm gap.

Caution
• If the unit is installed in a cold place make sure that all joints are covered with insulation, and tape well
• Duct connections should be covered during storage and installation
• Do not connect tumble dryers to the ventilation system
• Take care not to damage the water battery when connecting water pipes to connectors. Use a spanner to tighten the connection.

2 Product Description

2.1 Internal components
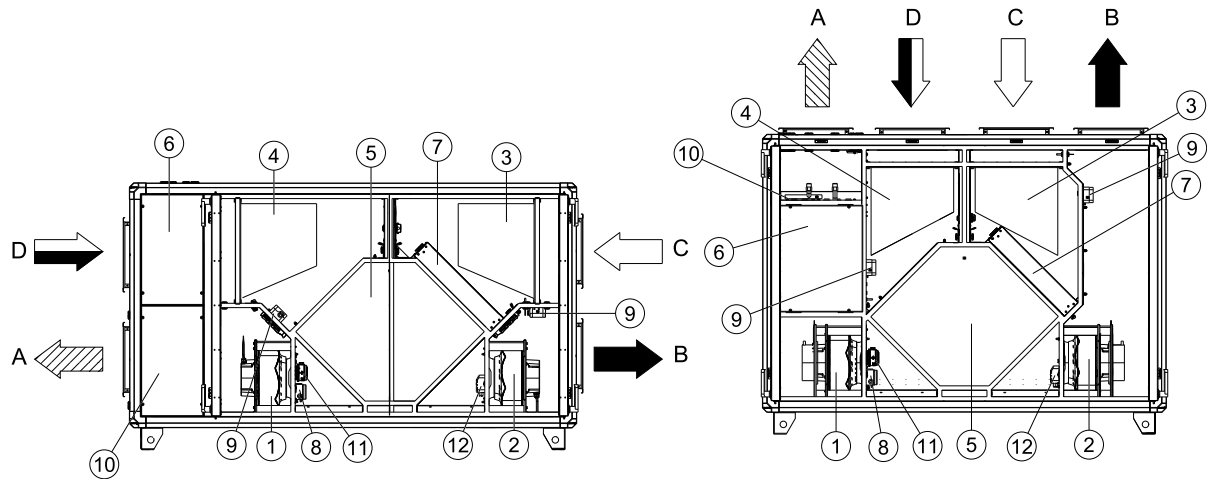
Fig. 1

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	Electrical connection box	
7	Damper by-pass outdoor air	
8	Pressure transmitter fans (accessory)	
9	Pressure guard filter	
10	Re-heater battery	
11	Airflow guard (only EL units)	
12	Differential pressure sensor – deicing	

2.2 Description of internal components

2.2.1 Supply and Extract air Fans

The fans have external rotor motors of EC type which are steplessly controlled individually by setting the control signal to a fixed value. 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 5 for more information.

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 M5 for the extract air filter. The filters need to be replaced when polluted. New filters can be acquired from your installer or wholesaler.

2.2.2.1 Pressure guard for filters

A pressure guard measures the differential pressure over the supply and extract air filters (pos. 9 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 SX/C, TX/C models are equipped with a counter flow heat exchanger and a by-pass damper. The operation of the by-pass damper is automatic and depends on the set temperature or if deicing is in operation.

2.2.4 Temperature sensor

4 temperature sensors (PT1000) are included in the unit from factory. The sensors are as follows:

- Supply air sensor

- Extract air temperature sensor

- Outdoor air temperature sensor

- Efficiency temperature sensor

For Topvex TX/C all temperature sensors are mounted and wired inside the unit, for Topvex SX/C the supply air sensor loosely delivered with the unit and needs to be installed in the supply air duct externally from the unit. See Installation instructions for more 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 hot water coil can be either HWL (hot water coil, low power) or HWH (hot water coil, high power). 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.

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 electrical heating battery has both automatic and manual overheating protection. The manual overheat protection is reset by pushing the red button on top of the electrical heater frame (pos. 10 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 selected control function 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.
• Beware of hot surface on the heating battery during maintenance and service.

2.3 Internal components Electrical connection box

Topvex SX/C   Topvex TX/C HW   Topvex TX/C EL
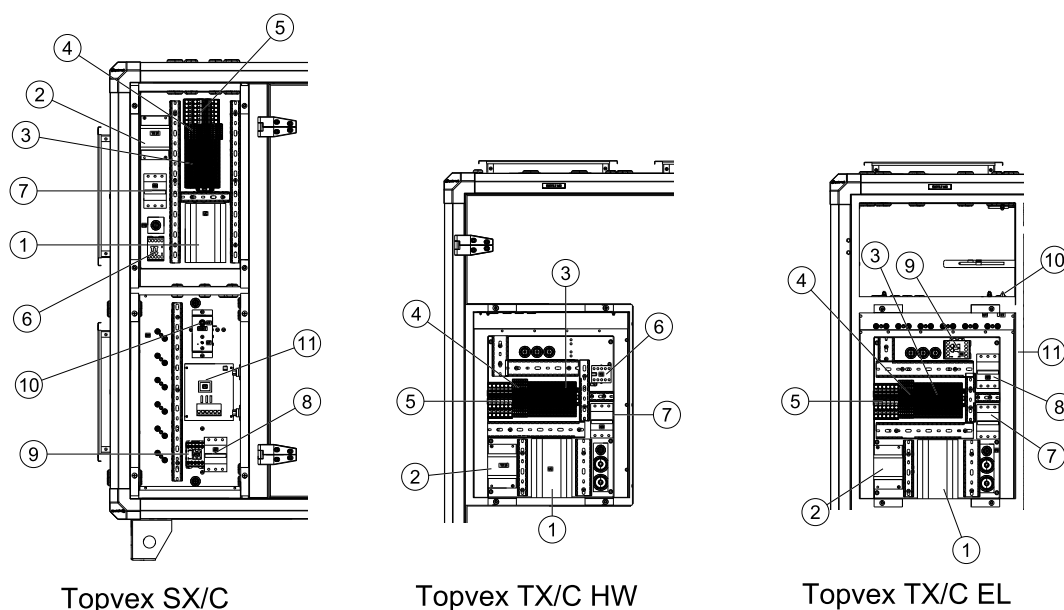
Fig. 2

Position	Description
1	Regulator E-283 WEB
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 (K2) On/Off Pump control water (HW units only, not present in EL-units)
7	Automatic fuse
8	Automatic fuse for heater (EL units only)
9	Contactor (K3) EL heater (EL units only)
10	Manual over heat protection reset (EL units only)
11	TTC El heater control (EL units only)

3 Interface Description

3.1 Control Panel

The SCP control panel is delivered with a 10 m cable (up to 100 m can be used) 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. The cable can be unscrewed in the back of the control panel (figure 3).

3.1.1 Operating the control panel
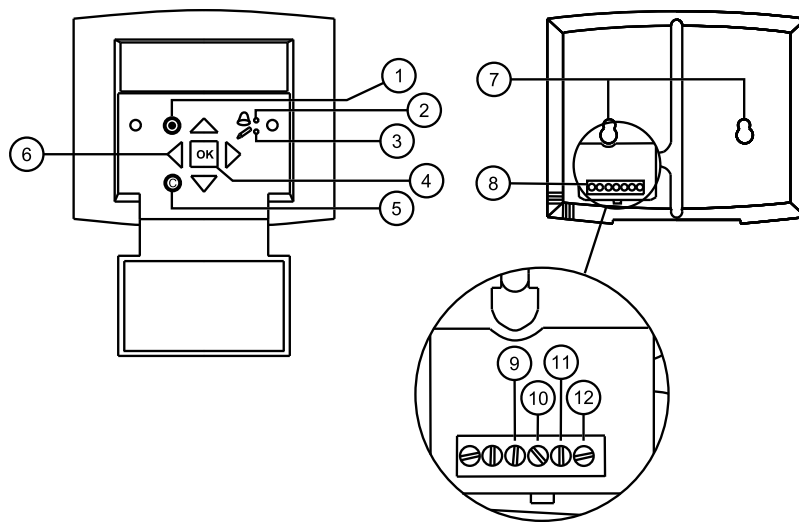
Fig. 3 The control panel

Posi-tion	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 brown cable.
10	Connection to yellow cable.
11	Connection to white cable.
12	Connection to black cable.

3.1.1.1 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.

4 Commissioning

4.1 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)

4.2 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 extract 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 00:00 - 24:00 for continuous running. Setting 00:00 - 00:00 inactivates the period (stops the unit). Normal speed overrides Reduced speed i.e. Normal speed 07:00 - 16:00 and Reduced speed 00:00 - 24:00 runs the unit on Normal speed 07:00 - 16:00 and Reduced speed the rest of the day.

5

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
```

6

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:  00:00 - 00:00
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 Monday to Friday. It's possible to set 2 periods per day

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

8

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 - 00:00
Per 2:  00:00 - 00:00
```

9

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.

4.3 Menu overview

Below menu overview shows both the Operator, Service and Administrator level. The overview of the parts unique to the levels in below table are marked with different background color.

To logon to Operator level use code 1111 under `Access rights`.	To logon to Service level use code 2222 under `Access rights`.	To logon to Administrator level use code 3333 under `Access rights`.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

`Topvex SX/C04 EL`
 	
`2015-11-11 14:26`
 	
`System:Normal run`
 	
`Sp:22.0 Act:  °C`
			Start screen headline
			
			Can be set to 5 different layouts
			
			(Changeable at "Administrator level" under the `Configuration` menu).

→ `Running mode`	→ `Running mode`	`Running mode`
		
		`Auto`
			Set running mode to `Auto`, `Manual reduced run`, `Manual normal run` or `Off`.

		`Op time`
		
		`SAF: 0.0 h`
		
		`EAF: 0.0 h`
			The time in hours that the motors have been operating
			
			SAF = Supply air fan
			
			EAF = Extract air fan

	→ `Selected functions`	`Control function`
		
		`Cascade extract ctrl`
		
		`Fan control`
		
		`Flow/Pressure/ Manual control`
			Type of air temperature control the unit is configured for.
			
			Type of fan speed control the unit is configured for.

		`Heating:  Water`
		
		`Exchanger: Plate/Rot.exc`
		
		`Cooling:  Not connect`
			Type of heating selected.
			
			Type of exchanger selected.
			
			Type of cooling selected.

		`Free cool active:No`	Status of the free cooling function.

		`Support control`
		
		`Active:  No`
		
		`CO2/VOC active`
		
		`Never`
			Status of the support control function.
			
			Status of the demand ventilation (CO2/VOC) function.

		`Fire damper function`
		
		`Not active`
		
		`Operation when alarm`
		
		`Stopped`
			Status of the fire damper function when fire alarm is active.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

		`Frost protection`
		
		`Active`
		
		`Cooling recovery`
		
		`Yes`
			Status of the frost protection function.
			
			Status of the cooling recovery function.

		`External set point`
		
		`Not active`
			Status of the external set point.

	→`Alarm events`		Alarm log list along with the time and date they occurred. Move down and up in the list by pressing ↑↓.
	→`Input/Output`	→`AI`	Status of the Analogue inputs.
		→`AI exp3`	Status of the Analogue inputs for expansion unit. **Only visible for counter-/crossflow units with a connected pressure module**
		→`DI`	Status of the Digital inputs.
		→`UI`	Status of Universal Analogue inputs or Universal Digital inputs.
		→`UI exp3`	Status of the Universal Analogue inputs for expansion unit. **Only visible for counter-/crossflow units with a connected pressure module**
		→`AO`	Status of the Analogue outputs.
		→`DO`	Status of the Digital outputs.

→`Temperature`	`Extract air temp`
	
	`Actual:  °C`
	
	`Setp:  22.0°C`
			Configured temperature control (default is `Extract air temp`).
			
			Actual temperature in the chosen control mode.
			
			Set-point temperature for the chosen control mode.

		`If cascade control`
		
		`Max/min supply setp.`
		
		`Max:  30°C`
		
		`Min:  14.0°C`
			Set the maximum and minimum allowed supply air temperature in case of cascade control.
			
			Logon to service level needed to change settings.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	`Outdoor temp: °C` `Supply air temp` `Act.:  °C` `Setp:  18°C`	`Neutral zone 0.0 °C`	Actual outdoor air temperature. Actual supply air temperature. Calculated supply air set point. The extract air controller output signal generates the supply air controller's set point value. A neutral zone can be set around the setpoint value. **Note:** See Corrigo manual-Ventilation application for more information.
	`Frost protection` `Actual:  °C`		Actual water temperature in the water heating battery. (Only visible for HW units).
	`Efficiency` `exch.` `Actual:  %` `Output exchanger` `Actual:  100%`		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. Efficiency calculated from the Outdoor, Extract and Efficiency air temperature. When the control signal is lower than 5% or the outdoor temperature is higher than 10° C the display will show 0%. Status of the exchanger output.
	`Temp for calculation efficiency` `Act:  NaN C`		Presented temperature for supply air efficiency calculation.
→`Air Control`			**This menu option becomes visible if the unit is configured for "Flow control", "Manual frequency" or "Pressure control".**
	`Frequency control manual SAF` `Output:  %`		Frequency control manual. Fans controlled by setting fixed output signal. **This menu option becomes visible if the unit is configured for "Manual frequency".**

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

		`Frequency control manual SAF`
		
		`Output 1/1:  75%`
		
		`Output 1/2:  50%`	

		`Outdoor comp.output.`
		
		`-20°C = 0 m³/h`
		
		`0°C = 0 m³/h`
		
		`Act.  Comp:  0 m³/h`	

	`Frequency control manual EAF`
	
	`Output:  %`		

		`Frequency control manual EAF`
		
		`Output 1/1:  75%`
		
		`Output 1/2:  50%`	

		`Outdoor comp.output.`
		
		`-20°C = 0 m³/h`
		
		`0°C = 0 m³/h`
		
		`Act.  Comp:  0 m³/h`	

	`Flow control SAF`
	
	`Actual:  m³/h`
	
	`Setp.:  m³/h`
			Airflow for the supply air fan (constant airflow control).
			
			Only visible if the unit is configured for "Flow control" (CAV).

		`Flow control SAF`
		
		`Setp 1/1:  1100 m³/h`
		
		`Setp 1/2:  550 m³/h`
			Set the normal (1/1) and reduced (1/2) airflow for the supply air fan.

		`Outdoor comp.Setp.`
		
		`-20°C = 0 m³/h`
		
		`0°C = 0 m³/h`
		
		`Act.  Comp:  0 m³/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.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

	`Flow control EAF`
	
	`Actual: xxx m³/h`
	
	`Setp.:xxx m³/h`
			Airflow for the extract air fan (constant airflow control).
			
			Only visible if the unit is configured for "Flow control" (CAV).

		`Flow control EAF`
		
		`Setp 1/1: 1100 m³/h`
		
		`Setp 1/2: 550 m³/h↓`
			Set the normal (1/1) and reduced (1/2) airflow for the extract air fan.

		`Outdoor comp.Setp.`
		
		`−20°C = 0 m³/h`
		
		`0°C = 0 m³/h`
		
		`Act. Comp: 0 m³/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`
			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: 200 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`
			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:  200 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.

	`Extra flow EAF Actual:  m³/h`		Shows the extract air flow
→ `Time settings`	→ `Time/Date`		Set correct time and date. Set 00:00 - 24:00 for continuous running. Setting 00:00 - 00:00 inactivates the period (stops the unit). Normal speed overrides Reduced speed i.e. Normal speed 07:00 - 16:00 and Reduced speed 00:00 - 24:00 runs the unit on Normal speed 07:00 - 16:00 and Reduced speed the rest of the day.

	→ `Timer Normal Speed`	`Normal Speed Monday`
		`Per 1:`
		`07:00-16:00`
		`Per 2:`
		`00:00-00:00→`
		
		`Normal Speed Monday-Friday`
		`Per 1:`
		`07:00-16:00`
		`Per 2:`
		`00:00-00:00`
			Set week schedule Monday to Sunday, Monday-Friday+ Holiday for normal speed. Possible to set 2 periods per day.
			
			Note the settings in the commissioning record.

	→ `Timer Reduced Speed`	`Reduced speed Monday`
		`Per 1:`
		`00:00-24:00`
		`Per 2:`
		`00:00-00:00→`
		
		`Reduced Speed Monday-Friday`
		`Per 1:`
		`00:00-24:00`
		`Per 2:`
		`00:00-00:00`
			Set week schedule Monday to Sunday, Monday-Friday + Holiday for reduced speed. Possible to set 2 periods per day.
			
			Note the settings in the commissioning record.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Extended running	Extended running 60 min Time in ext. running 0 min	Set the time for extended running. Use digital input to force the unit to start or increase to normal running even if the actual mode is 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.
	→ Holidays	Holidays (mm:dd) 1:01-01 — 01-02 2:01-01 — 01-01 3:01-01 — 01-01	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 temp. contr. Auto Manual set: 0.0		Set the supply air temperature controller to Auto, Manual 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.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

	`SAF: Auto`
	
	`Manual set:`
	`0.0`
			Set the output signal for SAF (supply air fan) to:`Auto`, `Manual`,`1/2-speed` or `1/1-speed`.

	`EAF: Auto`
	
	`Manual set:`
	`0.0`
			Set the output signal for EAF (extract air fan) to:`Auto`, `Manual`,`1/2-speed` or `1/1-speed`.

	`Heating`
	
	`Auto`
	
	`Manual set:`
	`100.0`
			Set the heating to `Auto`, `Manual` or `Off`.
			
			Set the manual output 0-100%.

	`Exchanger`
	
	`Auto`
	
	`Manual set:`
	`0.0`
			Set the exchanger rotor control to `Auto`, `Manual` or `Off`
			
			Set the manual output 0-100%

	`Cooling`
	
	`Auto`
	
	`Manual set:`
	`0.0`
			Set the cooling to `Auto`, `Manual` or `Off`
			
			Set the manual output 0-100%
			
			Note:
			
			Needs to be activated in order to be visible here

	`P1-Heating`
	
	`Auto`
			Set the pump control for the heating coil to `Auto`, `On` or `Off`

	`P1-Cooling`
	
	`Auto`
			Set the pump control for the cooling coil to `Auto`, `On` or `Off`

	`Fire damper`
	
	`Auto`
			Set the Fire damper to `Auto`, `Open` or `Close`
			
			Note:
			
			Needs to be activated in order to be visible here
			
			Configuration of fire damper functions are made at `Administrator level`

	`Outdoor air`
	`damper`
	
	`Auto`
			Set the Outdoor air damper to `Auto`, `Open` or `Close`

	`Exhaust air`
	`damper`
	
	`Auto`
			Set the Exhaust air damper to `Auto`, `Open` or `Close`

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

	`Extra sequence Y4`
	
	`Auto`
	
	`Manual set: 0.0`
			Set the Extra sequence to `Auto`, `Manual` or `Off`
			
			Only visible for Topvex SC units

	`Extra sequence Y5`
	
	`Auto`
	
	`Manual set: 0.0`
			Set the Extra sequence to `Auto`, `Manual` or `Off`
			
			Not used in default setting.

→ `Settings`			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.

	→ `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
			
			Note:
			
			See Corrigo manual-Ventilation application for more information.

		`Extract air control`
		
		`P-band:  100.0°C`
		
		`I-time:  300.0 sec`
			Set P-band and I-time for the Extract air control function
			
			Note:
			
			See Corrigo manual-Ventilation application for more information.

		`Shutdown mode`
		
		`P-band:  100.0°C`
		
		`I-time:  100.0 sec`
			Set P-band and I-time for the Shutdown function
			
			Note:
			
			See Corrigo manual-Ventilation application for more information.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		→ Frost protection Active Setp shutdown: 25.0°C P-band active: 5.0°C	Status for frost protection. When running mode switched to "Off". Shutdown controller will control the heating output to maintain a constant settable temperature at the frost protection sensor for the hot water coil. If frost protection temperature falls below `Frost protection Alarm level` + settable `P-Band` for frost protection, it will rise the internal signal and force the heating valve to open to avoid freeze-up of hot water coil.
		Fast stop at frost protection alarm Yes	**Set** the fast stop of the unit in case of frost protection alarm to `Yes` or `No`.
		Sequency with frost protection Y1-Heating	Frost protection control. Is available for `Y1 heating`, `Y4 extra sequence` or on both `Y1` and `Y4`.
	→ Control flow or Control pressure		Only shown if Fan control selected to these alternatives.
		Flow control SAF P-band: 2160.0 m³/h I-time: 40.0 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
		Flow control EAF P-band: 2160.0 m³/h I-time: 40.0 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).

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	`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`
Darker gray area, log in to "Administrator level" code 3333			
→ `Configuration`	→ `Inputs/Outputs`		Setup for inputs and outputs.
	→ `Sensor settings`		Setup of sensor types and control range.
	→ `Control function`	`Control function Mode:` `Cascade extract ctrl`	**Set** type of temperature control function you want the unit to operate under. Choose between `Room control, Cascade extract ctrl, Outd comp room, Outd comp extr air, Supply air control, Outdoor comp. supply` `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.),
	`Fan control`		
	→ `Extra sequence Y4`	**Topvex SC:** `Mode extra sequence Y4` `Active w cool recov`	**Only active for Topvex SC** Can be configured to one of the following alternatives: `Active, Active with cooling recovery, Active with enthalpy control` **and** `Active with both cooling recovery and enthalpy control.`
	→ `Extra sequence Y5`		`Extra sequence Y5` **can be** configured to `Active` **or** `Not active.`

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

	→
	
	`Pump control`
		`P1-Heating`
		
		`P1-Cooling`
			Set parameters for pump control.
			
			If, for any of the control circuits, no output is configured for pump control these settings will be ignored.

	→ `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.
			
			If no room sensor are connected extract air is valid.

		`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 setpoint offset 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 60 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 Corrigo manual for further 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
		`Sequency with CO2 comtrol Y2 exchanger`	CO2/VOC control can be used with mixing dampers. Select for use on Y2, Y4 or on both outputs.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Fire Function	Fire damper function Not active Operation when alarm Stopped	The fire alarm input can be configured as Not active, Normally closed or Normally open. Choose operation when alarm is active Stopped, Continuous run, Normal run, Only SAF, or Only EAF
		Fire alarm input Normally open Damper exercise No	Fire alarm input can be configured to normally open or normally closed. Fire alarm input is also available to be configure from digital inputs. Note the risk of a twice changed signal can create an undesired function. Activate the fire damper exercising, choose between No, Yes unit running or Yes unit stopped. Set the parameters for damper exercise in the submenu.
	→ Exchanger deicing	Exchanger deicing Yes	**This sections is for units with counterflow and crossflow exchangers.** Set if exchanger deicing will be used, Yes/No
		    Bypass: On Stop deicing: On Activation temp: 0,0° C Stop temp SAF: -8,0° C	**This sections is for units with counterflow and crossflow exchangers.** Exchanger deicing allowed with bypass, On/Off. Exchanger deicing allowed with stop of the supply air fan (SAF), On/Off Outdoor temperature limit to allow deicing function. Outdoor temperature limit for forced stop deicing, interlock of bypass deicing.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
			This sections is for units with counterflow and crossflow exchangers.
		`Setp Press dev: 50%`	Set point in percent of the pressure deviation to start deicing.
		`Stop hyst:  60%`	Reduction of the pressure deviation in percent to cancel deicing.
		`Actual setp: xxx Pa`	Actual setpoint for deicing presented. **Note!** The value can vary, depending on airflow.
		`Manual calib: Off`	Manual calibration `ON/Off` to make a new calibration manually. **Note!** Recommended to perform this operation with a dry exchanger and normal airflow.

	→ `Cooling recovery`	`Cooling recovery`
		
		`Yes`
		
		`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).

	→
	
	`External setpoint`
		`External setpoint`
		
		`Not active`
		
		`Min setp.: 12.0°C`
		
		`Max setp.: 30.0°C`
			An external setpoint device can be connected. The setpoint device must follow the PT1000 resistance curve. The setting range can be restricted.

	→ `Alarm settings`	`Alarm no(1-115): 1` `Run Error Supply Air`	

	→
	
	`Communication`
		`Function Port1`
		
		`Slave`
			Choose between different communications `Slave`, `Expansion unit, Freq conv/Press tran, External display, Exp and freq conv` or `Exp and ext display.`

		→ `Function Port2` `Exp and ext display`	
		`TCP/IP`	

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations

→ `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. To enter Admin level code: 3333.

	→ `Log off`	`Log off?`
		
		`No`
		
		`Actual`
		`level:None`
			Log off from Administrator 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.

4.4 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 and thereby reducing the need for cooling during the day time.

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.

If any stop conditions is fulfilled after three minutes, the unit will stop again. Otherwise, operation will continue until a stop condition is fulfilled.

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). When using free cooling, an offset to normal fan control setpoint is adjustable.

4.5 Defrost function

By measuring the pressure difference over the exchanger the need for defrosting can be detected. The differential pressure transmitter is auto calibrated by the system to obtain the correct pressure in relation to the airflow. Manual calibration is possible, e. g. after cleaning of exchanger.

The bypass damper opens to reduce the flow of cold outdoor air through the heat exchanger. When the bypass defrosting is initiated the supply temperature is allowed to decrease 4K from the setpoint. If the actual supply air temperature is decreased more then -4K a stop defrost sequence will be initiated. If stop defrost is not allowed, the unit will stop and the alarm `Analogue deicing` is presented in the display.

Table 1:

`Exchanger deicing` `Yes`	Set if exchanger deicing will be used, Yes/No
`Bypass` `On`	Exchanger deicing allowed with bypass, On/Off.
`Stop deicing` `On`	Exchanger deicing allowed with stop of the supply air fan (SAF),On/Off
`Activation temp` `0.0`	Outdoor temperature limit to allow deicing function
`Stop temp SAF` `-8`	Outdoor temperature limit for forced stop deicing, interlock of bypass deicing
`Setp Press dev` `50%`	Setpoint in percent of the pressure deviation to start deicing
`Stop hyst` `60%`	Reduction of the pressure deviation in percent to cancel deicing.

5 Maintenance

5.1 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.
>
> • Beware of hot surface on the heating battery during maintenance and service.

5.2 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*

5.3 Maintenance instructions

5.3.1 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 3) followed by OK (pos.4 figure 3).

3. Choose →`Acknowledge` by pressing OK.

Open the unit front doors and pull out the filters.
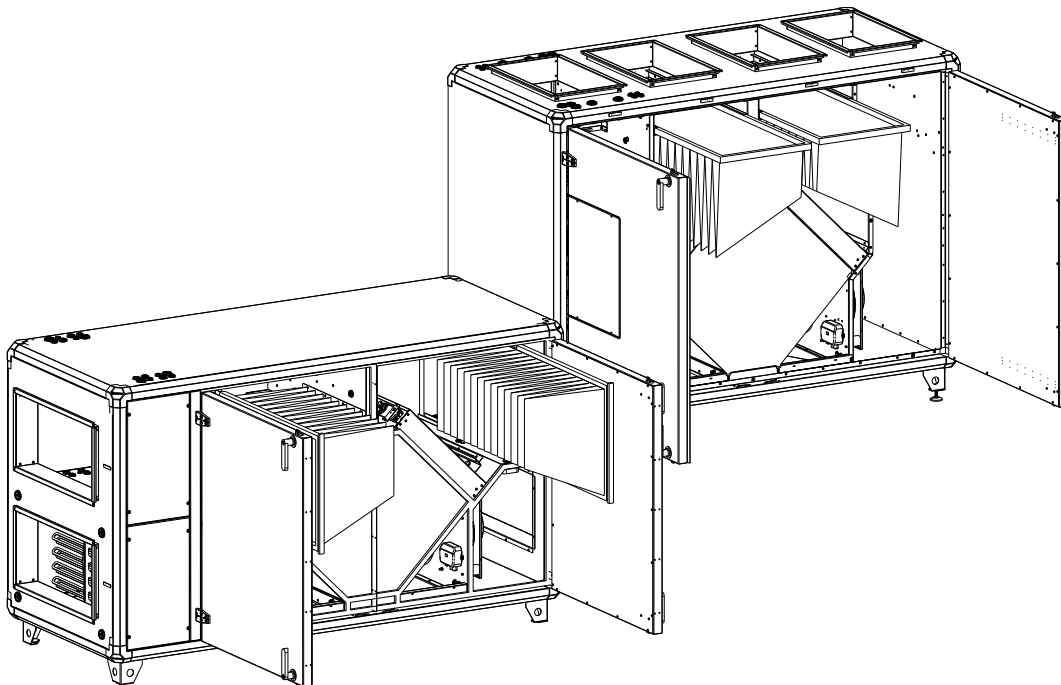
5.3.2 Checking the heat exchanger

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. Wash in hot soapy water or use pressure air. Do not use detergent containing ammonia.

> ⚠ **Caution**
>
> • The heat exchanger is sensitive for impacts. Handle with care.

5.3.3 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 are easily taken out from the unit by loosening the 2 bolts (pos 1) on the rail (pos 2) and disconnecting the fast couplings to the electric wires. Depending on the accessories installed, remove the tubing next to the fast couplings for the extract air fan or both the extract air fan and supply air fan.

Clean the fans with a cloth or a soft brush with a recommended interval of once per year. Do not use water. White spirit can be used to remove obstinate settlements. Allow drying properly before remounting.
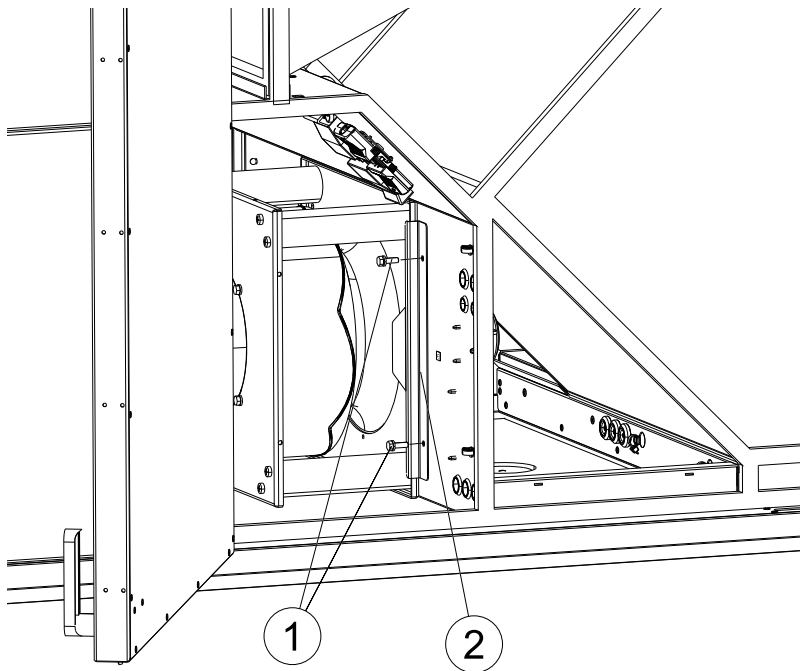
5.3.4 Checking the Hot water heating battery

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.

5.3.5 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 automatic safety function needs to be tested and verified.

5.3.6 Cleaning the extract louvers and inlet diffusers

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

The cleaning of these parts is done when necessary.

5.3.7 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.

5.3.8 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).

## 5.3.9 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.
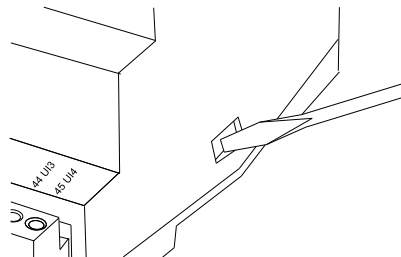
2

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".
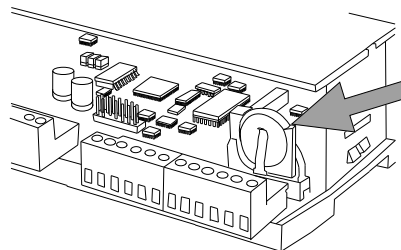
6 Troubleshooting

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.7 figure 2)
   - 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 unit 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).
   - 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

6.1 Alarms

The alarm button (pos.1, figure 3) 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 3) 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 4)
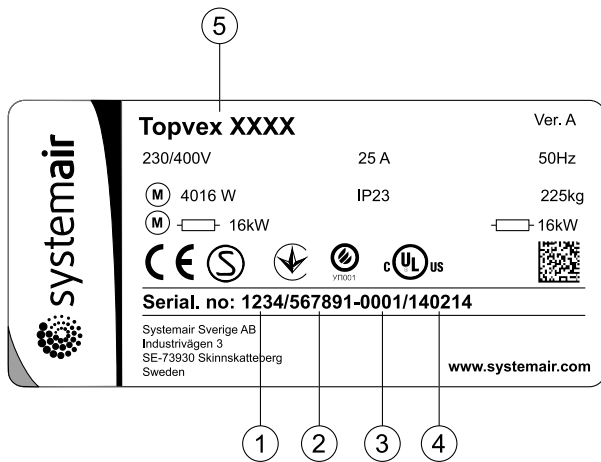

Fig. 4 Type label

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

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