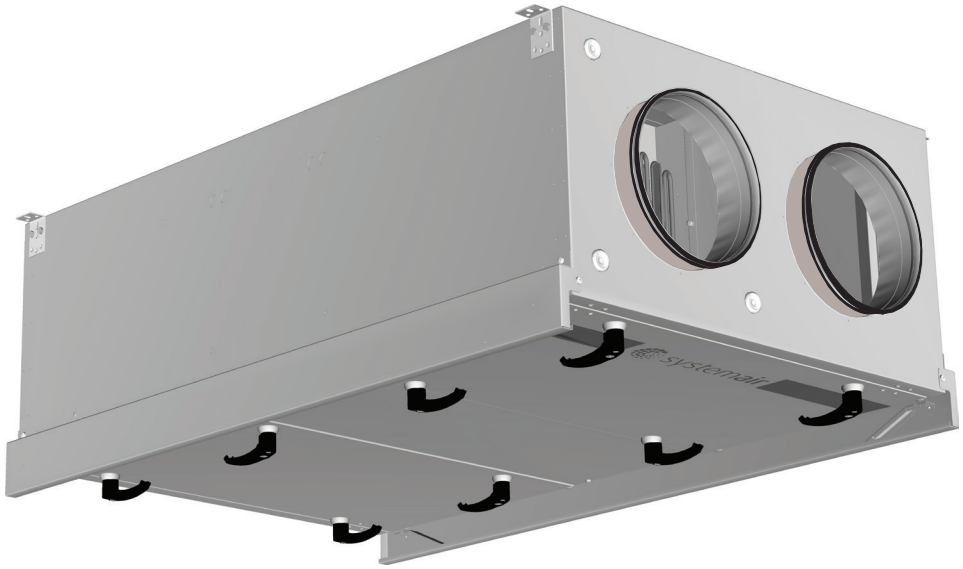
Topvex FR800, FR1600, FR3800

Compact Air Handling Unit



Operation and Maintenance Instructions

Item# : 400895
2015-06-23

Contents

1 Warning

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

Danger

- Make sure that the Main power 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 Main power 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 Topvex FR800-3800

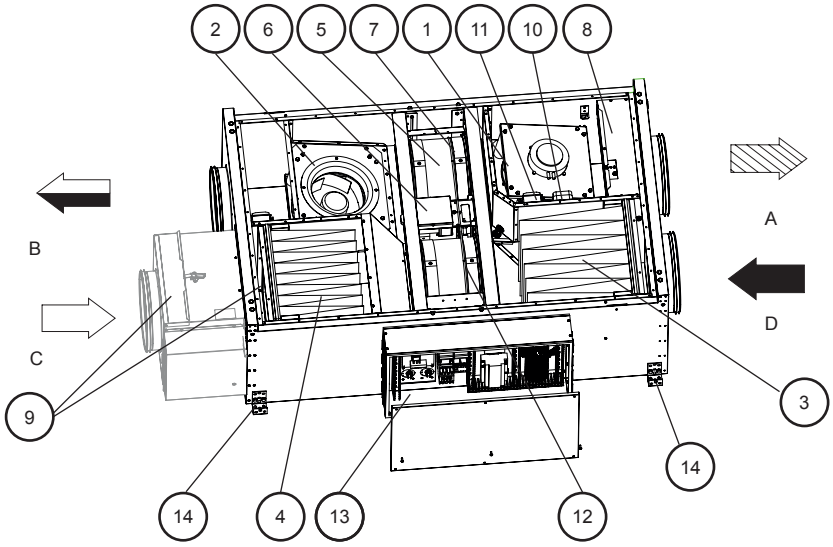


Fig. 1 Topvex FR components

Table 1: Components descriptions EL and HW units

Position	Description	Symbols
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 extract air.	
4	Filter outdoor air.	
5	Heat exchanger.	
6	Rotor motor.	
7	Rotor belt.	
8	Re-heater electric or hydronic.	
9	Pre-heater electric (mounted outside the unit) or hydronic	
10	Pressure guard for filter.	
11	Pressure transmitter for fan.	
12	Rotation guard for heat exchanger.	
13	Electrical connection box.	
14	Mounting brackets.	

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 (chapter 5).

2.2.1.1 Pressure Transmitter

Two pressure transmitters maintain the airflow at a constant level by measuring the differential pressure over the inlet cone of the fan impellers (pos.11 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 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 Outdoor and Extract Air Filters and Pre-Filter**

**** (only whit units with pre-heater)**

The filters are of bag filter type with filter quality MERV13 for the outdoor air filter and MERV9 for the extract air filter. The filters need to be replaced when dirty. New sets of filters can be acquired from your installer or wholesaler.
The pre-filter(s) is of a screen type and can be cleaned by using soap water or compressed air. It can be acquired from installer or wholesaler.

2.2.2.1 Pressure Guard Filters

A pressure guard measures the differential pressure over the supply and extract air filters (pos.10 figure 1). When the pressure drop reaches the set value an alarm is triggered in the main controller. The differential pressure can be set between 0.2 in.wg. (40Pa) and 1.2 in.wg. (300 Pa). The pressure switch is preset from factory to 1.0 in.wg. (240 Pa).

2.2.3 Heat Exchanger

Topvex FR models are equipped with a highly efficient, belt driven, rotating 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. (Chapter 5)

2.2.3.1 Rotor Motor

The rotor motor drives the exchanger rotor with a constant rotational speed as long as there is a heat demand. The motor is controlled by an on/off control signal. (pos.6 figure 1).

2.2.3.2 Rotation Sensor

A sensor registers the rotation of the heat exchanger rotor. It’s connected to the main regulator which gives an alarm if the rotor stops while there is a heat demand (pos.12 figure 1).

2.2.4 Temperature Sensors

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

- Supply air sensor
- Extract air sensor
- Outdoor air sensor
- Exhaust air sensor
- Extra unit sensor[1]

[1]. Only if pre heater is installed

In Topvex FR800-3800 all temperature sensors are mounted and wired inside the unit except for the supply air sensor, which is delivered uninstalled with the unit and needs to be installed in the supply air duct externally from the unit. See Installation instruction for more detailed information.

2.2.5 Hydronic Heater for FR800-3800

In units equipped with a hydronic **pre-heater**, the water coil is located next to the outside air connection. The coil material is copper piping with a frame of galvanized sheet steel and aluminun fins. Both **pre-heater & re-heater** are equipped with a frost protection sensor.

Both hydronic pre-heater and re-heater function outputs are modulated by the unit control in order to maintain their respective air temperature set points.

For Topvex FR800-3800 units without pre-heater and/or re-heater, a heating water coil can be equipped inside the unit. See “HWC-EPH Installation Instructions” manual (420353) for correct procedure.

2.2.6 Electrical Heater for FR800-1600

In unites equipped with an electric **pre-heater**, the heating rods are located next to the outdoor air connection. In units equipped with a built in electric **re-heater** (EL units only), the heating rods are located next to the supply air connection. The heater material is stainless steel. Both electric heaters have automatic and manual overheating protection. The manual overheat protection is reset by pushing the reset button on the electrical (see figure 3).

Both electric pre-heater and re-heater function outputs are modulated by the unit control in order to maintain their respective air temperature set points.

For Topvex FR800-1600 units without pre-heater, an electric heater can be equipped inside the unit. See “HWC-EPH Installation Instructions” manual (420353) for correct procedure.

Danger

- Make sure that the Main power 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.

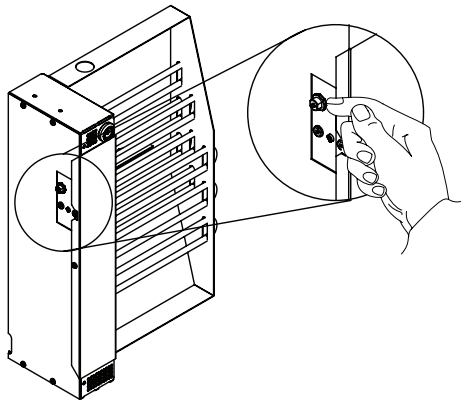
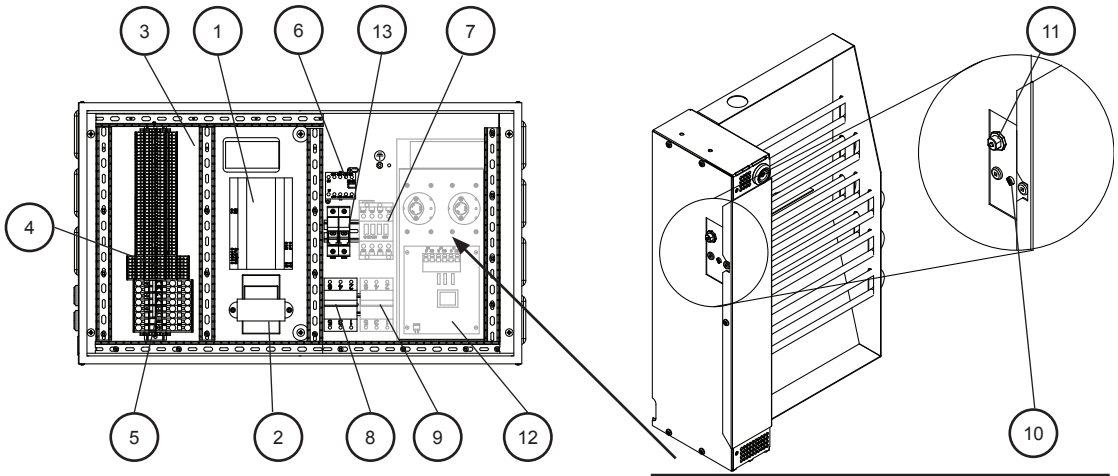


Fig. 2 Reset of the manual overheat protection in Topvex FR800-1600

2.3 Internal components Electrical connection box

Danger

- Make sure that the Main power 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.



Note:

Electric heater section. (Present in EL units only)

Fig. 3 Electrical components

Table 2: Description of electrical components

Position	Description
1	Controller E-28 (UC)
2	Transformer 208-230/24VAC (TR24)
3	Terminals for internal and external components (TB3)
4	Terminals for internal wiring (TB2)
5	Terminals for main power voltage to the unit (TB1)
6	Contactor (K1) On/Off rotor motor
7	Contactor (K3) On/Off control of EL heater (EL units only)
8	Automatic fuse (AS1)
9	Automatic fuse for heater (AS2) (EL units only)
10	Automatic over heat protection reset (EL units only) (OT1)
11	Manual over heat protection reset (EL units only) (ET1)
12	TTC EI heater control
13	Fuse holders F1 and F2

Note:

For pre-heater components, please refer to the “HWC-EPH Installation Instructions” manual (420353).

3 Interface Description

3.1 Control Panel

The SCP control panel is delivered with a 32 ft. (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).

3.1.1 Operating the control panel

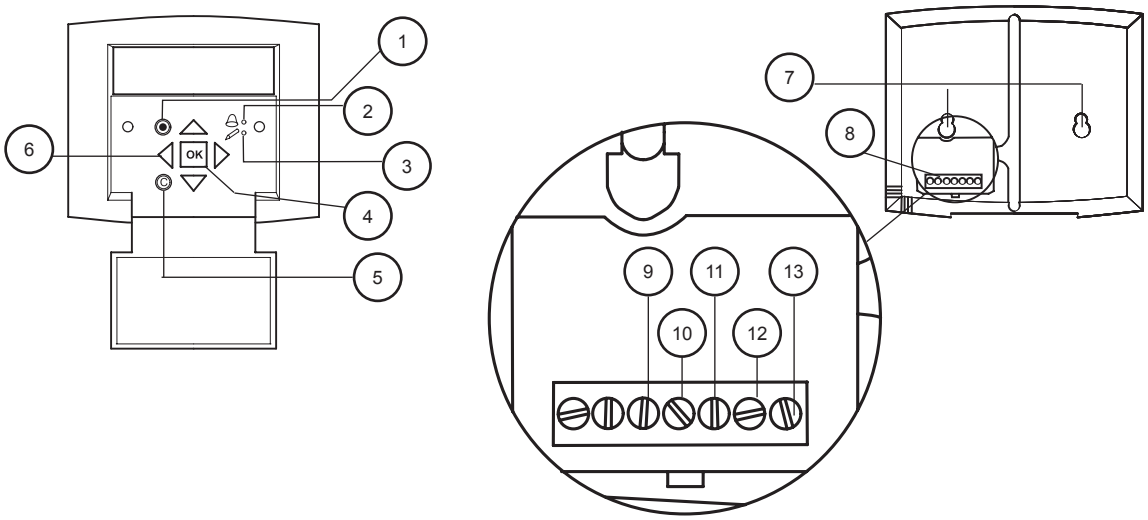


Fig. 4 The control panel

Table 3: Description of Control panel and wire connection

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 chargeable 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 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

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, if used, 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 function 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.

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.

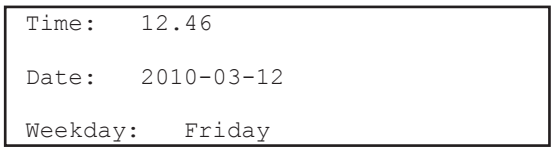
2

Shows the supply air temperature setpoint

Set the supply air setpoint. Default is 64º F (logon to service level needed, code 2222, to change default setting)

3

Ensure that correct time and date is displayed. If not change the settings.



4

Set the weekday (Monday-Friday) schedule for normal speed. 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 weekend and holiday schedule for normal speed. 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
```

6

Set the weekday (Monday-Friday) schedule for reduced speed. 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
```

7

Set the weekend and holiday schedule for reduced speed. 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
```

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.

Note:

To perform more advanced settings please see the enclosed CD where the Corrigo E - manual can be found.

4.3 Menu overview OPERATOR/SERVICE LEVEL

The menu overview below shows both the Operator and Service level. The overview of the parts unique to the Service level in the table below 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

`FR 800 EL`
 	
`2011-03-15 9:00`
 	
`System: Stopped`
 	
`Sp: 18.0 Act: °F`
			Start screen headline.
			
			Can be set to 5 different layouts.
			
			(Changeable at “system level” under the `configuration` menu).

`→ 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 motor have been operating.
			
			SAF = Supply air fan.
			
			EAF = Exhaust air fan.

	`→ Selected function`	`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`
		
		`C02/VOC active`
		
		`Never`
			Shows the status of the support control function.
			
			Shows the status of the demand ventilation (C02/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	→ Analogue inputs	**Shows** the status of the Analogue inputs.
		→ Digital inputs	**Shows** the status of the Digital inputs.
		→Universal inputs	**Shows** status of Universal Analogue inputs. **Shows** status of Universal Digital inputs.
		→Analogue outputs	**Shows** the status of the Analogue outputs.
		→Digital outputs	**Shows** the status of the Digital outputs.
→Temperature	Extract air temp Act.: °F Setp: 64.4°F		**Shows** the configured temperature control (Default is Extract air temp). **Shows** the actual temperature in the chosen control mode. **Shows** the temperature for the chosen control mode.
		If cascade control Max/min supply setp. Max: 86°F Min: 53.6°F	**Shows** the maximum and minimum allowed supply air temperature in case of cascade control. **Login to service level needed to change settings.**
	Outdoor temp: °F Supply air temp Actual: °F Setp: 64.4°F		**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: °F		**Shows** the actual water temperature in the water heating coil. (Only visible for HW units).
	Exhaust air temp Actual: °F		**Shows** the actual exhaust air temperature.
	Efficiency 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 98% and the outdoor temperature is lower than 50 °F. When the control signal is lower than 98% or the outdoor temperature is higher than 50 °F 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: CFM Setp.: CFM		**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: 647.4 CFM Setp 1/2: 323.7 CFM	**Set** the normal (1/1) and reduced (1/2) airflow for the supply air fan.
		Outdoor comp.Setp. 1 -4°F = 5.9 CFM 32°F = 0 CFM Act. Comp: 0 CFM	**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 CFM Setp.: CFM		**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: 647.4 CFM Setp 1/2: 323.7 CFM↓	**Set** the normal (1/1) and reduced (1/2) airflow for the extract air fan.
		Outdoor comp.Setp. 1 -4°F = 5.9 CFM 32°F = 0 CFM Act. Comp: 0 CFM	**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: in.wg Setp.: in.wg		**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: 0.6 in.wg Setp 1/2: 0.4 in.wg	**Set** the external pressure set point for normal speed (1/1) and reduced speed (1/2) for the supply fan.
		Outdoor comp.Setp. 1 -4°F = 0 in.wg 50°C = 0 in.wg Act. Comp: 0 in.wg	**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: in.wg Setp.: in.wg		**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: 1.0 in.wg Setp 1/2: 0.4 in.wg	**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 -4°C = 0 in.wg 50°C = 0 in.wg Act. Comp: 0 in.wg	**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 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 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 setting for the weekday “Holiday”.
→ Manual/Auto			In this menu the running mode of all the configured output signal 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		**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 P1-Exchanger Auto		**Set** the pump control for the heating coil to Auto,On or Off. **Set** the pump control for a possible run around 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 System level.**
	Fresh air damper (Outdoor air damper) Auto		**Set** the outdoor damper to Auto, Open or Close.
	Exhaust air damper Auto		**Set** the Exhaust air damper to Auto, Open or Close.
→ 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.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ Control temp	Supply air control P-band: 91.4°F I-time: 100.0 sec	**Set** P-band and I-time for the Supply air control function. **Note:** See Corrigo E ventilation manual for deeper explanation.
		Room control P-band: 212°F I-time: 300.0 sec	**Set** P-band and I-time for the Room control function. **Note:** See Corrigo E ventilation manual for more info.
		Shutdown mode P-band: 91.4°F I-time: 100.0 sec	**Set** P-band and I-time for the Shutdown function. **Note:** See Corrigo E ventilation manual for deeper explanation.
		→ Frost protection Active Setp shutdown: 77.0°F P-band active: 41.0°F	P-band active 41° F means that the frost protection controller will start overriding the heating output when the frost protection temperature is less than 41 degrees above the set frost alarm default alarm limit is 45° F.
		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 is chosen in the configuration of the unit from factory.
.		Flow control SAF P-band: 5885.8 CFM 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 is that configuration is chosen.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Flow control EAF P-band: 5885.8 CFM 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 is 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 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	→ Control function	Control function Mode: Room 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 temps.), Room /supply air →(possible to switch between the two depending on outdoor temps.),
	→ Free cooling	Free cool active: No Outd. temp activation 71.6°F	**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.

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
		Outd. temp night High: 59.0°F Low: 41.0°F Room temp min. 64.4°F	**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.
		Outdoor sensor placed in intake channel (intake duct) No	**Set** 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

Main menu item	Sub-menu item 1	Sub-menu item 2	Explanations
	→ C02/VOC Control	C02/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 C02/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 C02/VOC demand function
		Activation level 1/2-speed: 800 ppm 1/2-speed: 1000 ppm diff: 160 ppm	**Set** the activation level as 1/2 speed **Set** the activation level as 1/1 speed **Set** allowed diff. value
	→ Humidity control	Humidity control Not active Start limit: 15% Stop limit: 5%	**Set** the humidity control to Humid/Dehumidification, Dehumidification, Humidification or Not active. **Set** the start limit and stop limit in %RH Applicable for external Humidification or Dehumidification device.
	→ Exchanger frost prevention	Mode: Off Type: Recirculation Continue exhausting during recirculation: NO	**Set** mode to ON or OFF **Set** Type to Recirculation or Exhaust Only Set exhaust air fan and exhaust air damper operation for recirculation to Yes or No.
	→ Cooling recovery	Cooling recovery No Cooling limit: 35.6°F	**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).
→ 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.

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.

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 condition 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 (71.6°F (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.
- The timer 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 (64.4°F (18°C)) or below the set min value (condensation risk, 50°F (10°C)).
- The room temp/extract air temp is below the set stop value (64.4°F (18°C)).
- One of the timer outputs for normal speed, External stop or External 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).

4.5 Cooling Recovery

If the extract air is colder than the outdoor air and cooling is required, the heat exchanger control is reversed in order to return the cool extract air.

Note

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

4.6 Exchanger Frost Prevention

If the exhaust air temperature falls below the frost threshold of the unit the exchanger frost prevention function will be triggered and the unit will cycle between ventilation mode and the selected type of frost prevention mode in order to prevent any frost build up within the unit.

Types of frost prevention mode:

Exhaust only:
During exhaust only frost prevention, the supply fan will shut down and the outdoor air damper will close (interruption of the cold outdoor airflow). The unit will keep extracting warm air for a defined period of time preventing any frost build up before going back to normal ventilation mode.

Recirculation:
There are 3 different recirculation configurations. First is a 5th port configuration with continuous exhaust set to "NO". Second is a 5th port configuration with continuous exhaust set to "YES" in order to maintain an uninterrupted rate of exhaust. The last option is an H-Type configuration where the unit exhaust air is recirculated through the supply stream (continuous exhaust has to be set to "NO" for this configuration). These configurations require a dedicated recirculation damper interlocked with the outdoor air damper in order that as the outdoor air damper closes, the recirculation path is opened and vice versa.

During recirculation frost prevention, the outdoor air damper will close and the dedicated recirculation damper will open. The unit will recirculate warm air for a defined period of time preventing any frost build up before going back to normal ventilation mode.

Note

The following is only valid if the exchanger frost prevention function is set to `Active` in the program menu.

5 Maintenance

5.1 Important

Danger

- Make sure that the Main power 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 Main power 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.

5.2 Maintenance Intervals

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

Type of maintenance	Once a year	When necessary
Cleaning the heat exchanger	X	
Cleaning the fans	X	
Cleaning extract louvers 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.

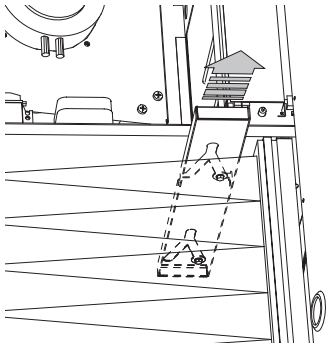
2. Acknowledge the alarm by pressing the red button on the control panel (pos. 1 figure 4) followed by OK (pos. 4 figure 4).

3. Choose →Acknowledge by pressing OK.

The filters are taken out according to the below procedure:

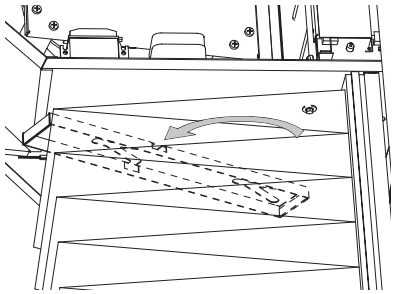
1

Release the filter frame by pulling the filter support bars.



2

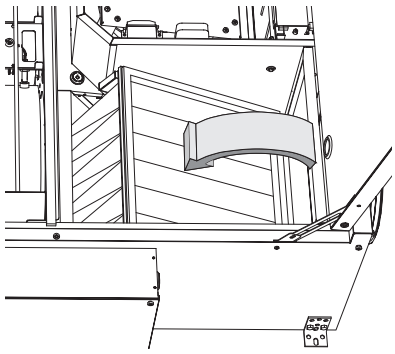
Tilt the support bars to the back.



3

It is now possible to fold the filter and frame backwards. This is especially important it there is lack of space in front of the unit and the sliding door kit is used.

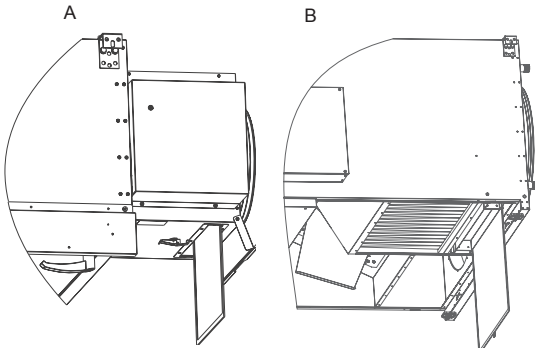
The filter can now be taken out of the unit.



4

Changing pre-filter (only when pre-heater is installed

A - EL Pre-Heater
B - HW Pre-Heater



5

Insert the new filter and fasten it against the inlet seal with the filter support bars.

Make sure the filter is fitted tight all around the frame.

5.3.2 Checking the Heat Exchanger

After a long time of use dust may built up in the exchanger (pos. 5, figure 1) and block the air flow. It is important to clean the exchanger regularly to maintain high efficiency. The total heat exchanger in the Topvex FR800-3800 can be taken out of the unit. Wash in hot soapy water or use pressurized air. Do not use detergent containing ammonia.

Note:

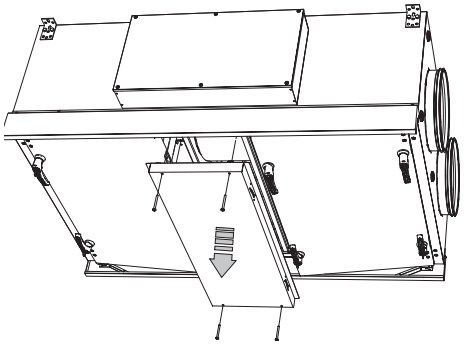
Make sure that the rotor motor is not exposed to moisture

5.3.2.1 Dismounting the Heat Exchanger Block on Ceiling Mounted Units

1

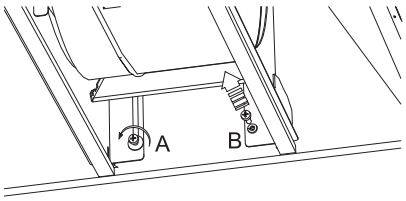
Remove the exchanger cover plate in the centre of the unit by unscrewing the 4 screws in the corners of the plates.

Removing the plate is only possible after opening both inspection doors.



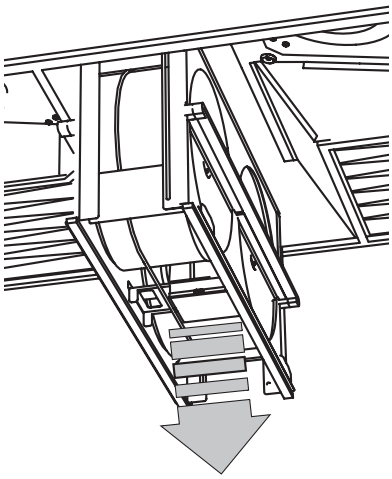
2

There are 4 screws (2 on each side) holding the heat exchanger block (FR3800 model has 8 screws, 4 on each side). When removing the heat exchanger start with checking that the screw marked “A” is tightened properly. Remove the screw marked “B” completely as shown in the figure after which the screw marked “A” is loosened carefully, just enough to allow the exchanger frame to slide in the tracks



3

Slide out the exchanger block until the end of the tracks.



> **Warning**
>
> The heat exchanger block is heavy. Use proper support device when taking out the heat exchanger block for maintenance!

4

After finished cleaning/maintenance, push the heat exchanger block and fasten all screws tightly.

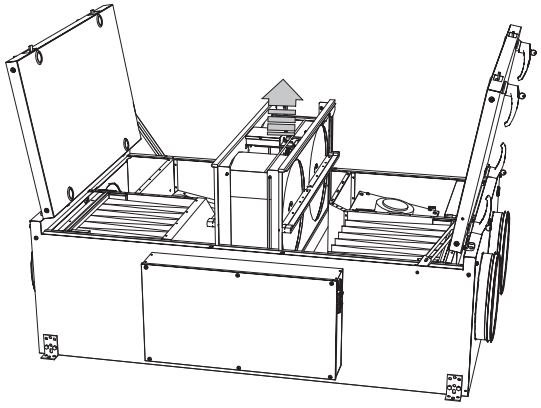
5.3.2.2 Dismounting the Heat Exchanger Block on Floor Mounted Units

1

Loosen all screws completely holding the heat exchanger block.

2

Remove the heat exchanger block completely by lifting it straight up.



> **Caution**
>
> The exchanger block is heavy, make sure to use proper support device or sufficient number of persons to lift the heat exchanger out of the unit.

Table 4: Weight of heat exchanger block

Model	Weight of heat exchanger block in lbs (kg)
FR800	66 (30)
FR1600	88 (40)
FR3800	146 (66)

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 (pos.1 and 2, figure 1). This will reduce the efficiency.

The fans can be dismounted by loosening the 4 screws on the fan casing (figure 5). Topvex FR1600-3800 have a fan support bracket that needs to be removed by loosening the 4 screws. The fans may be cleaned with a cloth or a soft brush. Do not use water. A mild solvent can be used to remove obstinate settlements. Allow drying properly before remounting.

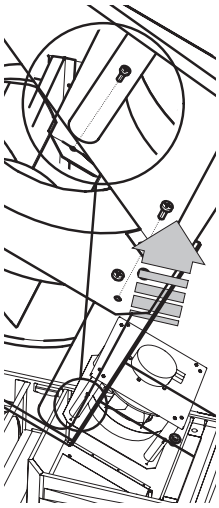


Fig. 5 Dismounting the fans

5.3.4 Checking the Hot Water Heating Coil

After long periods of operation (usually several years) dust may have deposited on the surface of the coil. This may reduce coil capacity. The coil 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 coil's aluminum fins. Once a year the coil water circuit needs to be vented to maintain the coil capacity

5.3.5 Checking the Electrical Heater

After a 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. The heater rods need to be measured to ensure there are no discrepancies in resistance between them. The automatic safety function needs to be tested and verified.

5.3.6 Cleaning 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, bathrooms 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.

5.3.7 Checking the Outdoor Air Intake

Leaves and other debris 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 in the Corrigo Controller

Note:

This procedure requires knowledge of proper ESD protection; i.e. an grounded 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.

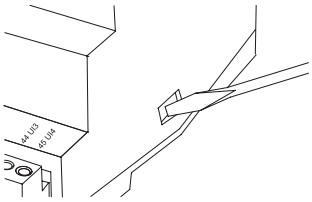
The replacement battery must be of the type CR2032.

Danger

- Make sure that the Main power supply to the unit is disconnected before performing any maintenance or electrical work!

1

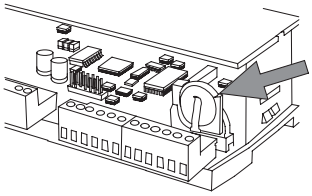
Remove the cover by pressing down the locking torques at the edge of the cover using a small screwdriver, and at the same time pulling the edges outwards.



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”.



5.4 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. See section 4.3 to learn how to navigate through the control panel menu. For more information on the alarm designations go to the Systemair website (www.systemair.com/na/North-America/) and download the controller user manual.

1. **Fan(s) do not start**
   - Check if there are any alarm messages
   - Check if the automatic fuse AS1 is tripped (figure 3, pos. 8)
   - Check if fan(s) thermal contact is tripped due to overheating (shows as “Fan alarm” in the control panel).
   - Check the run status and the setting in control panel (schedules, auto/manual operation, airflow set points, etc.)

2. **Wheel motor does not start**
   - Check if there are any alarm messages
   - Check if the automatic fuse AS1 is tripped (figure 3, pos. 8)
   - Check if the fuses in the fuse holders F1 & F2 are blown (figure 3, pos. 13)
   - Check the run status and the setting in control panel (schedule, auto/manual operation, free cooling active, etc.)

3. **Reduced Airflow**
   - Check if there are any alarm messages
   - Check the run status and the setting in control panel (schedules, auto/manual operation, airflow set points, etc.)
   - Check if outdoor/exhaust air damper (if used) are opened
   - Check if filters need to be changed
   - Check if diffuser/louvers are opened
   - Check if diffusers/louvers need cleaning
   - Check if fans and/or exchanger need to be cleaned
   - Check for obstruction at the air inlets/outlets
   - Check ducts for visible damage and/or buildup of dust and debris

4. **Cold supply air**
   - Check if there are any alarm messages
   - Check the supply air temperature set point on the control panel
   - If electric re-heater is equipped, check if the automatic fuse AS2 is tripped (figure 3, pos. 9)
   - If electric re-heater is equipped, check if the overheating thermostat is tripped. If so, see section 2.2.6
   - If hydronic re-heater is equipped, check if the valve(s)/actuator(s) controlling the water flow are functioning properly
   - Check if filters need to be changed

5. **Noise/vibrations**
   - Check if the unit is completely leveled
   - Check if fans and/or exchanger need to be cleaned
   - Check if the screws holding the fans are tightened properly

5.4.1 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 4) will flash if there are non-acknowledged alarms and be on (but not flashing) 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.

6 Service

Before calling your service representative, make a note of the specification and production number from the type label (figure 6).

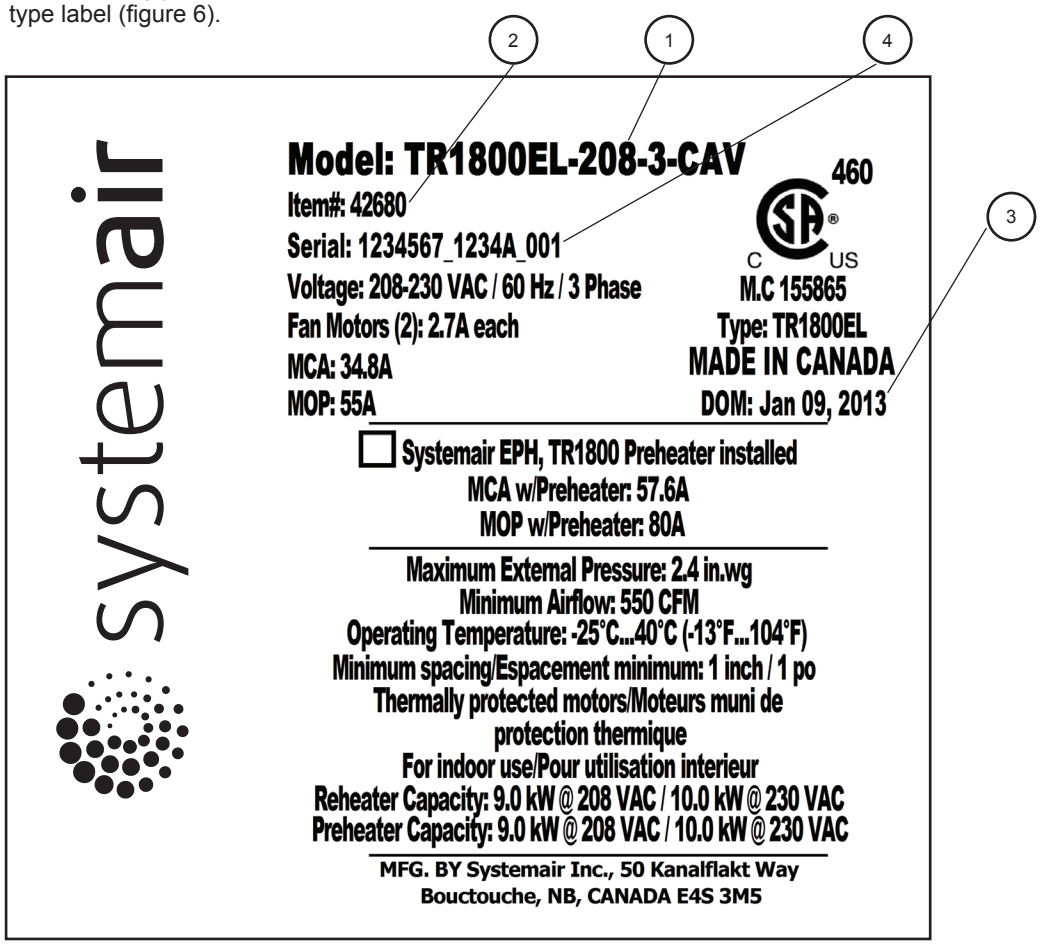


Fig. 6 Type label

Table 5: Label description

Position	Description
1	Model number
2	Item number
3	Date of manufacturing (DOM)
4	Serial number

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

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