

Topvex SR/TR03, SR/TR04, SR/TR06 Compact Air Handling Unit

Installation instructions

GB

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1 EU Declaration of conformity

Manufacturer



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hereby confirms that the following products:

Air handling units

EI	None	HWL	HWH
Topvex SR03-SR06	Topvex SR03-SR06	Topvex SR03-SR06	Topvex SR03-SR06
Topvex SR03-SR06 M0	Topvex SR03-SR06 M0	–	Topvex SR03-SR06 M0
Topvex TR03-TR06	Topvex TR03-TR06	Topvex TR03-TR06	Topvex TR03-TR06
Topvex TR03-TR06 M0	Topvex TR03-TR06 M0	–	Topvex TR03-TR06 M0

(The declaration applies only to product in the condition it was delivered in and installed in the facility in accordance with the included installation instructions. The insurance does not cover components that are added or actions carried out subsequently on the product)

Comply with all applicable requirements in the following directives and regulations

Machinery Directive 2006/42/EC
Low Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU

Ecodesign Directive 2009/125/EC
327/2011 Requirements for fans
1253/2014 Requirements for ventilation units

The following harmonized standards are applied in applicable parts:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 13857	Safety of machinery – Safety distances to prevent hazard zones being reached by upper or lower limbs
EN 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements
EN 60335-1	Household and similar electrical appliances – Safety Part 1: General requirements
EN 60335-2-40	Safety of household and similar electrical appliances - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers
EN 50106:2007	Safety of household and similar appliances – Particular rules for routine tests referring to appliances under the scope of EN 60 335-1 and EN 60967
EN 60529	Degrees of protection provided by enclosures (IP Code)
EN 62233	Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standards for residential, commercial and light-industrial environments

The complete technical documentation is available.

Skinnskatteberg, 15-03-2016



Mats Sándor
Technical Director

2 Warnings

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



Danger

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.



Warning

Indicates a potentially hazardous situation that may result in minor or moderate injuries.



Caution

Indicates a risk of damaging the product or prevent optimal operation.

Important

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

3 Product information

3.1 General

This installation manual concerns air handling unit type Topvex SR/TR 03-06 manufactured by Systemair AB. Topvex SR/TR 03-06 include the following model options:

- **Model:** SR03, SR04, SR06, TR03, TR04, TR06
- **Heating coil:** **EL** (Electric), **HWL** (Water coil, low power), **HWH** (Water coil, high power) or **None**.
- **Right or left models:** **R** (Right) **L** (Left). The side where the supply air is located when viewed from the access side.
- **Airflow control:** **CAV** – Constant Air Volume, **VAV** – Variable Air Volume = Constant duct pressure control (as an accessory)
- **M0:** Aluminium fan impeller

This manual consists of basic information and recommendations concerning the design, installation, start-up and operation, to ensure a proper fail-free operation of the unit.

The key to proper and safe operating of the unit is to read this manual thoroughly, use the unit according to given guidelines and follow all safety requirements.

3.2 Technical data

3.2.1 Dimensions and weights Topvex SR 03-06

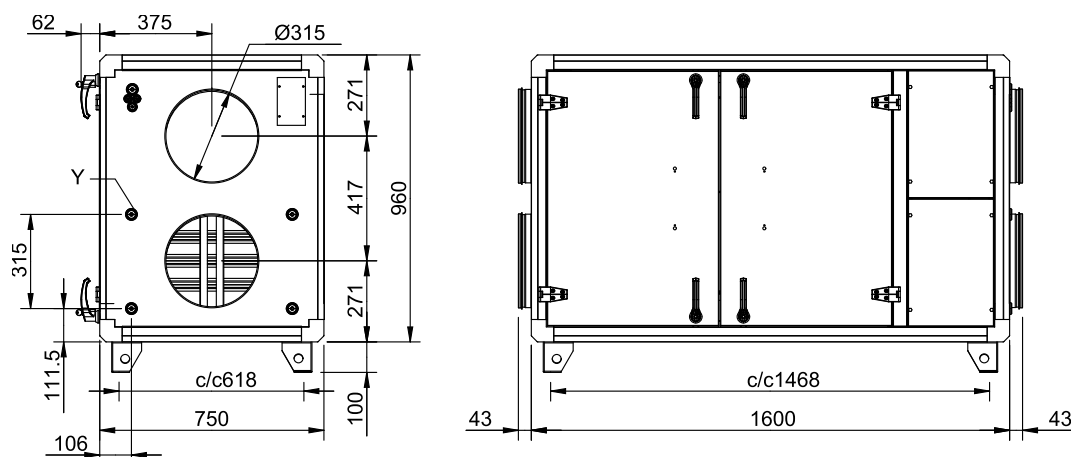


Fig. 1 Dimensions (mm) SR03 (Drawn as a right hand unit)

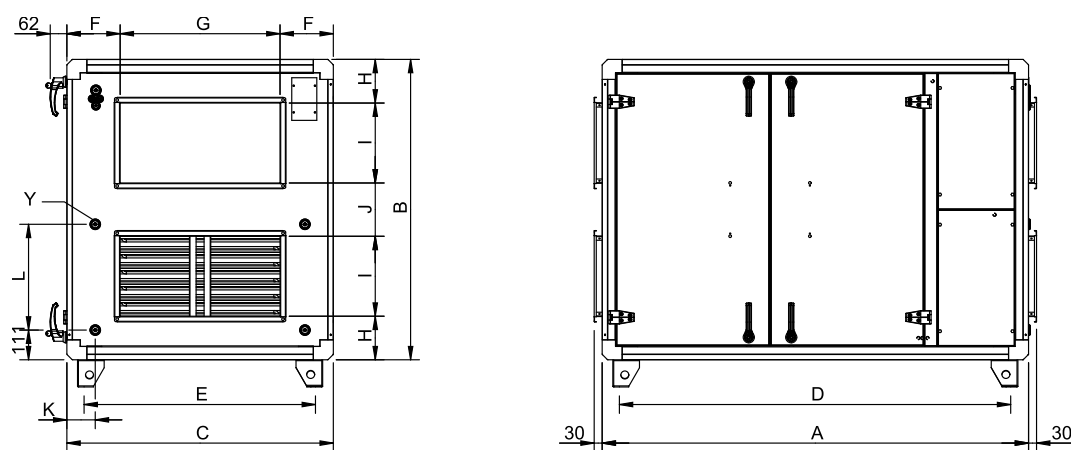


Fig. 2 Dimensions (mm) SR04, SR06 (Drawn as a right hand unit)

Model	A	B	C	D (c/c)	E (c/c)	F
SR04	1600	1041	850	1315	565	175
SR06	1600	1128	1000	1468	868	200

Model	G	H	I	J	K
SR04	500	171	250	200	355
SR06	600	164	300	200	396

Y: 15R 1/2" Inner thread

Table 1 Weights Topvex SR 03-06

Model	Weight (kg)
SR03	220
SR04	270
SR06	300

3.2.2 Space required Topvex SR 03-06

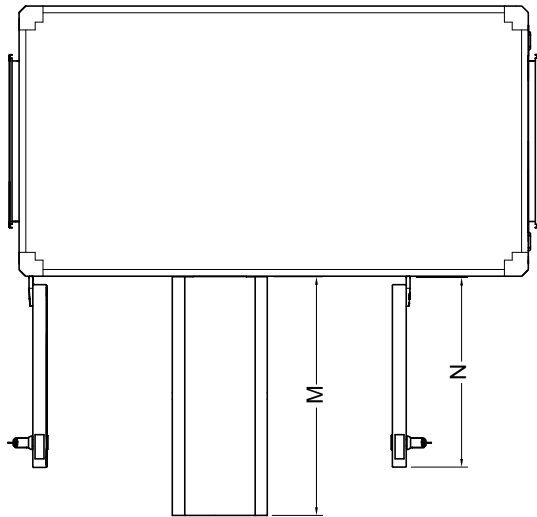


Fig. 3 Space required

Model	M (mm)	N (mm)
SR03	650	603
SR04	750	603
SR06	900	603

3.2.3 Dimension and weight Topvex TR 03-06

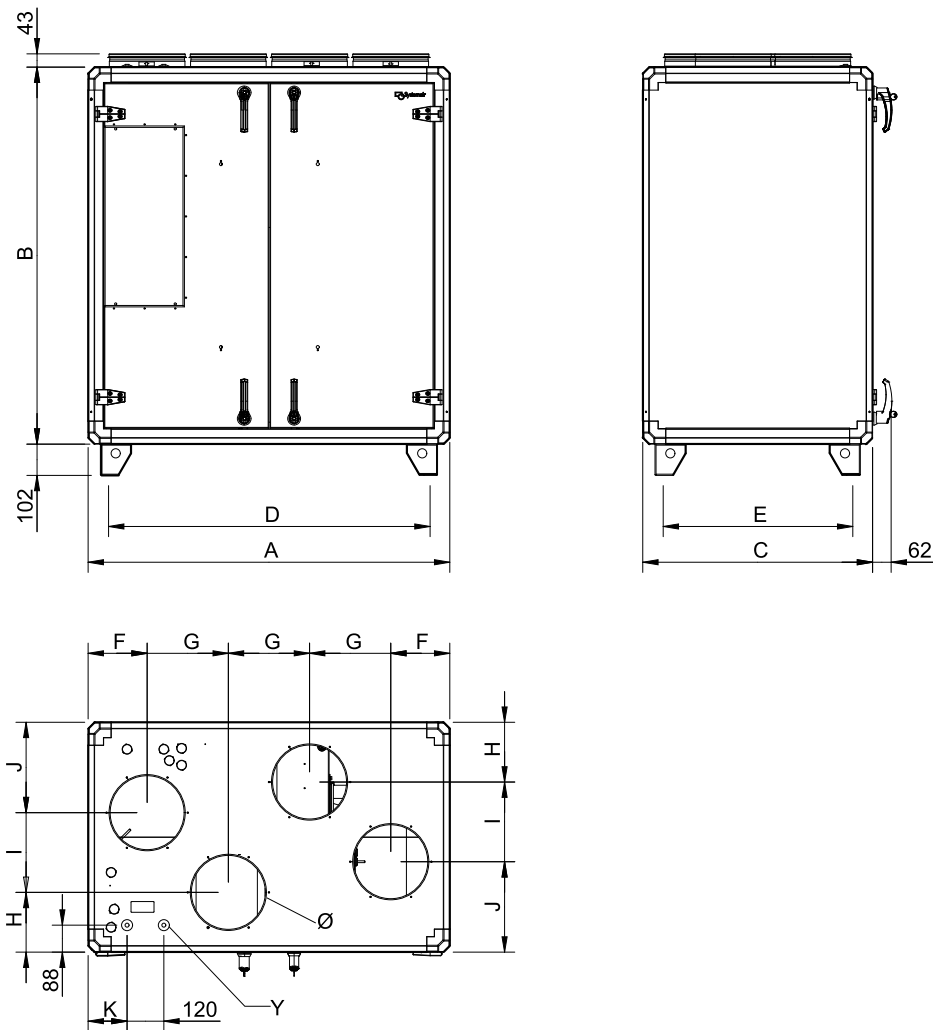


Fig. 4 Dimensions (mm) TR03, TR04 (Drawn as a left hand unit)

Model	A	B	C	D (c/c)	E (c/c)	F
TR03	1180	1230	750	1048	618	193
TR04	1480	1280	850	1348	718	209

Model	G	H	I	J	K	Ø
TR03	265	195	260	295	127	250
TR04	354	315	220	315	163	315

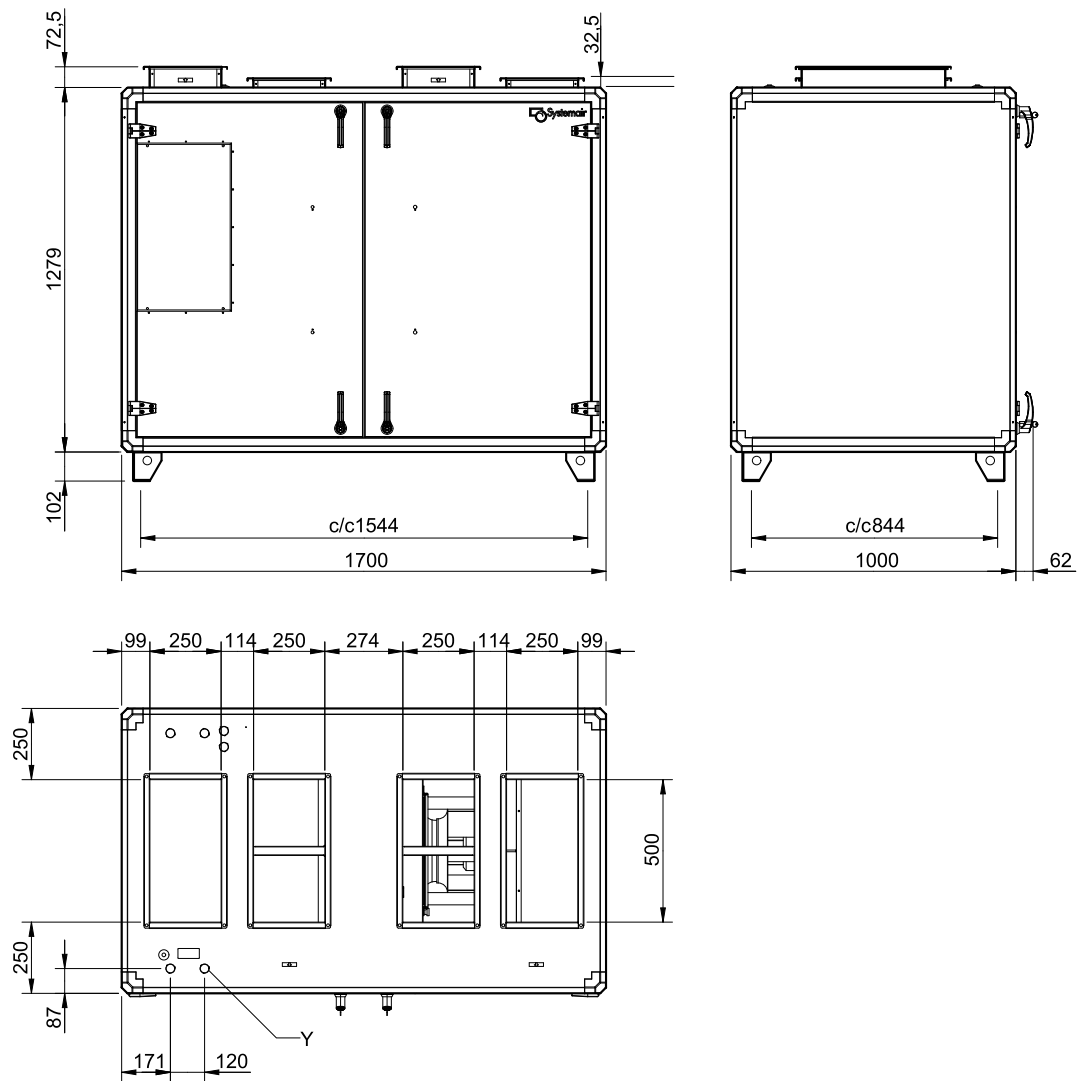


Fig. 5 Dimensions (mm) TR06

Table 2 Weights Topvex TR 03-06

Model	Weight
TR03	230
TR04	290
TR06	360

3.2.4 Space required Topvex TR 03-06

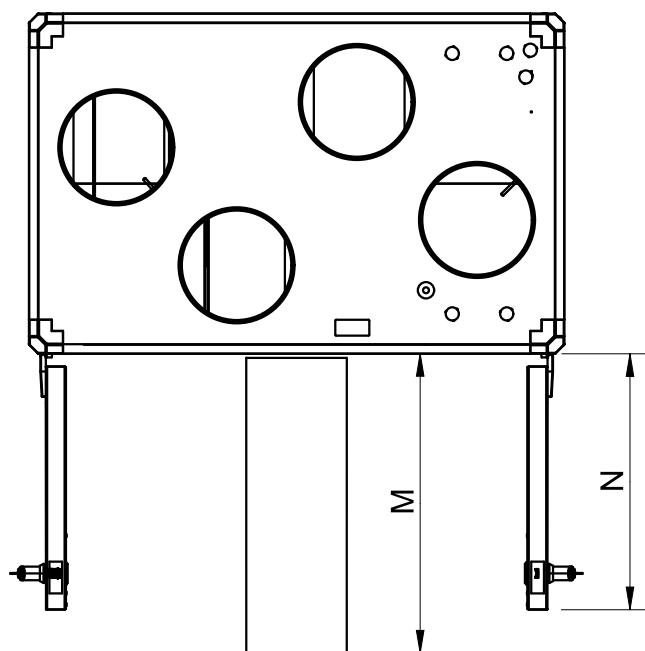


Fig. 6

Model	M (mm)	N (mm)
TR03	660	570
TR04	760	715
TR06	910	825

3.2.5 Electrical data Topvex SR/TR 03-06

Table 3 Power Consumption

Model	Fans (W tot.) 230V 1~ and 400 V 3N~	El Heating battery (kW tot.)	Fuse (mains) (A) for 230V 1~ and 400 V 3N~	Fuse (mains) (A) for 230V 1~ and 230V 3~
SR/TR03 EL	1412	3	3x13	3x16
SR/TR03 (None, HWL/HWH)	1412	-	10	10
SR/TR03 EI M0	1014	3	3x13	3x16
SR/TR03 (None, HWH M0)	1016	-	13	13
SR/TR04 EL	1460	4	3x16	3x20
SR/TR04 (None, HWL/HWH)	1460	-	10	10
SR/TR04 EI M0	1560	4	3x16	3x20
SR/TR04 (None, HWH M0)	1560	-	10	13
SR/TR06 EL	1794	6.3	3x16	3x25
SR/TR06 (None, HWL/HWH)	1794	-	3x10	3x10
SR/TR06 EI M0	2066	6.3	3x16	3x25
SR/TR06 (None, HWH M0)	2066	-	3x10	3x13

3.3 Transport and storage

The Topvex SR/TR 03-06 should be stored and transported in such a way that it is protected against physical damage that can harm panels, handles, display etc. It should be covered so that dust, rain and snow cannot enter and damage the unit and its components. The appliance is delivered in one piece containing all necessary components, wrapped in plastic on a pallet for easy transportation.

When transporting the Topvex SR/TR 03-06 units, use a forklift placed on the gable of the unit (figure 7.)



Warning

The unit is heavy. Be careful during transport and mounting. Risk of injury through pinching. Use protective clothing.

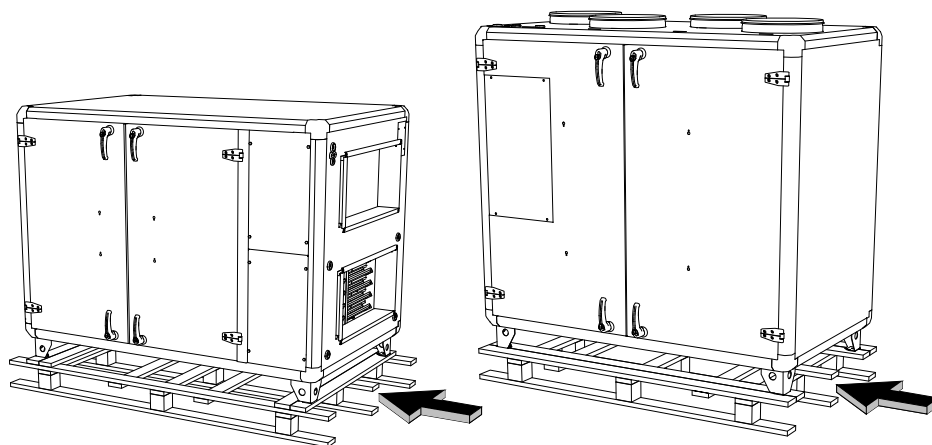


Fig. 7 Transporting the unit

4 Installation

4.1 Unpacking

Verify that all ordered equipment are delivered before starting the installation. Any deviation from the ordered equipment must be reported to the supplier of Systemair products.

4.2 Where/how to install

Place the unit on a **horizontal flat surface**. It's important that the unit is completely levelled before it is put into operation.

Place the unit preferably in a separate room (e.g. storage, laundry room, attic or similar).

Topvex SR/TR 03-06 can be installed outside if weather protected. An outdoor air section, ODS is available as accessory.

If the unit is installed in a cold place it is important that the unit is not shut-off by the main switch. As long as the main voltage is on the electrical cabinet will be kept warm also in cold climates.

When choosing the location it should be kept in mind that the unit requires maintenance regularly and that the inspection doors should be easily accessible. Leave free space for opening the doors and for taking out the main components (figure 3 and figure 6).

Avoid placing the appliance against a wall, as low frequency noise can cause vibrations in the wall even if the fan noise-level is acceptable. If this is not possible it is recommended to carefully insulate the wall.

The outdoor air intake of the building should if possible be put in the northern or eastern side of the building and away from other exhaust outlets like kitchen fan outcasts or laundry room outlets.

4.3 Installing the unit

The unit must be installed in the following position (figure 8).

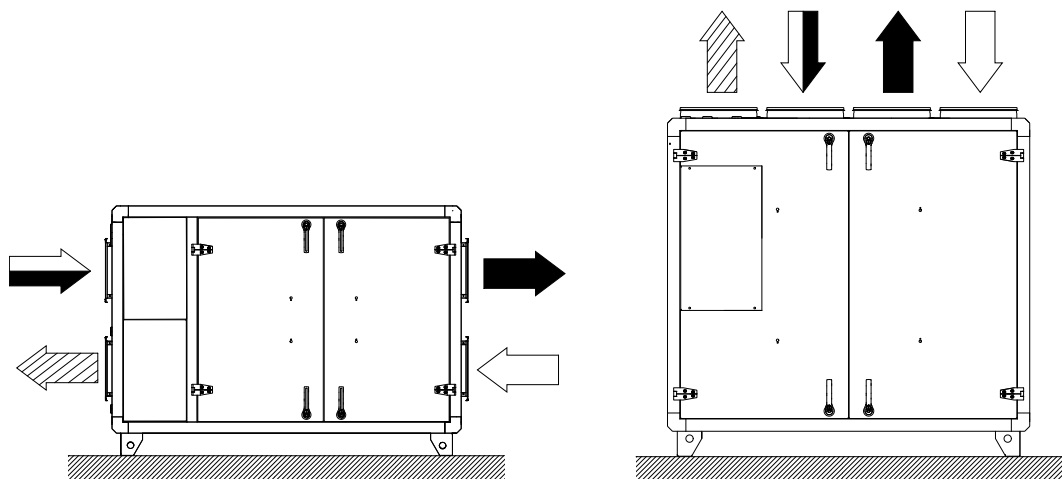


Fig. 8 Installation position (left hand unit)

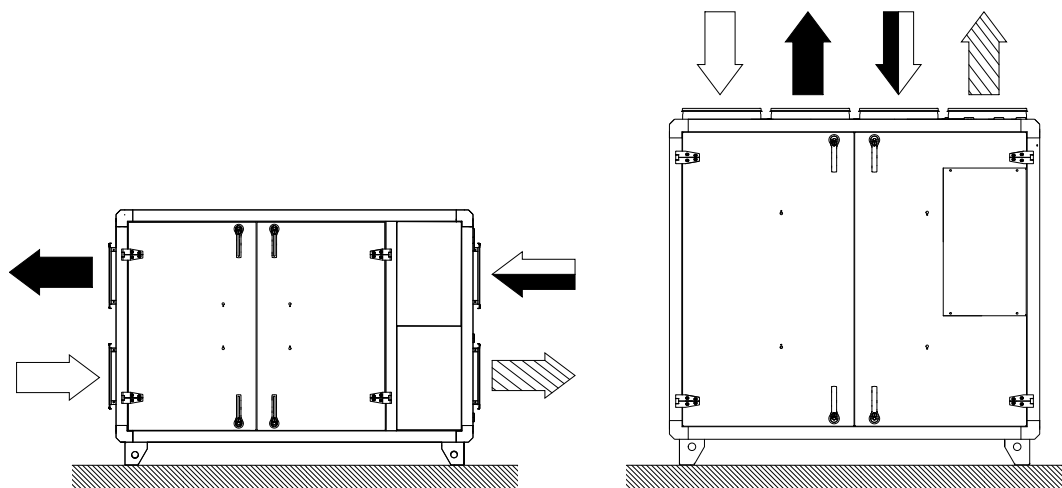






Fig. 9 Installation position (right hand unit)

Table 4 Symbol description

Symbol	Description
	Supply air
	Exhaust air
	Outdoor air
	Extract air

4.3.1 Installation procedure

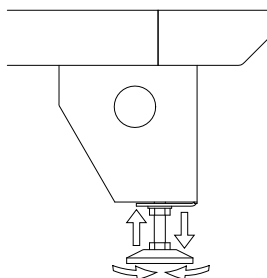
- 1 Prepare the surface where the unit is to be mounted. Make sure that the surface is flat, levelled and that it supports the weight of the unit. Perform the installation in accordance with local rules and regulations.
- 2 Lift the unit in place.



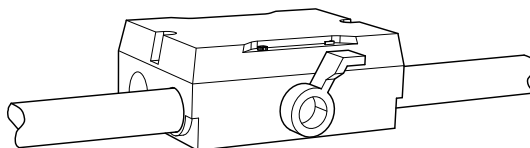
Warning

Beware of sharp edges during mounting and maintenance. Make sure that a proper lifting device is used. Use protective clothing.

- 3 Level the unit with help of the enclosed mounting feet



- 4 Connect the unit electrically to the mains through the all pole circuit breaker (safety switch), which is enclosed inside the unit on delivery. The wiring is led through the gable of the unit (Topvex SR 03-06) or through the top of the unit casing (Topvex TR 03-06) directly to the electrical connection box. See enclosed wiring diagram, and below table (chapter 4.5.5) for more information.



Warning

The units electrical connection to the mains supply must be preceded by an all pole circuit breaker with a minimum 3 mm gap.



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.

4.4 Supply air sensor (Topvex SR 03-06)

The supply air sensor is fitted in the duct after the unit in the supply air duct (figure 10). See chapter 4.5.5 to which terminals the sensor needs to be connected in the electrical connection box. Other temperature sensors are built in to the unit from factory. The supply air sensor is enclosed in the unit package on delivery.

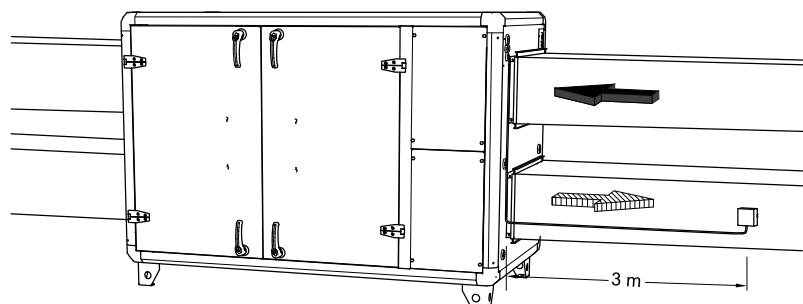


Fig. 10 Installed supply air sensor (right hand connected unit)

4.5 Connections

4.5.1 Ducting

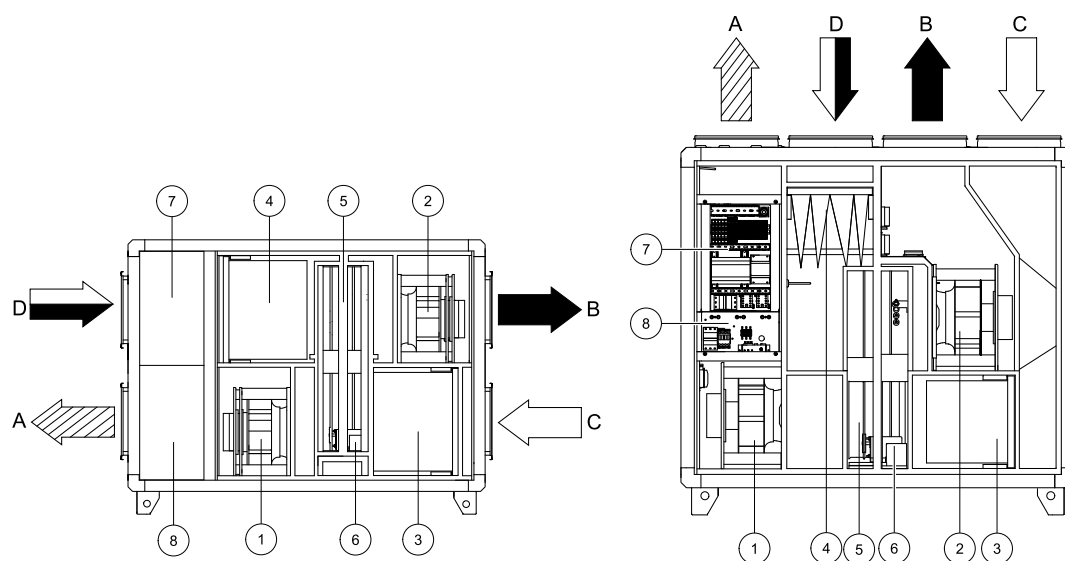






Fig. 11 Connections and basic components in left hand connected units

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	Rotor motor	
7	Electric compartment	
8	Re-heater battery	

4.5.2 Condensation and heat insulation

Outdoor air duct and exhaust ducts must always be well insulated against condensation. Correct insulation installation on ducts connected to the unit is especially important. All ducts installed in cold rooms/areas must be well insulated. Use insulating covering (minimum 100 mm mineral wool) with plastic diffusion barrier. In areas with extremely low outdoor temperatures during the winter, additional insulation must be installed. Total insulation thickness must be at least 150 mm.



Caution

- If the unit is installed in a cold place make sure that all joints are covered with insulation, and tape well
- Duct connections/duct ends should be covered during storage and installation
- Do not connect tumble dryers to the ventilation system

4.5.3 Silencers

To avoid fan noise being transferred via the duct system, silencers should be installed both on supply and extract air.

To avoid noise being transferred between rooms via the duct system and also to reduce noise from the duct system itself, installation of silencers before every inlet diffuser is recommended.

4.5.4 Electrical connections, components

All electric connections are made in the electrical connection box which can be found in the front of the unit (figure 12). The hatch is removed by unscrewing four screws (figure 12).

The unit must not be put into operation before all the electrical safety precautions have been read and understood. See the enclosed wiring diagram for internal and external wiring.

All external connections to possible accessories are made to terminals inside the electrical connection box (table 4.5.5).

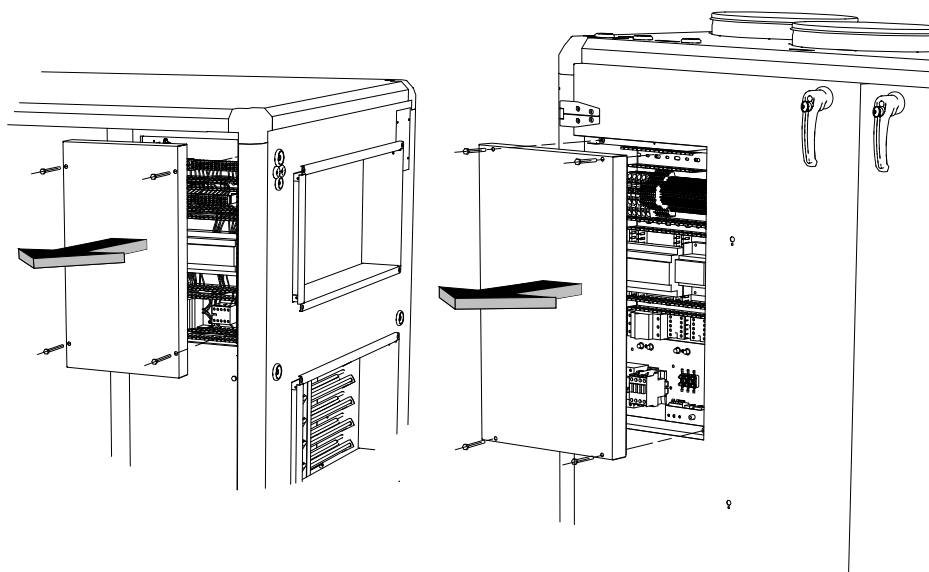


Fig. 12 Opening the electrical connection box



Danger

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

Topvex SR/TR 03-06 are equipped with a built in regulator and internal wiring (figure 13).

The figure shows the electrical connection box for the Topvex TR 03-06 units. The connection box for the Topvex SR 03-06 has the same layout and components with the difference that the electrical heater is situated in a separate compartment.

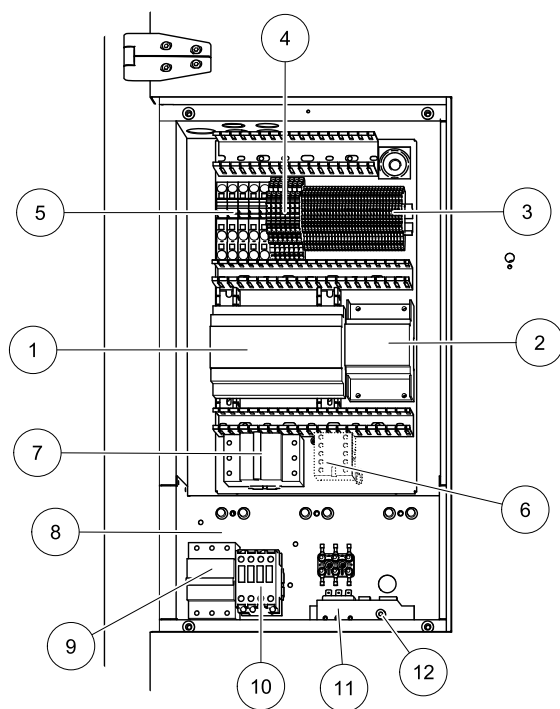


Fig. 13 Electric components

Position	Description
1	Regulator E-28 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) Pump control water (HW units only, not present in EL-units)
7	Automatic fuse
8	Electric heater frame
9	Automatic fuse for heater
10	Contactor (K3) for control of EL heater
11	Thermostat (EL units)
12	Manual over heat protection reset (EL units)

4.5.5 External connections

Table 5 Connections to external functions

Terminal block		Description	Remark
	PE	Ground	
N	N	Earthed neutral (supply voltage)	Used for phase 230V 1~ and 400V 3~
L1	L1	Phase (Main supply voltage)	Used for phase 230V 1~ if the unit has this mains 400V 3~/230V 3~
L2	L2	Phase (Main supply voltage)	400V 3~/230V 3~
L3	L3	Phase (Main supply voltage)	400V 3~/230V 3~
1	G	Auxiliary supply (Pressure transmitter. Water valve actuators)	24V AC
2	G0	Reference (Water valve actuator mains)	24V AC
10	DO ref	DO reference	G (24V AC)
12 ¹	DO 2	Outdoor/Exhaust air damper	24V AC Max. 2,0 A continuous load
WP	L1	Circulation pump hot water system	230V AC
14 ¹	DO 4	Cooling pump	24V AC
15 ¹	DO 5	DX Cooling step 1	24V AC
16 ¹	DO 6	DX Cooling step 2	24V AC
17 ¹	DO 7	Alarm output for DO signals	24V AC
30	AI Ref	Supply air temperature sensor reference	neutral
31	AI 1	Temperature sensor, supply air	
40	Agnd	UI reference	neutral
41 ²	UAI 1/(UDI 1)	Pressure transmitter extract air	
42 ²	UAI 2/(UDI 2)	Pressure transmitter supply air	
44	UAI 3/(UDI 3)	Frost protection sensor water heating battery	Use terminal 40 as reference
4 ³	DI ref	Extended running/Fire alarm reference	+ 24V DC
P1:50/P2:60	B	Exo-line B	Modbus, Exo-line connection
P:151/P2:61	A	Exo-line A	Modbus, Exo-line connection
P1:52/P2:62	N	Exo-line N	Modbus, Exo-line connection
74 ³	DI 4	Extended running	Normally open contact Use terminal 4 as reference
75 ³	DI 5	Fire alarm	Normally open contact Use terminal 4 as reference
76 ³	DI 6	External stop	Normally open contact Use terminal 4 as reference
90	Agnd	AO Reference	neutral
93	AO 3	Control signal valve actuator, Water Heating	0–10V DC
94	AO 4	Control signal valve actuator, Cooling	0–10V DC

¹ Maximum current load for all DO combined: 8A

² Connection to external pressure sensor in case of pressure controlled unit (VAV)

³ These inputs may only be wired to voltage free contacts

4.5.6 BMS Connection

BMS Connection

Communication possibilities for controller E283 WEB.

- RS485(Modbus): 50-51-52 or 60-61-62
- RS485(BACnet): 50-51-52 or 60-61-62
- RS485(Exoline): 50-51-52-53 or 60-61-62-63
- TCP/IP Exoline
- TCP/IP Modbus
- TCP/IP WEB
- TCP/IP BACnet

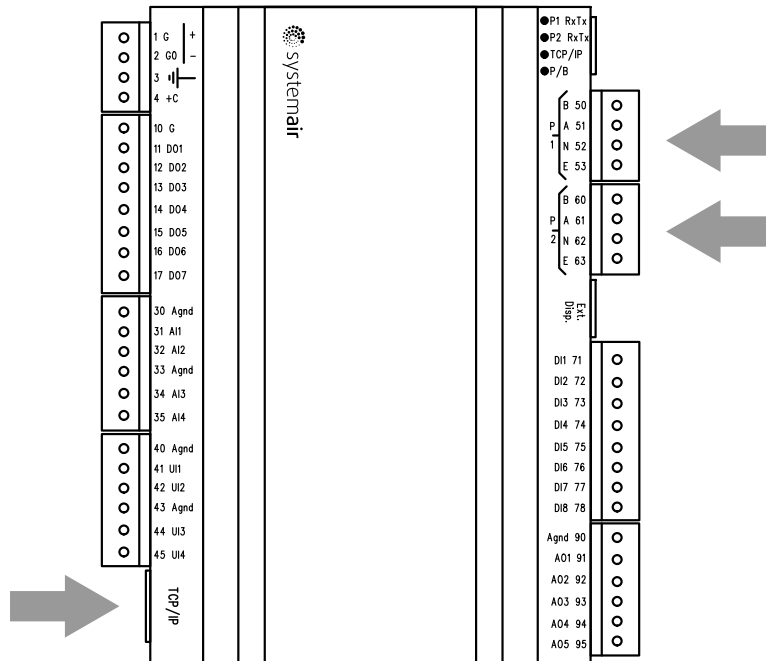


Fig. 14 BMS connection on the controller

4.6 Installing the control panel

4.6.1 Dimensions

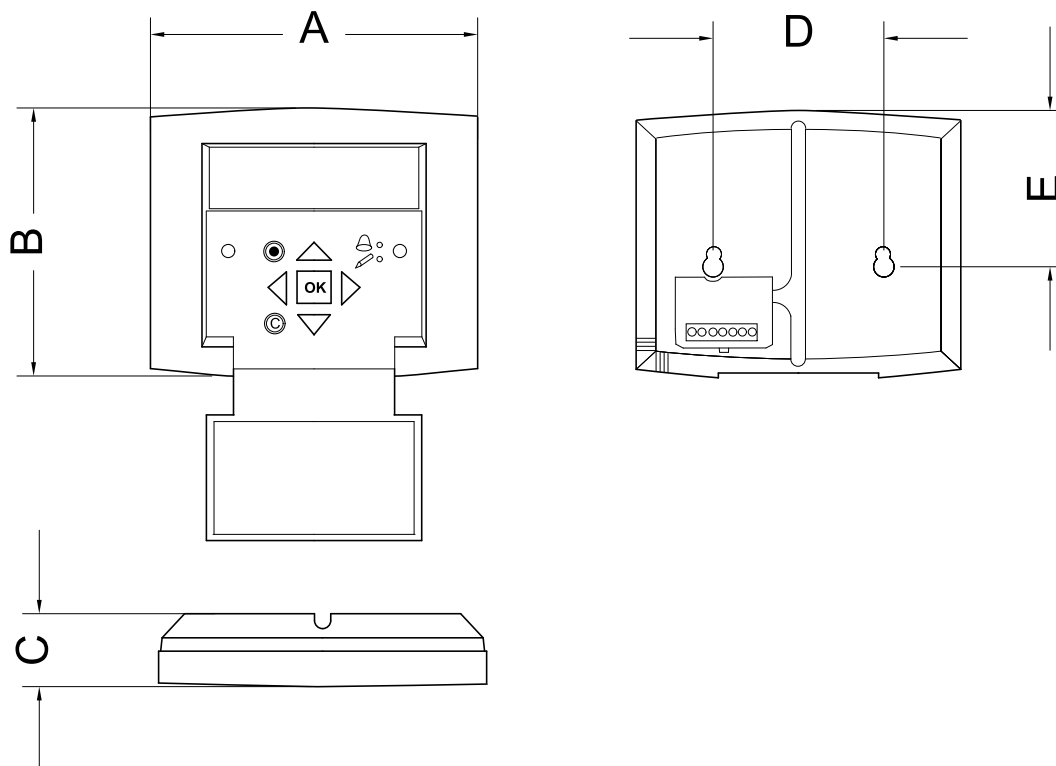


Fig. 15 Control panel dimensions

Position	Dimensions (mm)
A	115.0
B	94.0
C	26.0
D	c/c 60.0
E	50.5

4.6.2 General information

The control panel is delivered connected to the Corrigo control unit situated in the electrical connection box. Cable length is 10 m. In case the control panel needs to be detached from the signal cable it is possible to loosen the wires on the back of the control panel (figure 16).

A set of self-adhesive magnet strips are included in the package to facilitate installation on a metal surface.

4.6.3 Installation

1. Find an appropriate place to install the control panel. Maximum length between control panel and unit is 100 m.
2. If needed, drill two holes in the wall to hang the control panel (center to center: 60 mm) (pos.1, figure 16).

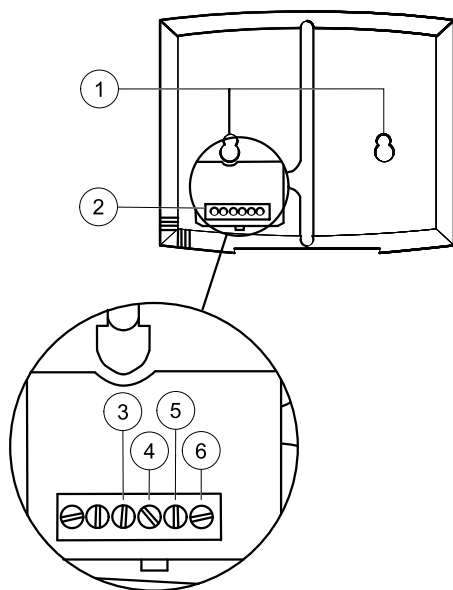


Fig. 16 Control panel wire connections

Position	Description
1	Mounting holes
2	Connection block
3	Connection to brown cable
4	Connection to yellow cable
5	Connection to white cable
6	Connection to black cable

4.7 Additional equipment

For information concerning additional external equipment such as valve actuators, motorized dampers, E-tool, roof units, wall grilles etc. see technical catalogue and their enclosed instructions.

For electrical connections of external components see enclosed wiring chart.



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