Topvex SR 09, 11, Topvex TR 09-15
Compact Air Handling Units

Installation instructions

GB

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1 EU Declaration of Conformity

CE

Manufacturer
Systemair Sverige AB
Industrivägen 3
SE-739 30 Skinnskatteberg Sweden
Phone: +46 222 440 00
www.systemair.com

The manufacturer hereby confirms that Topvex SR 09, 11, Topvex TR 09, 12, 15 comply with all applicable requirements in the following directives and regulations.

Machinery Directive 2006/42/EC

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

Low Voltage Directive 2014/35/EU

EMC Directive 2014/30/EU

The following harmonized standards are applied in applicable parts:

EN ISO 12100

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

Safety of household and similar appliances – Particular rules for routine tests referring to appliances under the scope of EN 60 335-1.

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.

EN 13053

Ventilation for buildings – Air handling units – Rating and performance for units, components and sections.

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.

The complete technical documentation is available.

Skinnskatteberg, 2020–08–21

Sofia Rask
Managing 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 09, 11 and Topvex TR 09-15 manufactured by Systemair Sverige AB. The units include the following model options:

- **Model:** SR09, SR11, TR09, TR12, TR15
- **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 09, 11

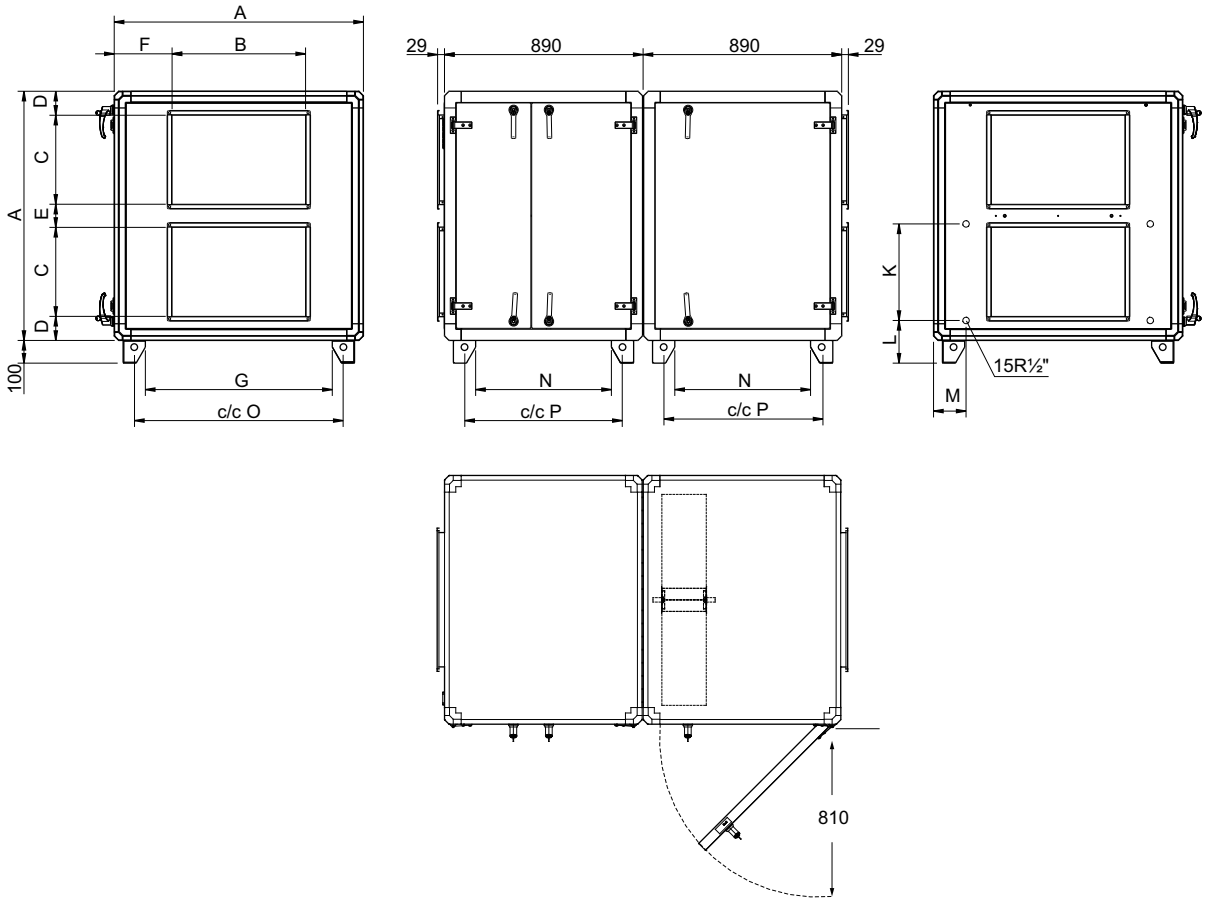


Fig. 1 Dimensions (mm) Topvex SR 09, 11 (Drawn as left hand unit)

Model	A	B	C	D	E	F	G
SR09	1120	600	400	108	104	260	840
SR11	1230	800	400	135	165	215	950

Model	K	L	M	N	c/c O	c/C P	Weight, kg
SR09	434	195	145	610	940	710	370
SR11	487	195	145	610	1050	710	440

3.2.2 Dimensions and weight Topvex TR 09-15

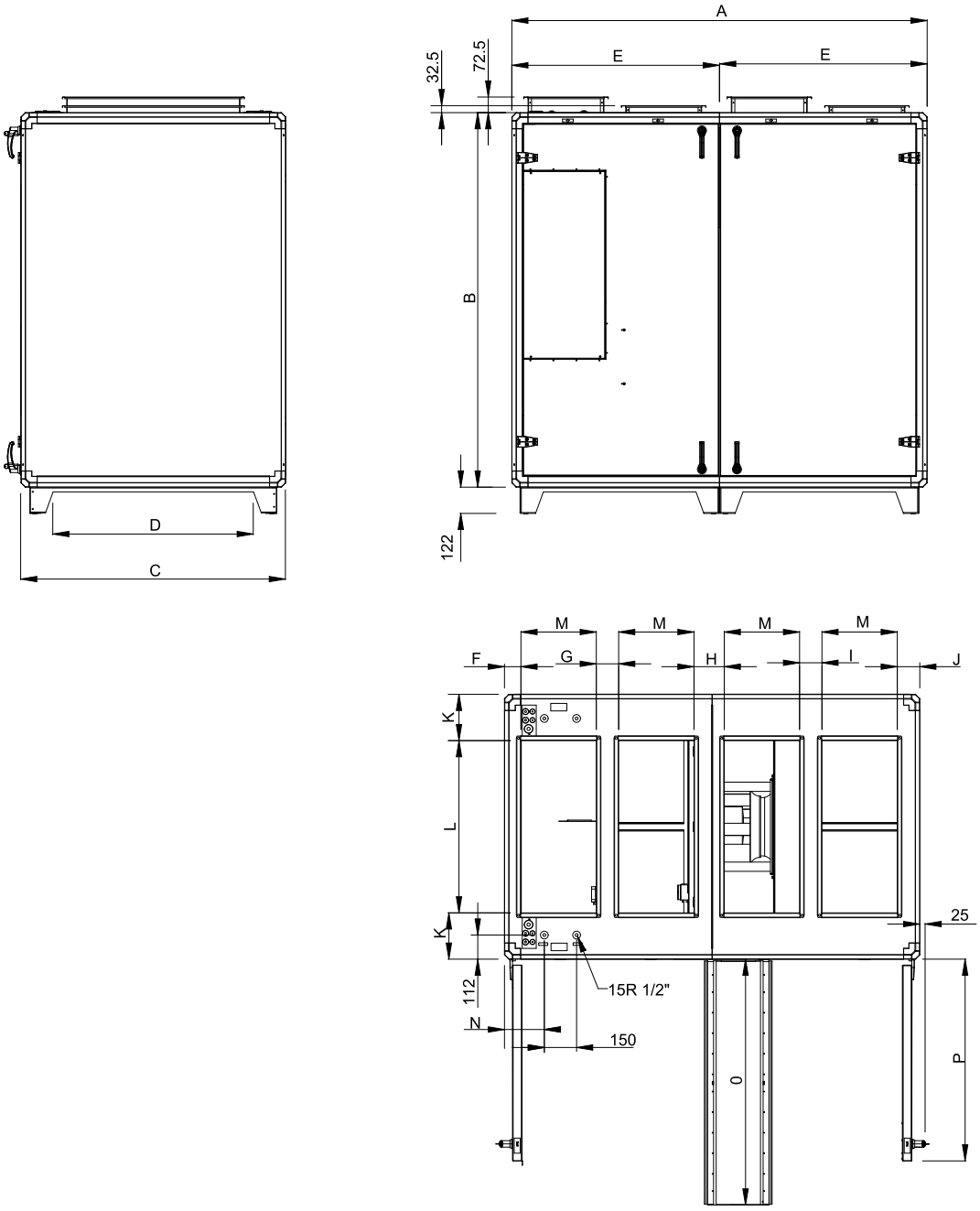


Fig. 2 Dimensions (mm) Topvex TR 09-15 (Drawn as left hand unit)

Model	A	B	C	D	E	F	G	H	I
TR09	1790	1630	1120	810	895	104	129	123	129
TR12	1930	1740	1230	930	965	76	104	141	104
TR15	1930	1980	1470	1180	965	76	104	141	104

Model	J	K	L	M	N	O	P	Weight, kg
TR09	105	210	700	300	165	1030	870	490
TR12	105	215	800	350	185	1140	940	580
TR15	105	236	1000	350	185	1380	940	730

3.2.3 Electrical data

Model	Fans (W tot) 400 V 3N~	El Heating battery (kW tot.)	Fuse (mains) (A) for 400 V 3N~	Fuse (mains) (A) for 230 V 3~
SR09 EL	5062	12	3x32	3x50
SR09 (None, HWL/HWH)	5062	–	3x10	3x16
SR09 EL M0	3754	12	3x35	3x50
SR09 (None,/HWH) M0	3754	–	3x10	3x16
SR11 EL	4902	15	3x35	3x63
SR11 (None, HWL/HWH)	4902	–	3x10	3x16
SR11 EL M0	6130	15	3x35	3x63
SR11 (None, HWH) M0	6130	–	3x16	3x20

Model	Fans (W tot) 400 V 3N~	El Heating battery (kW tot.)	Fuse (mains) (A) for 400 V 3N~	Fuse (mains) (A) for 230 V 3~
TR09 EL	5052	9	3x25	3x40
TR09 (None, HWL/HWH)	5052	–	3x10	3x16
TR09 EL M0	3780	9	3x25	3x40
TR09 (None, HWH) M0	3780	–	3x10	3x10
TR12 EL	4756	12	3x32	3x50
TR12 (None, HWL/HWH)	4756	–	3x10	3x16
TR12 EL M0	3574	12	3x35	3x50
TR12 (None, HWH) M0	3574	–	3x10	3x16
TR15 EL	4998	15	3x35	3x63
TR15 (None, HWL/HWH)	4998	–	3x10	3x16
TR15 EL M0	6760	15	3x35	3x63
TR15 (None, HWH) M0	6760	–	3x16	3x20

3.3 Transport and storage

The Topvex SR/TR 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 units use a forklift placed on the gable of the unit.



Warning

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

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 09, 11 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 1 and figure 2).

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 Dividing the Topvex air handling units

On delivery the two halves of the Topvex appliance are mounted together. If necessary they can be divided for easy transport to the site of installation figure 3 and figure 4.

4.3.1 How to split the Topvex SR unit

Remove the heat exchanger, supply air fan and the extract air filter

A. Loosen the cable connectors in the wall

B. The two halves of the unit are joined using 4 M10 screws, one in each corner

C. It is possible dismount the gables by removing 6 MRX M6 screws with PH2 bits tool

Reassemble in the reverse order.

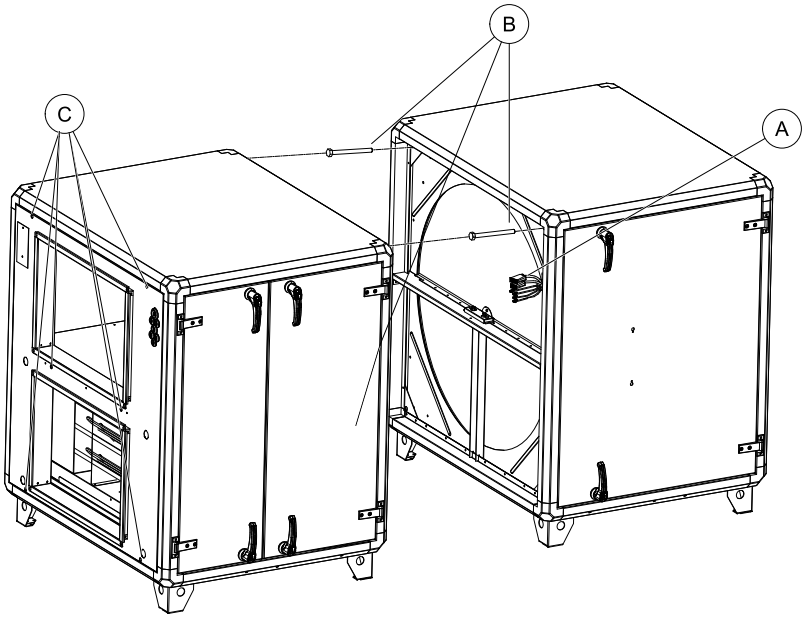


Fig. 3 Left hand version

Note:

When reassembling the pieces make sure they are connected correctly – see cable markings on the side of the cables.

4.3.2 How to split the Topvex TR unit

Remove the heat exchanger, extract fan and the extract air filter

A. Remove the plate

B. Loose the cable connectors

C. Remove the 7 M10 screws that join the two halves of the appliance

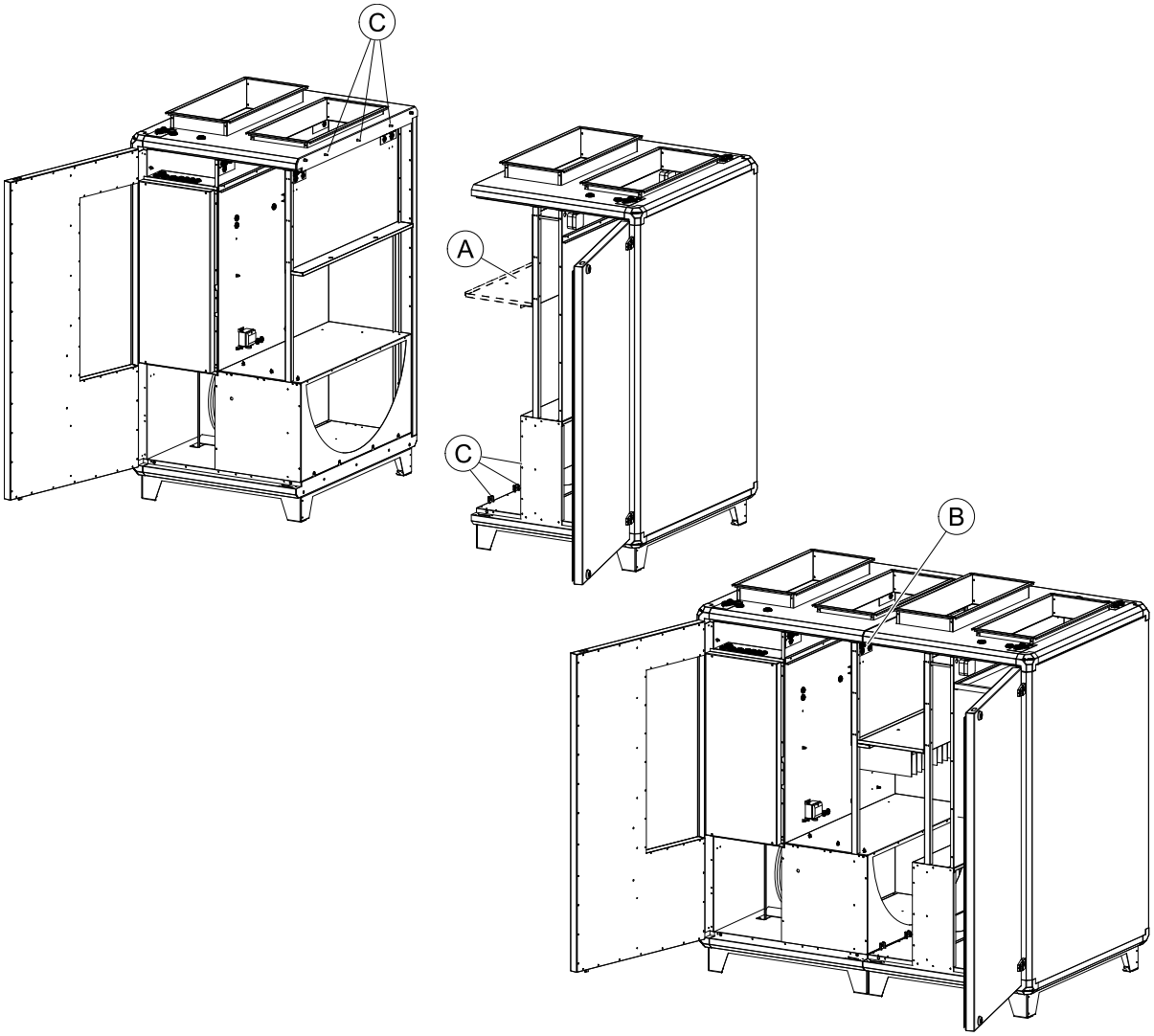


Fig. 4 Left hand version

4.4 Installing the unit

The unit must be installed in the following position (figure 5 and figure 6).

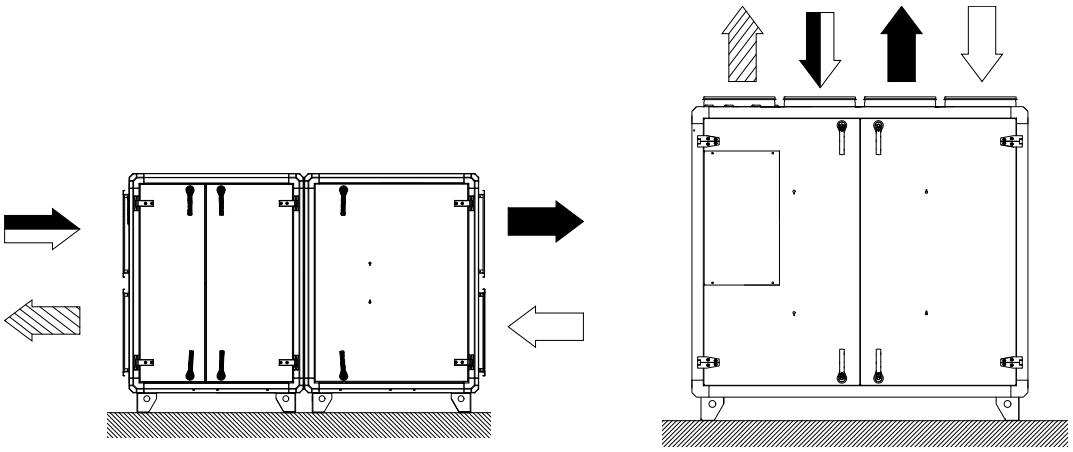


Fig. 5 Installation position (left hand unit)

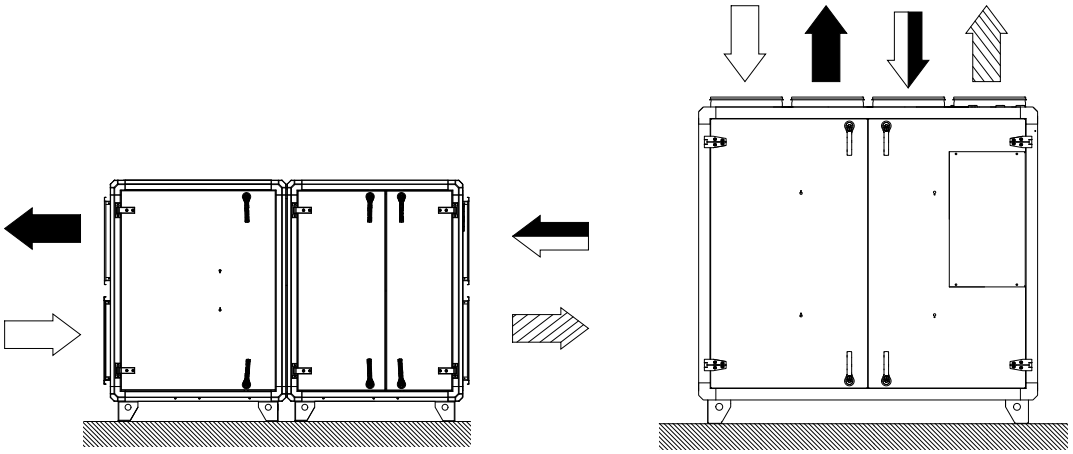


Fig. 6 Installation position (right hand)

Table 1 Symbol description

Symbol	Description
	Supply air
	Exhaust air
	Outdoor air
	Extract air

4.4.1 Installation procedure

Warning

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

Warning

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

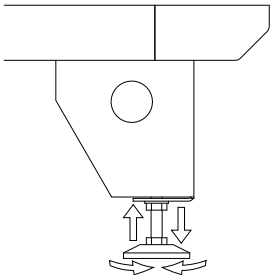
Danger

- Make sure that the mains 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.

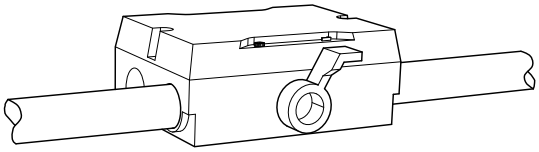
1 Prepare the surface where the unit is to be mounted. Make sure that the surface is flat, levelled and that it supports the weight of the unit. Perform the installation in accordance with local rules and regulations.

2 Lift the unit in place.

3 Level the unit with help of the enclosed mounting feet



4 Connect the unit electrically to the mains power supply through the all pole circuit breaker, safety switch (accessory). The wiring is led through the gable of the unit (Topvex SR 09, 11) or through the top of the unit casing (Topvex TR 09-15) directly to the electrical connection box.
See enclosed wiring diagram, and chapter 4.6.6, for more information.



4.4.2 The rotors vertical position (Topvex SR 09, 11)

To achieve optimal sealing against the rotor's brush strip and the chassis frame, check and if necessary adjust the rotors vertical position when the unit is installed. Remove the filter for easy access.

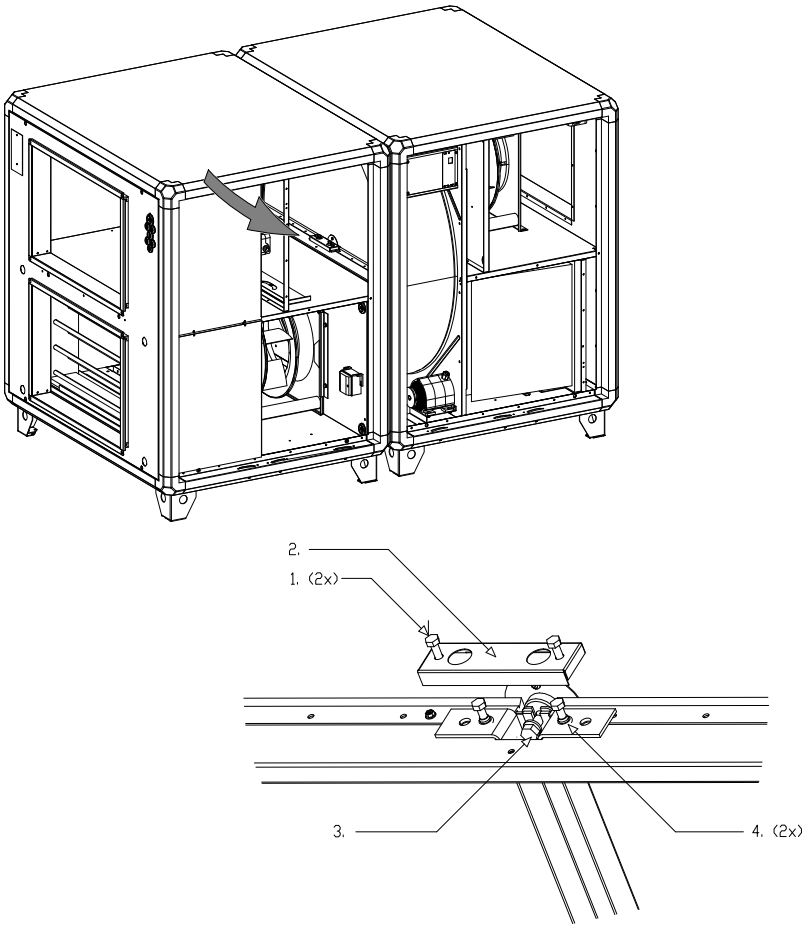


Fig. 7 Rotor position (left hand unit)

Adjustment:

1. Loosen the two screws
2. Remove the cover
3. Adjust the rotors height by loosening the locking screw to the axel of the rotor
4. Adjust the rotor vertical position by adjusting the two screws on the rotor bracket
5. After adjustment, tighten the locking screw to the rotor axel (3), mount the cover (2) and fasten the screws (1).

4.5 Supply air sensor

The supply air sensor is enclosed in the unit package on delivery. Mount the supply air sensor in the supply air duct after the air handling unit (figure 8). See chapter 4.6.6 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.

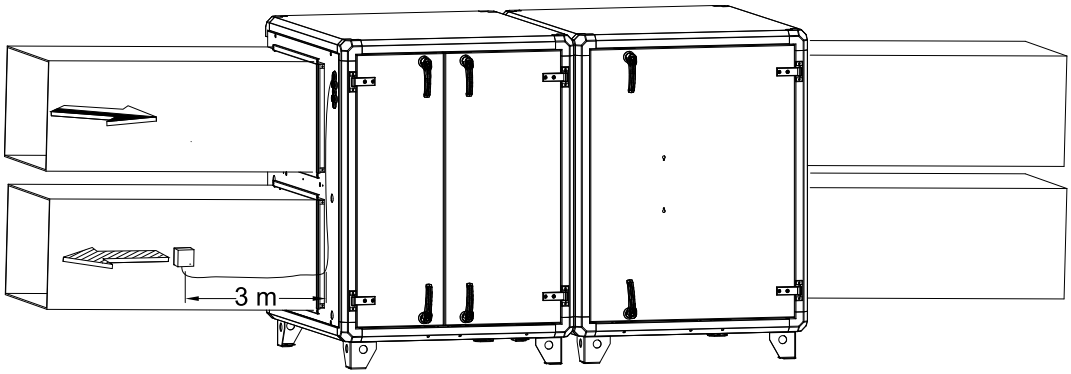


Fig. 8 Installed supply air sensor (Topvex SR09, left hand unit)

4.6 Connections

4.6.1 Ducting

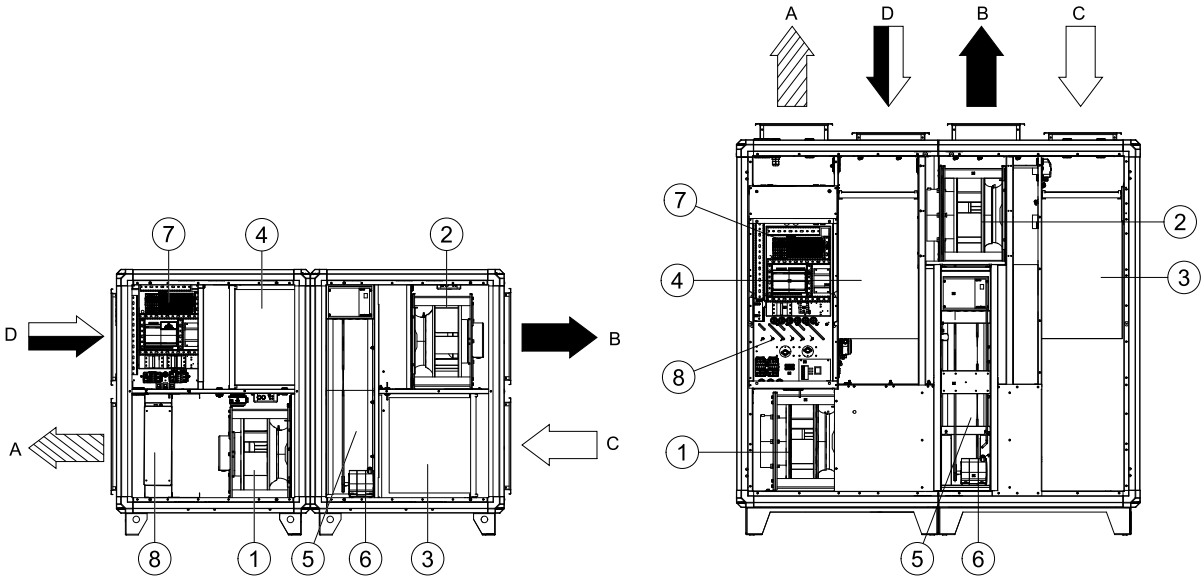


Fig. 9 Connections and basic components in left hand connected units

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	Electrical connection box	
8	Re-heater battery	

4.6.2 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

4.6.3 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.

4.6.4 Electric connections

All electric connections are made in the electrical connection box which can be found in the front of the unit (figure 10). The hatch is removed by unscrewing four screws (figure 10).

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 (chapter 4.6.6).

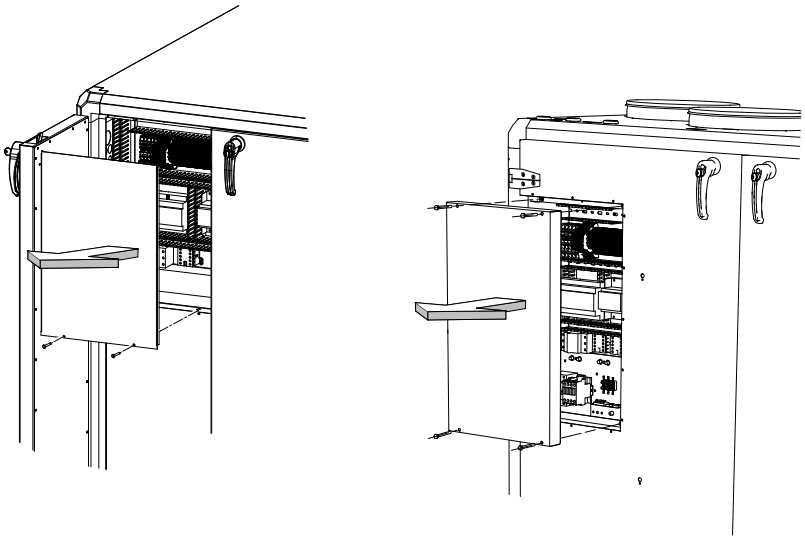


Fig. 10 Opening the electrical connection box

Danger

- Make sure that the mains 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.

4.6.5 Electrical connection box, components

Topvex SR/TR are equipped with a built in regulator and internal wiring (figure 11).

The figure shows the electrical connection box for the Topvex TR 09-15 units. The connection box for the Topvex SR 09, 11 has the same layout and components with the difference that the electrical heater is situated in a separate compartment.

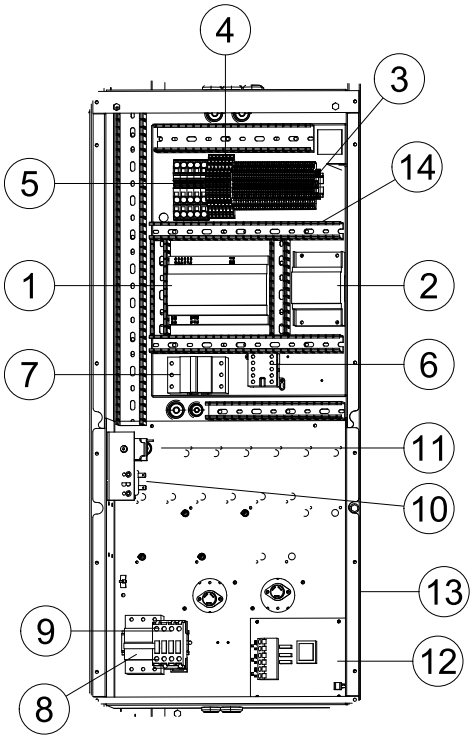


Fig. 11 Electric components

Position	description
1	Control unit CU283W-4
2	Transformer 230/24V AC
3	Terminals for internal and external components
4	Terminals for internal wiring
5	Terminals for mains power supply to the unit
6	Contactor (K2) Pump control water (HW units only, not used in EL-units)
7	Automatic fuse
8	Automatic fuse for EL heater
9	Contactor (K3) EL heater
10	Automatic over heat protection (EL units)
11	Manual over heat protection reset (EL units)
12	TTC EL heater control (EL units)
13	Switch module
14	Panel outlet

4.6.6 External connections

Table 2 Connections to external functions

Terminal block		Description	Remark
	PE	Ground	
N	N	Earthed neutral (mains power supply)	Used for phase 230V 1~ and 400V 3~
L1	L1	Phase (mains power supply)	Used for phase 230V 1~ if the unit has this mains 400V 3~/230V 3~
L2	L2	Phase (mains power supply)	400V 3~/230V 3~
L3	L3	Phase (mains power supply)	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*

4.6.7 BMS Connection

Communication possibilities for control unit.

- 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

RS 485 connection

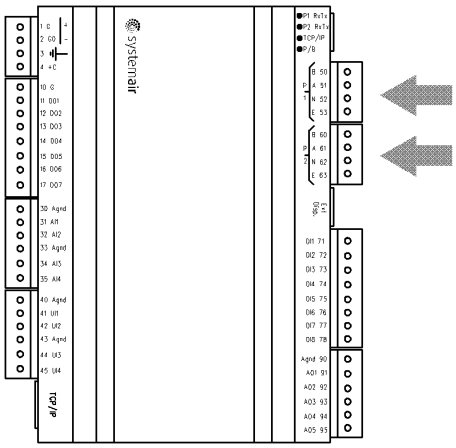


Fig. 12

TCP/IP connection

Connect the device to panel outlet or switch module, depending on type of air handling unit.

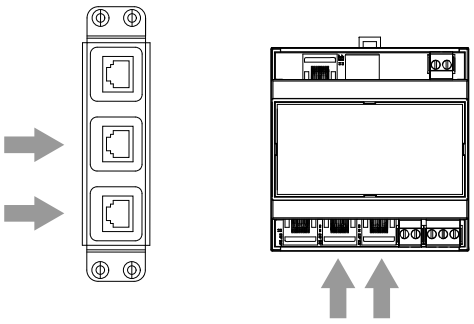


Fig. 13 Panel outlet view is an example,

Note:

RJ 45

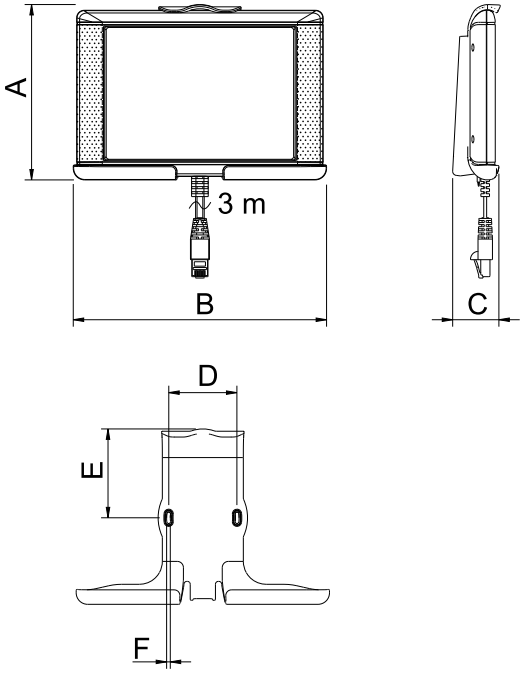
24V HMI connection dedicated for the display. The connection is only for HMI and no other connections is permitted.

4.7 Installing NaviPad control panel

The protection class of the NaviPad control panel is IP 54 and 0-50° permitted ambient temperature. If NaviPad is mounted outdoor the panel needs to be protected against direct UV radiation. Communication between the panel and the controller in the cabinet is possible with up to 100 meters of cable.

4.7.1 Dimensions NaviPad

NaviPad is the control panel for Systemair´s air handling units and contains several selectable languages.

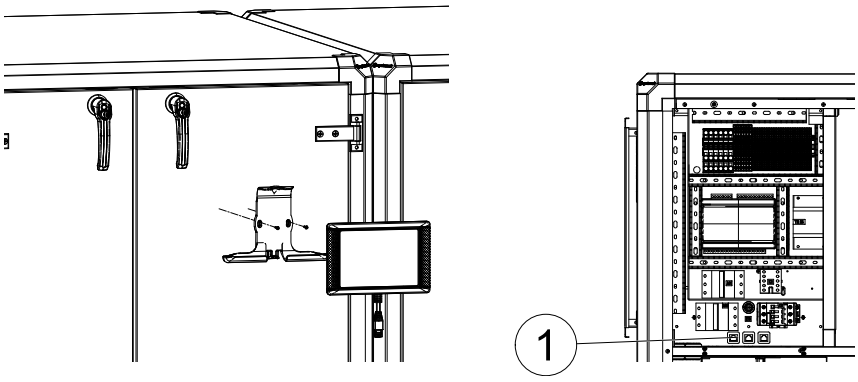


A	B	C	c/cD	E	F
153	221	40,3	59,4	77,5	3,2

4.7.2 Mount NaviPad

The NaviPad control panel with 3 m cable, holder and screws are enclosed with the air handling unit. The air handling units has pre-drilled holes in the doors. Mount the control panel holder on the air handling unit and place NaviPad in the holder. NaviPad is connected to the panel outlet (pos 1) in the air handling unit at delivery.

See enclosed Quick guide for operating of the control panel.



4.8 Additional equipment

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

For electrical connections of external components see enclosed wiring chart.

Systemair Sverige AB
Industrivägen 3
SE-739 30 Skinnskatteberg, Sweden

Phone +46 222 440 00

www.systemair.com

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