



## Decentralised ventilation units

FSL / SCHOOLAIR

### TROX GmbH

Heinrich-Trox-Platz  
47504 Neukirchen-Vluyn  
Germany  
Phone: +49 (0) 2845 2020  
Fax: +49 (0) 2845 202265  
E-mail: [trox@trox.de](mailto:trox@trox.de)  
<http://www.troxtechnik.com>

### Important notes

#### About this manual

This manual enables operating or service personnel to correctly install the product described below and to use it safely and efficiently.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

#### Other applicable documentation

- FSL-CONTROLII installation and configuration manual (for units with FSL-CONTROL II control system)
- Project-specific documents (if any)

#### TROX Technical Service

To ensure that your request is processed as quickly as possible, please keep the following information ready:

- Product name
- TROX order number
- Delivery date
- Brief description of the fault

Online	<a href="http://www.troxtechnik.com">www.troxtechnik.com</a>
Phone	+49 2845 202-400

### Correct use

Decentralised ventilation units are used for the air conditioning of rooms such as offices, meeting rooms or classrooms.

Decentralised ventilation units are used for:

- Ventilation (not possible with secondary air units)
- Heating and/or cooling

The ventilation unit is designed for frost-proof installation in buildings, on the inside of an external wall. The unit has to be properly installed on the external wall (by others).

Correct use also involves complying with all the information provided in this manual.

Any use that goes beyond the correct use or any different use of the unit is regarded as incorrect use.

Water connection: Air-water systems are to be connected to a central heating or cooling system.

- Hot water connection: 75 °C max. (55 °C if flexible hoses are used).
- Chilled water connection: 16 °C min.
- Operating pressure: 6 bar max.

## Incorrect use



### WARNING!

#### Danger due to incorrect use!

Incorrect use of the unit can lead to dangerous situations.

Never use the unit:

- in areas with potentially explosive atmospheres
- in humid rooms
- in rooms with aggressive or dust-laden air

## Safety signs

The following symbols and signs are found on the unit. They apply to the very location where they are found.

## Electrical voltage



Hazardous electrical voltage that is present in the ventilation unit. Only skilled qualified electricians are allowed to work on parts of the ventilation unit marked with this symbol. Such work must be carried out only by skilled qualified electricians or the technical service.

## Controls access panel

Das Gerät darf nur von autorisiertem Fachpersonal geöffnet werden. Bevor die Anschlussterminals zugänglich gemacht werden, müssen alle Netzanschlusskreise spannungsfrei sein.

L'appareil ne peut être ouvert que par le personnel qualifié autorisé. Avant d'avoir accès aux bornes de connexion, mettre hors circuit toutes les raccordements au réseau.

This device may only be opened by authorized specialist staff. Switch off all the voltage circuits before making any terminal block available.

Only skilled qualified electricians are allowed to open the controls access panel. Ensure that no voltage is present on any mains circuit before you open the cover to access the terminal connections.

## Qualified staff

### HVAC technician

HVAC technicians are individuals who have sufficient professional or technical training in the field they are working in to enable them to carry out their assigned duties at the level of responsibility allocated to them and in compliance with the relevant guidelines, safety regulations and instructions. HVAC technicians are individuals who have in-depth knowledge and skills related to HVAC systems; they are also responsible for the professional completion of the work under consideration.

HVAC technicians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on HVAC systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

### Skilled qualified electrician

Skilled qualified electricians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on electrical systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

### Specialized personnel

Specialised personnel are personnel, who due to their specialized training, skills, and experience, as well as knowledge of the applicable standards and regulations, are capable of executing the tasks assigned to them, and of recognizing possible hazards and avoiding them on their own.

### Personal protective equipment

Personal protective equipment must be worn for any work in order to reduce health or safety hazards to the minimum.

The appropriate protective equipment for a job must be worn for as long as the job takes.

### Industrial safety helmet



Industrial safety helmets protect the head from falling objects, suspended loads, and the effects of striking the head against stationary objects.

### Protective gloves



Protective gloves protect hands from friction, abrasions, punctures, deep cuts, and direct contact with hot surfaces.

### Safety shoes



Safety shoes protect the feet from crushing, falling parts and prevent slipping on a slippery floor.

## Transport and storage

### Checking delivered goods

Check delivered items immediately after arrival for transport damage and completeness.

If there is any visible damage, proceed as follows:

- Either do not accept the delivered items, or accept them with reservations.
- Note down the damage on the shipping documents or on the shipping company's delivery note.
- Immediately file a complaint with the shipping company and vendor.



*File a complaint as soon as you detect any damage. Claims for compensation can be filed only within the complaint period.*

## Transport

### CAUTION!

#### **Danger of injury from sharp edges, sharp corners and thin sheet metal parts!**

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

- If possible, take the module in its transport packaging up to the installation location.
- Use only lifting and transport gear designed for the required load.
- Always secure the load against tipping and falling.
- Do not move bulky items just by yourself. Get help to prevent injuries and damage.

## Storage

Please note:

- Store the unit only in its original packaging
- Protect the unit from the effects of weather
- Protect the unit from humidity, dust and contamination
- Storage temperature: -10 °C to 50 °C.
- Relative humidity: 95 % max., no condensation

## Packaging

Properly dispose of packaging material.

## Installing and fixing the unit

### Personnel:

- Specialized personnel

### Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

### Before installation

Before you install the unit, take suitable precautions to protect air distribution components from contamination during installation ⇒ VDI 6022.

If this is not possible, at least cover the unit or take other precautions to protect it from contamination. In this case you have to ensure that the unit cannot be started.

Ensure that all components are clean before you install them. If necessary, clean them thoroughly. If you have to interrupt the installation procedure, protect all openings from the ingress of dust or moisture.

### Installation information

- Install the ventilation unit preferably in a thermally insulated, low-leakage building.
- Frost free and dry installation location.
- Installation and connections to be performed by others; fixing, connection and sealing material to be provided by others
- Install the unit only on structural elements that can carry the load of the unit.
- Use only certified fixing systems.
- The room facing side of the unit must remain completely accessible for maintenance and cleaning.

### Air connection

Two openings in the façade are required, one for outdoor air and one for exhaust air. The ventilation unit is to be sealed to the external wall with a factory fitted closed cell perimeter seal. The surfaces onto which the outdoor air and exhaust air openings are sealed must be even. Ensure that the unit is correctly sealed to the wall.

The outdoor air and exhaust air openings have to be protected against the effects of weather (by others).

Secondary air units are not to be connected to the façade.

### Installation location and fixing

#### Ceiling

Use suitable suspension systems to suspend the unit; be sure to use all suspension points.

#### Wall (inside of an external wall)

Use the levelling feet to ensure that the unit is completely horizontal, then fix the unit (screws) to the wall or floor.

#### Floor/underfloor

Place the unit in the floor recess and use the levelling feet to ensure that the unit is completely horizontal, then fix it (screws) to the floor.

## Connecting the water pipes

### Personnel:

- HVAC technician

### Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

### General information

- Using flexible hoses (accessories) instead of rigid water pipes to connect the heat exchanger will make it easier to clean the heat exchanger.
- Components such as valves and lockshields are factory fitted but you will have to tighten them at the time of installation.
- Control valves are fitted in the return pipe, lockshields in the flow pipe; this improves the control behaviour.
- Units with a condensate drip tray (optional) require a drainage pipe and a drain trap (by others).
- Control valves, gate valves and safety valves are required; if they are not part of the supply package, they have to be provided by others.
- Drain valves and vent valves are required; if they are not part of the supply package, they have to be provided by others.
- As a last step, check all connections to make sure they do not leak.
- We recommend insulating the pipes in order to prevent energy losses.

### ! NOTICE!

#### Temperatures below the dew point

Temperatures below the dew point should be avoided as they lead to condensation which may cause damage to the building structure.

Interfaces	Dimensions	Connection options:
Chilled water/hot water connection	G 1/2" union nut and flat seal, SW24	Screw connection (rigid)

Interfaces	Dimensions	Connection options:
		Flexible hoses (accessory)
Condensate drain (optional)	Spigot Ø12 mm	Hose (by others)

### Marking of 2-pipe heat exchangers

Symbol	Connection	Type of valve <sup>1</sup>	Operating mode
V (blue)	Chilled water or hot water flow	Lockshield	Cooling or heating <sup>2</sup>
R (blue)	Chilled water or hot water return	Control valve	

1) Only units with FSL-CONTROL II.

2) A three-way valve allows for both heating and cooling.

### Marking of 4-pipe heat exchangers

Symbol	Connection	Type of valve <sup>2</sup>	Operating mode
V (blue)	Chilled water flow	Lockshield	Cooling
R (blue)	Chilled water return	Control valve	
V (red)	Hot water flow	Lockshield	Heating
R (red)	Chilled water return	Control valve	

1) Only units with FSL-CONTROL II.

Ensure that the surfaces are clean

1. ▶ Insert seal and tighten screw connection by hand.

### ! NOTICE!

Heat exchanger and pipes may easily become damaged.

Always use a suitable tool to counter the tightening force in order to prevent any damage.

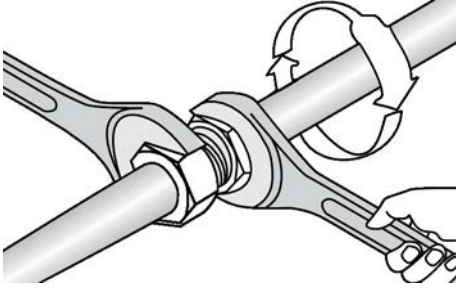


Fig. 1: Tightening the connection

2. ▶ Tighten threaded connections, including valves and lockshields, with a spanner.

**! NOTICE!**

**Subzero temperatures will damage the heat exchanger!**

Only fill the heat exchanger if there is no danger of freezing.

3. ▶ Fill the heat exchanger and vent it. To fill the system, use clean tap water (pH value 6.5 to 9) or a water glycol mixture (max. 30 % glycol). Heat exchangers are fitted with bleed screws for venting.
4. ▶ Check the system for leaks immediately after installation and then at regular intervals.

## Making electrical connections

### Personnel:

- Skilled qualified electrician

**! DANGER!**

**Electric shock hazard! Electrical equipment carries a dangerous electrical voltage!**

- Only skilled qualified electricians are allowed to work on the electrical system and to connect the unit to the mains.
- Disconnect the cable from the mains (all phases) and secure the unit against inadvertently being switched on again.
- Ensure that no voltage is present.
- Carry out assembly or connection jobs only as long as no voltage is present.

### Notes on the electrical installation

Any cables must be designed for the supply voltage for which they will be used. The length and cross section as well as any contact resistance may increase voltage losses. The power rating of each unit must also be considered. A skilled qualified electrician has to select the correct cable types and sizes. This job must only be carried out by specialist electrical companies.

- For the electrical connection comply with any applicable regulations and follow the code of good practice. Be sure to comply with the applicable VDE guidelines and local regulations.
- The connection data can be found on the rating plate or in the wiring diagrams.
- Protect any connections from physical damage.
- Lead cables through the cable glands on the ventilation unit.
- If any maintenance jobs have to be carried out, the unit first has to be de-energised (all phases). No voltage must be present. Separators can be used (e.g. fuses or RCBOs), minimum distance between contacts: 3 mm.
- For units without integral controls from TROX follow the instructions of the controls provider.

## Notes on control panels

Select an installation location where the control panel is not affected by disturbances. Avoid solar gain and draughts.

Seal the end of the conduit in the junction box as otherwise a draught could occur in the conduit and affect the measurement results.

## Initial commissioning

### Personnel:

- Skilled qualified electrician

Before initial commissioning:

- Remove protective film, if any.
- Ensure that the unit is clean. If necessary, clean the casing and the inlet and outlet openings from dust.
- Connecting water pipes professionally:
  - Ensure that all heat exchangers are clean and free from residues and foreign matter.
  - Ensure that the water system including the heat exchanger has been filled and vented.
  - Check operating pressure and temperature; ensure that there are no leaks.
  - If the unit has a condensate drain, check and ensure that the drain is tight.
- Making electrical connections professionally:
  - Check and ensure that the actual supply voltage is the same as the one given on the rating plate.
  - Ensure that the ventilation unit has been correctly earthed.
- Check filters for correct fit and contamination. Should the filters have been contaminated even before installation, replace them.

For commissioning see also VDI 6022, part 1 – 'Hygiene requirements for ventilation and air-conditioning systems and units'.

1. ▶ Switch on the power supply.
  - ⇒ The ventilation unit is on.
2. ▶ Configure the control of the ventilation unit, if necessary.

## Control of ventilation units

For units with the integral FSL-CONTROL II control system ↪ Installation and configuration manual, FSL-CONTROL II single room control.

For units without integral controls from TROX follow the instructions of the controls provider.

## Maintenance and cleaning



### DANGER!

Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.

Switch off the supply voltage and secure it against being inadvertently switched on again before working on the unit.



### WARNING!

Risk of burning or scalding! The heat exchanger is hot! Before you work on a heat exchanger, switch it off and leave it to cool.

## Maintenance

The level of contamination of a ventilation unit depends to a large part on the location of the building and on the length of daily use of the unit.

The system owner should therefore set maintenance intervals based on the hygiene requirements. The legal hygiene requirements have to be met.

An increased dust exposure due to construction work is to be expected during the first three months after initial commissioning; this is why filters should be replaced after three months, and the unit should be cleaned.

We also recommend you to randomly check the contamination level of filters every three months during the first year and use the result as a basis for setting further maintenance intervals.

Operational reliability requires that the necessary maintenance measures are taken in the suggested maintenance intervals, ↪ *'Maintenance measures'* on page 9

## Hygiene inspection

A hygiene inspection to VDI 6022 is due every three years. Hygiene inspections have to be carried out by sufficiently qualified individuals and on a random selection of typical ventilation units. If any hygiene issues are detected, all decentralised ventilation units have to be cleaned.

## Cleaning

- Cleaning intervals to VDI 6022.
- Clean all surfaces with a damp (not wet) cloth.
- Use only common household cleaners, do not use any caustic, scouring or otherwise aggressive cleaning agents.
- Carefully clean the heat exchanger with an industrial vacuum cleaner. Be careful to not damage the fins. We recommend using a soft brush on the suction inlet.
- Rinse the recuperative heat exchanger with hot water (40 °C max.), e.g. by using a commercially available shower head.
  - Do not use organic solvents (such as acetone or methanol) to clean the heat exchanger.
  - Do not put the recuperative heat exchanger into a dishwasher.



**Maintenance report**

<b>Building:</b>	<b>Floor:</b>	<b>Unit:</b>
<b>Commissioning:</b> <input type="checkbox"/>	<b>Maintenance:</b> <input type="checkbox"/>	<b>Date:</b> __ . __ . 20__

**Maintenance measures**

Item to be checked	Measures	Interval [months]			Done	
		6	12	24	Yes	No
Cleaning the ventilation unit	Remove dust and contamination from the casing and from the air passages inside the unit.		X		<input type="checkbox"/>	<input type="checkbox"/>
Checking air terminal units in the external wall for damage and corrosion (random check)	Clean; if necessary, repair.		X		<input type="checkbox"/>	<input type="checkbox"/>
Checking the heat exchanger, condensate drip tray and condensate drain (random check)	Check for corrosion and hygiene; clean	X <sup>1</sup>	X		<input type="checkbox"/>	<input type="checkbox"/>
Checking outdoor air and exhaust air openings for leakages (random check)	In case of visible leakages: adjust the damper opening angle, replace the actuator, clean		X		<input type="checkbox"/>	<input type="checkbox"/>
	Check if the damper blade closes in case of a power failure			X	<input type="checkbox"/>	<input type="checkbox"/>
Checking filters after any pressure drop, based on hygiene conditions, based on operating time (random checks)	Replace the filter medium, clean the filter chamber, check seals	X <sup>1</sup>	X		<input type="checkbox"/>	<input type="checkbox"/>
Checking the recuperative heat exchanger (random check)	Check seals, adjust or replace if necessary; clean the recuperative heat exchanger; check and clean water drain	X <sup>1</sup>	X		<input type="checkbox"/>	<input type="checkbox"/>
Checking fan functions (random check)	Different speeds			X	<input type="checkbox"/>	<input type="checkbox"/>
Checking release of the frost protection function for heat exchangers	Let the supply air temperature sensor cool down to a value below the release temperature and see if the ventilation unit is switched off as a consequence		X		<input type="checkbox"/>	<input type="checkbox"/>
Checking valves for function and leakages (random check)	Check whether the heating and cooling valves open and close correctly and whether the effect of the actuator action is correct			X	<input type="checkbox"/>	<input type="checkbox"/>

1) if condensation forms

Item to be checked	Measures	Intervall [months]			Done	
		6	12	24	Yes	No
Checking the control panel (random check)	Check switching function, setpoint shift			X	<input type="checkbox"/>	<input type="checkbox"/>
Checking control units (random check)	Check circuits, control signals; adjust them if necessary			X	<input type="checkbox"/>	<input type="checkbox"/>

1) if condensation forms

<b>Comment:</b>	
<b>Next mainenance scheduled for:</b>	
<b>Signature:</b> (Technician)	
<b>Company:</b> (Stamp)	



