



Decentralised ventilation units

Vertical façade ventilation units

FSL-V-ZAB/SEK

SCHOOLAIR-V / -V-1800 / -V-HE / -V-HV

with control FSL-CONTROL III (optional)



Read the instructions prior to performing any task!

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General information

About this manual

This operating and installation manual enables operating or service personnel to correctly install the ventilation unit and to use it safely and efficiently.

This operating and installation manual is intended for use by fitting and installation companies, in-house technicians, technical staff, instructed persons, and qualified electricians or air conditioning technicians.

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 the general safety regulations for the area of application of the ventilation unit also apply.

This manual must be given to the system owner when handing over the system. The system owner must include the manual with the system documentation. The manual must be kept in a place that is accessible at all times.

Illustrations in this manual are mainly for information and may differ from the actual design.

Other applicable documentation

- Installation and configuration manual FSL-CONTROL III (for units with FSL-CONTROL III 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

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The manufacturer does not accept any liability for damages resulting from:

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- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications
- Technical changes
- Use of non-approved replacement parts

The actual scope of delivery may differ from the information in this manual for bespoke constructions, additional order options or as a result of recent technical changes.

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For details regarding defects liability please refer to Section VI, Warranty Claims, of the Delivery and Payment Terms of TROX GmbH.

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1 Ventilation unit overview

1.1 Variants

1.1.1 FSL-V-ZAB/SEK

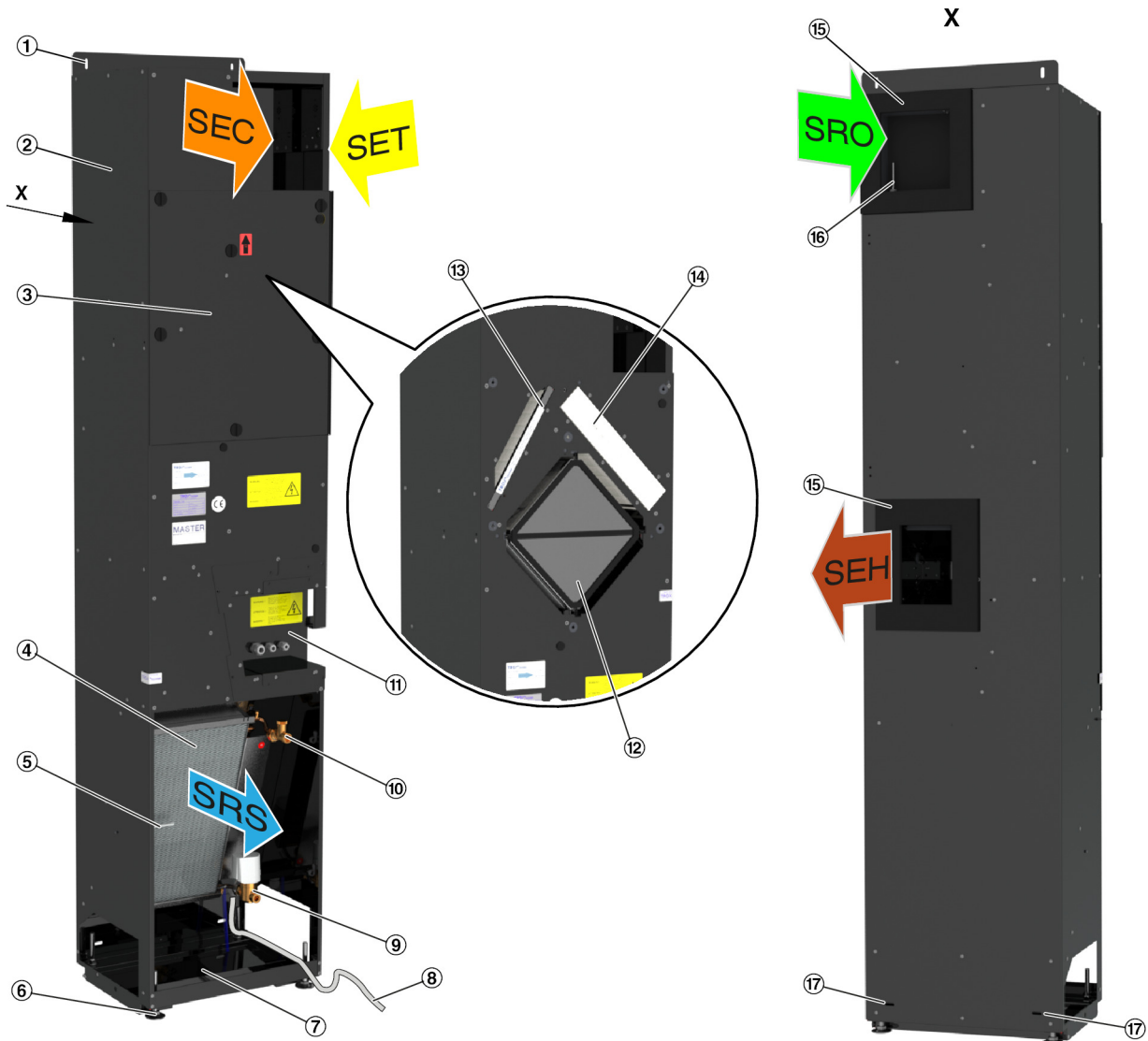


Fig. 1: FSL-V-ZAB/SEK-2L/-4L with 2-pipe or 4-pipe heat exchanger

- | | | | |
|----|---------------------------------|-----|---|
| 1 | Fixing bracket (sliding) | 12 | Cross flow heat recovery unit |
| 2 | Casing | 13 | Extract air ISO coarse 50% |
| 3 | Inspection access panel | 14 | Fresh air filter ISO ePM1 65% |
| 4 | 2-pipe or 4-pipe heat exchanger | 15 | Seal on the wall side |
| 5 | Supply air temperature sensor | 16 | Outdoor air temperature sensor (optional) |
| 6 | Feet | 17 | Lower fixing holes |
| 7 | Condensate drip tray | SEH | Single room exhaust air |
| 8 | Power cable | SET | Single room extract air |
| 9 | Control valve | SRO | Single room outdoor air |
| 10 | Lockshield | SRS | Single room supply air |
| 11 | Controls access panel | SEC | Secondary air (optional) |

1.1.2 SCHOOLAIR-V

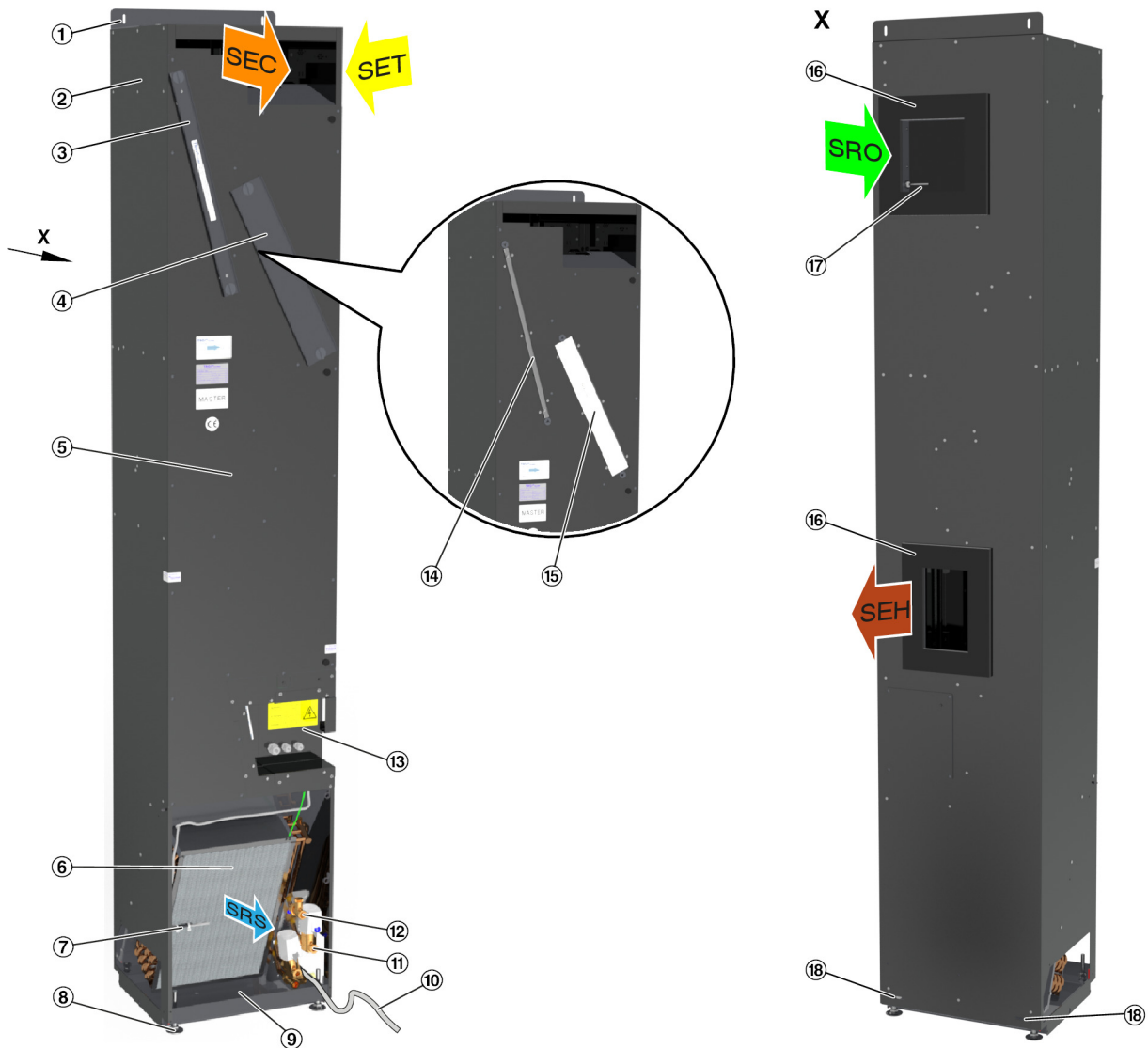


Fig. 2: SCHOOLAIR-V-2L / -4L with 2-pipe or 4-pipe heat exchanger

1	Fixing bracket (sliding)	13	Controls access panel
2	Casing	14	Extract air ISO coarse 50%
3	Extract air filter cover	15	Fresh air filter ISO ePM1 65%
4	Outdoor air filter cover	16	Seal on the wall side
5	Cover plate	17	Outdoor air temperature sensor (optional)
6	2-pipe or 4-pipe heat exchanger	18	Lower fixing holes
7	Supply air temperature sensor	SEH	Single room exhaust air
8	Feet	SET	Single room extract air
9	Condensate drip tray	SRO	Single room outdoor air
10	Power cable	SRS	Single room supply air
11	Control valve	SEC	Secondary air (optional)
12	Lockshield		

1.1.3 SCHOOLAIR-V-1800

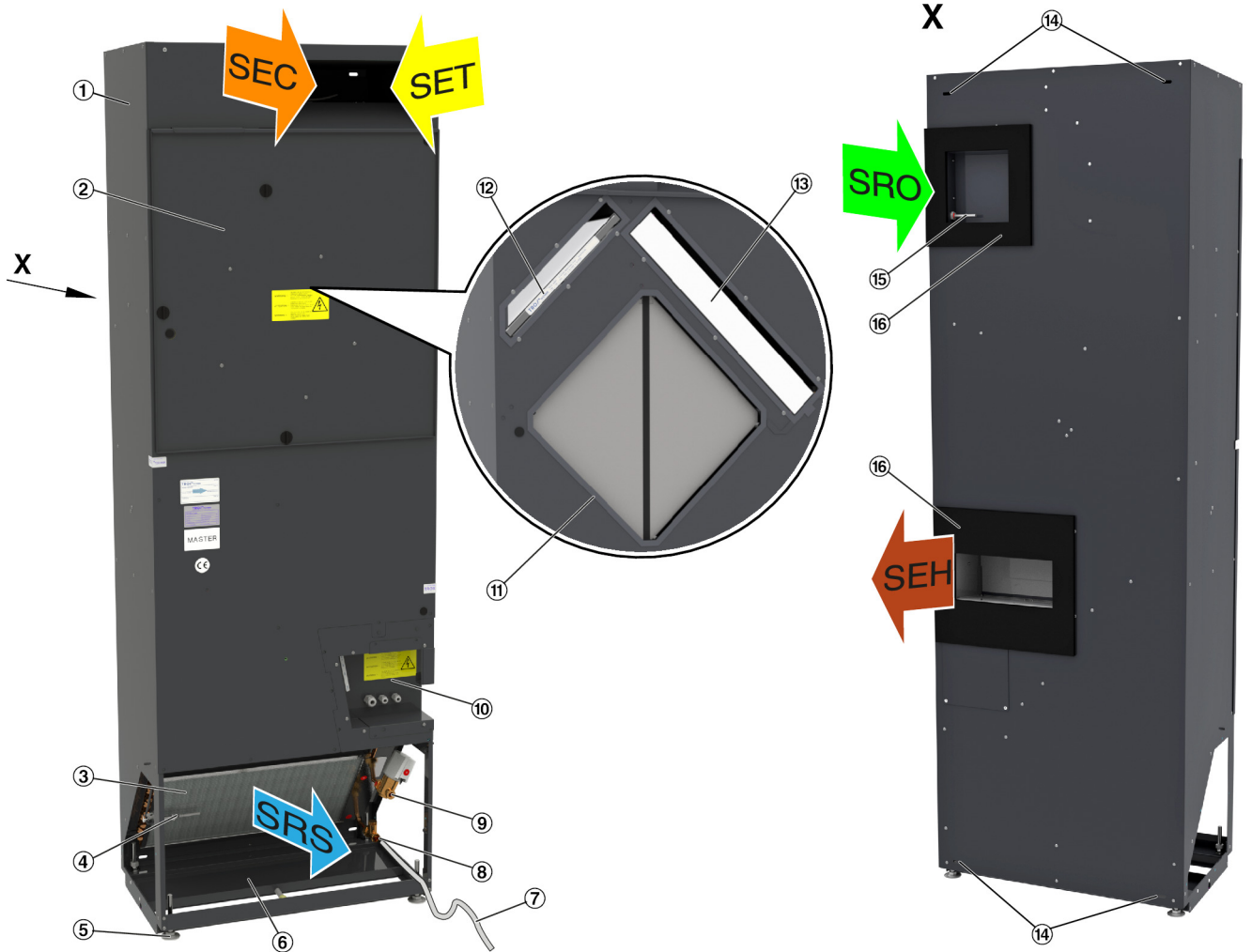


Fig. 3: SCHOOLAIR-V-1800-2L / -4L with 2-pipe or 4-pipe heat exchanger

- | | | | |
|----|---------------------------------|-----|---|
| 1 | Casing | 12 | Extract air ISO coarse 50% |
| 2 | Inspection access panel | 13 | Fresh air filter ISO ePM1 65% |
| 3 | 2-pipe or 4-pipe heat exchanger | 14 | Fixing holes |
| 4 | Supply air temperature sensor | 15 | Outdoor air temperature sensor (optional) |
| 5 | Feet | 16 | Seal on the wall side |
| 6 | Condensate drip tray | SEH | Single room exhaust air |
| 7 | Power cable | SET | Single room extract air |
| 8 | Lockshield | SRO | Single room outdoor air |
| 9 | Control valve | SRS | Single room supply air |
| 10 | Controls access panel | SEC | Secondary air (optional) |
| 11 | Cross flow heat recovery unit | | |

1.1.4 SCHOOLAIR-V-HE

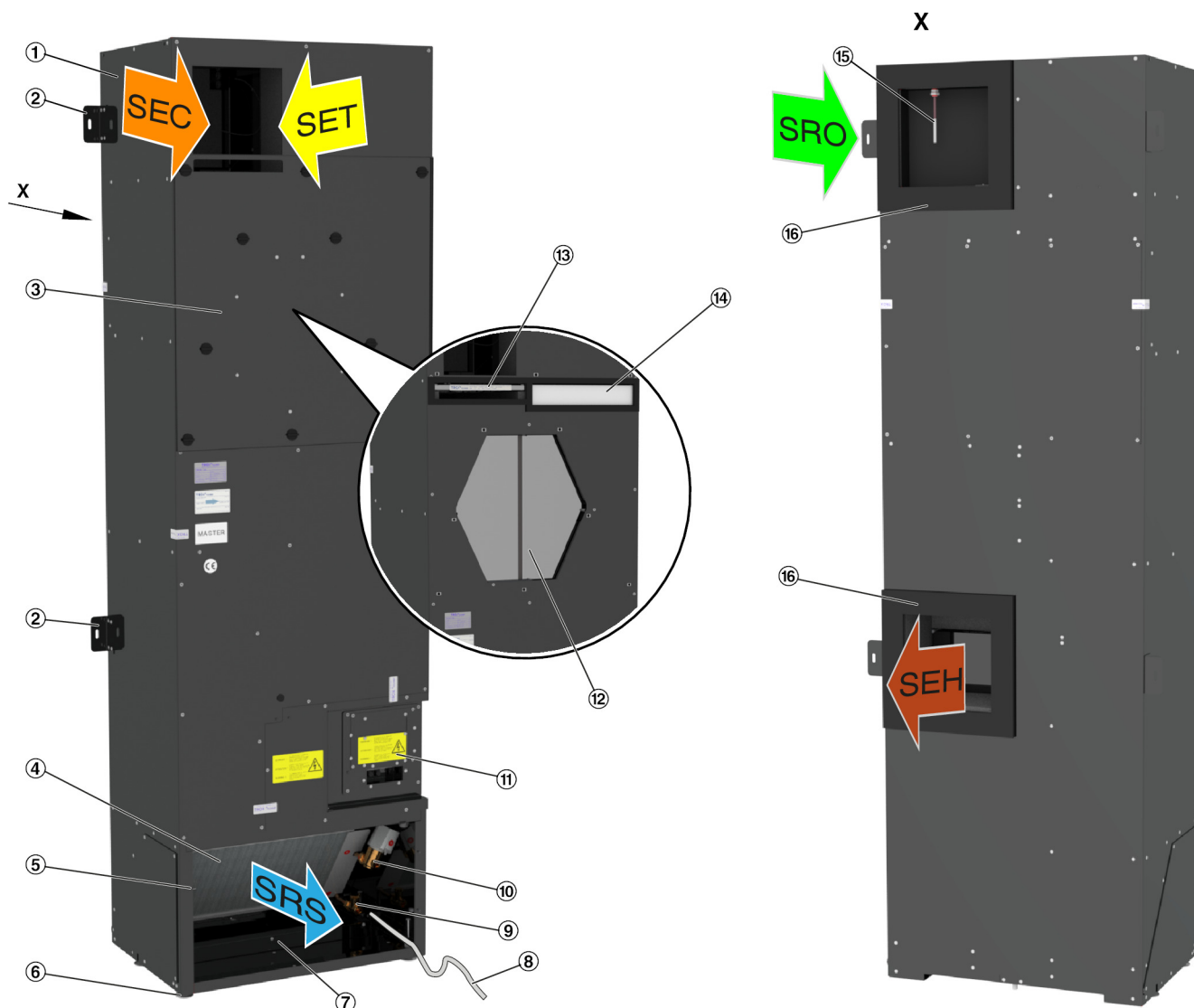


Fig. 4: SCHOOLAIR-V-HE-2L / -4L with 2-pipe or 4-pipe heat exchanger

1	Casing	12	Cross counter flow heat recovery unit
2	Fixing bracket (4 pieces)	13	Extract air ISO coarse 50%
3	Inspection access panel	14 ¹⁾	Fresh air filter ISO ePM1 65%
4	2-pipe or 4-pipe heat exchanger	15	Outdoor air temperature sensor (optional)
5	Supply air temperature sensor	16	Seal on the wall side
6	Feet	SEH	Single room exhaust air
7	Condensate drip tray	SET	Single room extract air
8	Power cable	SRO	Single room outdoor air
9	Lockshield	SRS	Single room supply air
10	Control valve	SEC	Secondary air (optional)
11	Controls access panel		

1) A differential pressure sensor is used to monitor the condition of the outdoor air filter.

1.1.5 SCHOOLAIR-V-HV

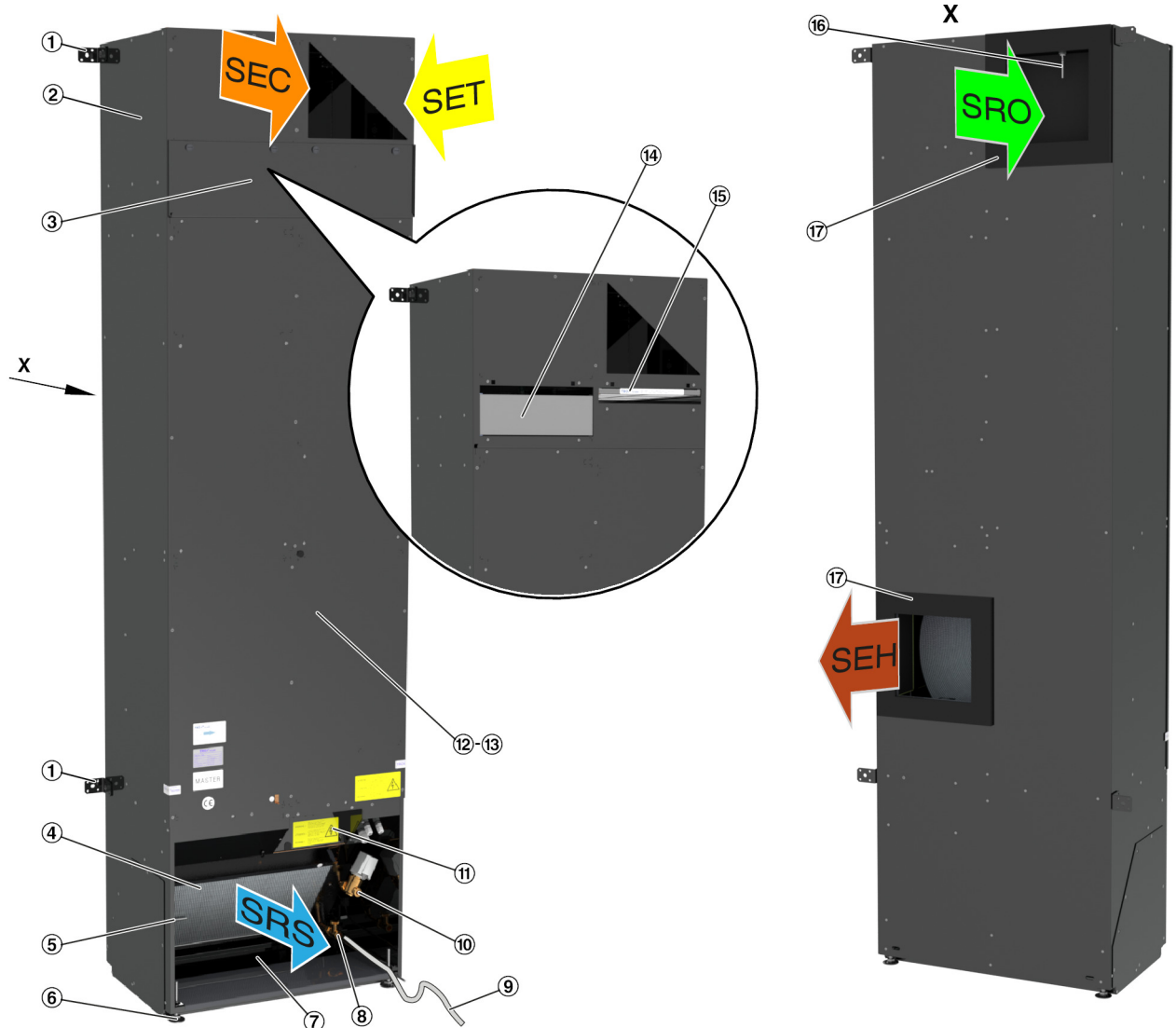


Fig. 5: SCHOOLAIR-V-HV-2L / -4L with 2-pipe or 4-pipe heat exchanger

- | | | | |
|----|--|------------------|---|
| 1 | Fixing bracket (4 pieces, supplied separately) | 12 | Cover plate |
| 2 | Casing | 13 | Rotary heat exchanger (inside) |
| 3 | Inspection access panel | 14 ¹⁾ | Fresh air filter ISO ePM1 65% |
| 4 | 2-pipe or 4-pipe heat exchanger | 15 | Extract air ISO coarse 50% |
| 5 | Supply air temperature sensor | 16 | Outdoor air temperature sensor (optional) |
| 6 | Feet | 17 | Seal on the wall side |
| 7 | Condensate drip tray | SEH | Single room exhaust air |
| 8 | Lockshield | SET | Single room extract air |
| 9 | Power cable | SRO | Single room outdoor air |
| 10 | Control valve | SRS | Single room supply air |
| 11 | Controls access panel | SEC | Secondary air (optional) |

1) A differential pressure sensor is used to monitor the condition of the outdoor air filter.

1.2 Schematic illustration of the airflows

FSL-V-ZAB/SEK / SCHOOLAIR-V / -V-1800 / -V-HE

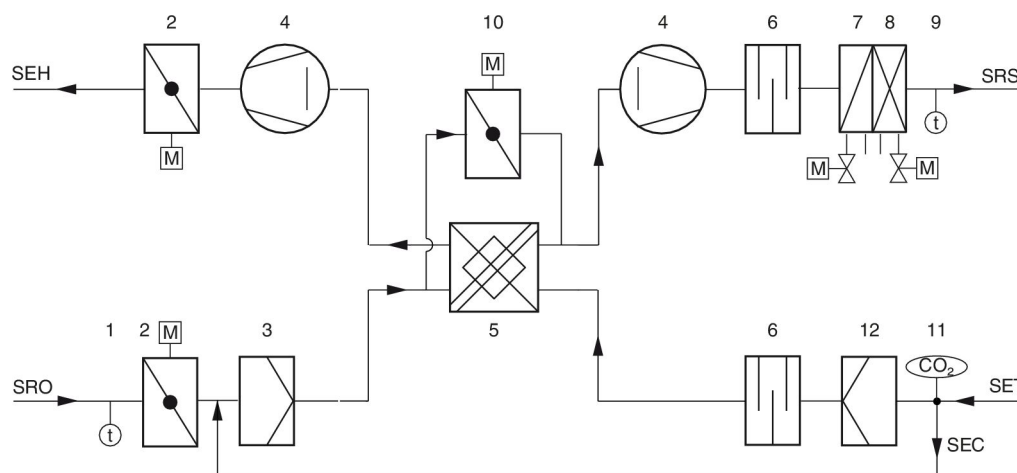


Fig. 6: Ventilation diagram for FSL-V-ZAB/SEK / SCHOOLAIR-V / -V-1800 / -V-HE

- | | | | |
|---|---|-----|-----------------------------------|
| 1 | Outdoor air temperature sensor (optional) | 10 | Bypass damper with actuator |
| 2 | Shut-off damper with actuator (exhaust air and outdoor air) | 11 | CO ₂ sensor (optional) |
| 3 | Outdoor air filter | 12 | Extract air filter |
| 4 | Fan (supply air and extract air) | SEH | Single room exhaust air |
| 5 | Recuperative plate heat exchanger:
FSL-V-ZAB / SCHOOLAIR-V / -V-1800: cross flow
SCHOOLAIR-V-HE: cross counter flow | SET | Single room extract air |
| 6 | Sound attenuator | SRO | Single room outdoor air |
| 7 | Heating coil | SRS | Single room supply air |
| 8 | Cooling coil (optional) | SEC | Secondary air (optional) |
| 9 | Supply air temperature sensor | | |

Functional description

Decentralised supply and extract air units for room ventilation and for dissipating cooling loads and heat loads.

An EC-centrifugal fan takes in the outdoor air which then flows through the motorised shut-off damper and the outdoor air filter. It then flows through the heat recovery unit; it is possible to bypass the heat recovery unit in order to protect it, or when it is sensible with regard to energy efficiency.

If necessary, the air is heated or cooled by the heat exchanger before it is discharged to the room as a displacement flow (for 4-pipe systems this is optional).

The extract air first passes through the extract air filter, then flows through the heat recovery unit, the extract air fan and the motorised shut-off damper before it is discharged to the outside as exhaust air.

If the room air quality is sufficient, FSL-CONTROL III closes the outdoor air dampers and changes to secondary air operation, which is more energy efficient in any case.

The control system compares the room air quality set-point value to the actual value measured by the CO₂-sensor and switches automatically between outdoor air and secondary air operation.

If the power fails, the outdoor air and exhaust air dampers are closed to ensure fire protection and frost protection and to avoid draughts. This is ensured by a capacitor in each actuator.

SCHOOLAIR-V-HV

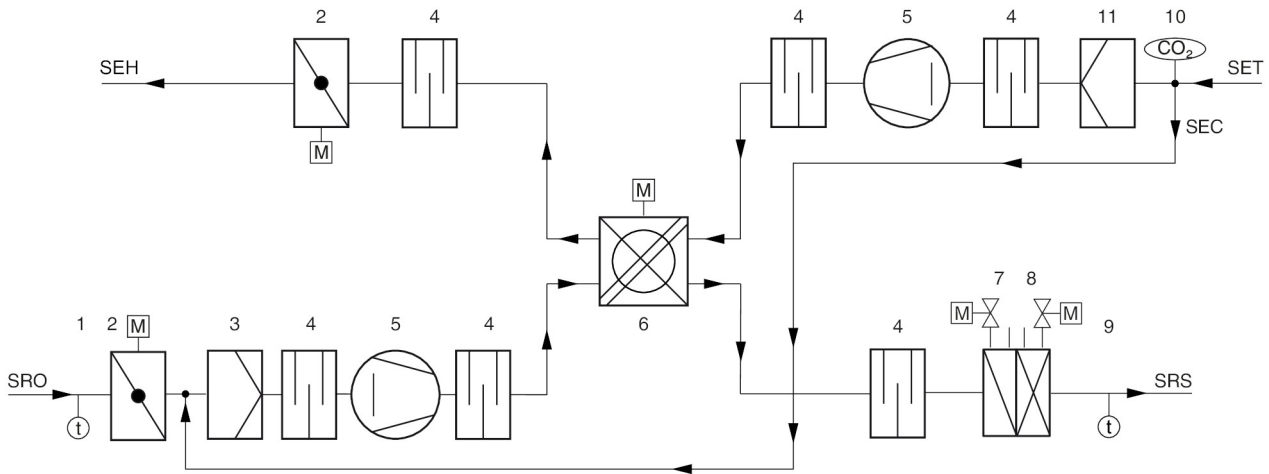


Fig. 7: SCHOOLAIR-V-HV ventilation diagram

- | | | | |
|---|---|-----|-----------------------------------|
| 1 | Outdoor air temperature sensor (optional) | 9 | Supply air temperature sensor |
| 2 | Shut-off damper with actuator (exhaust air and outdoor air) | 10 | CO ₂ sensor (optional) |
| 3 | Outdoor air filter | 11 | Extract air filter |
| 4 | Sound attenuator | SEH | Single room exhaust air |
| 5 | Fan (supply air and extract air) | SET | Single room extract air |
| 6 | Rotary heat exchanger for heat recovery | SRO | Single room outdoor air |
| 7 | Heating coil | SRS | Single room supply air |
| 8 | Cooling coil (optional) | SEC | Secondary air (optional) |

Functional description

Decentralised supply and extract air units for room ventilation and for dissipating cooling loads and heat loads.

An EC-centrifugal fan takes in the outdoor air which then flows through the motorised shut-off damper and the outdoor air filter. The outdoor air then flows through the rotary heat exchanger, which can be switched off to protect the device when it is sensible with regard to energy efficiency.

If necessary, the air is heated or cooled by the heat exchanger before it is discharged to the room as a displacement flow (for 4-pipe systems this is optional).

The extract air first passes through the outdoor air filter, then flows through the heat recovery unit, the extract air fan and the motorised shut-off damper before it is discharged to the outside as exhaust air.

If the room air quality is sufficient, FSL-CONTROL III closes the outdoor air dampers and changes to secondary air operation, which is more energy efficient in any case.

The control system compares the room air quality set-point value to the actual value measured by the CO₂-sensor and switches automatically between outdoor air and secondary air operation.

If the power fails, the outdoor air and exhaust air dampers are closed to ensure fire protection and frost protection and to avoid draughts. This is ensured by a capacitor in each actuator.

2 Safety

2.1 Symbols used in this manual

Safety notes

Symbols are used in this manual to alert readers to areas of potential hazard. Signal words express the degree of the hazard.

Comply with all safety instructions and proceed carefully to avoid accidents, injuries and damage to property.

DANGER!

Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

Potentially hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION!

Potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE!

Potentially hazardous situation which, if not avoided, may result in property damage.

ENVIRONMENT!


Environmental pollution hazard.

Safety notes as part of instructions

Safety notes may refer to individual instructions. In this case, safety notes will be included in the instructions and hence facilitate following the instructions. The above listed signal words will be used.

Example:

1. ▶ Loosen the screw.

2. ▶  **CAUTION!**
Danger of finger entrapment when closing the lid.

Be careful when closing the lid.

3. ▶ Tighten the screw.





Tips and recommendations



Useful tips and recommendations as well as information for efficient and fault-free operation.

Additional markers

In order to highlight instructions, results, lists, references and other elements, the following markers are used in this manual:

Marker	Explanation
 1., 2., 3. ...	Step-by-step instructions
	Results of actions
	References to sections in this manual and to other applicable documents
	Lists without a defined sequence
[Switch]	Operating elements (e.g. push buttons, switches), display elements (e.g. LEDs)
'Display'	Screen elements (e.g. buttons or menus)

2.2 Correct use

Decentralised ventilation units are used to create a comfortable room temperature and to ventilate rooms such as offices, meeting rooms, or classrooms in schools.

Functions of the ventilation unit

- Ventilation
- Outdoor air filtering
- Heating and/or cooling (optional)

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.

Incorrect use

WARNING!

Danger due to incorrect use!

Incorrect use of the unit can lead to dangerous situations.

Incorrect use includes:

- Any use that is not described in this operating manual
- Operation that does not comply with the technical data
- Modifying of the unit by others, tampering with the unit
- Use, installation, operation, maintenance or repair other than described in this manual
- Having work carried out by unqualified individuals
- Use of non-genuine replacement parts or accessories, whose quality and function are not equivalent to those of the original parts
- Operation in rooms with explosive gases or gas mixtures
- Operation in rooms where the supply or extract air contains particles that are conductive, aggressive, corrosive, combustible or hazardous to health
- Operation in rooms where the humidity is permanently high (> 90 %)
- Operation outdoors
- Use for enforced ventilation
- Operation without air filters

2.3 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



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.

2.4 Electric shock hazard

Electric current

DANGER!

Danger of death due to electric current!

Danger of electric shock! Do not touch any live components! Damaged insulation or damaged parts are a life threatening hazard.

- Only a skilled qualified electrician must work on the electrical systems.
- If the insulation is damaged, disconnect the power supply immediately and have the insulation repaired.
- Switch off the power supply before you carry out maintenance or cleaning.
- Ensure that live parts do not come into contact with moisture. Moisture can cause a short circuit.

2.5 Risks from rotating parts

Rotating parts

WARNING!

Risk of injury from rotating parts!

Rotating parts in the fan can cause severe injuries.

- Switch off the power supply before you carry out maintenance or cleaning.
- The fan does not stop immediately! Check that no parts are moving once you have opened the ventilation unit.
- Do not reach into the moving fan.
- Do not open the ventilation unit while the fan is in operation.

2.6 Health risk due to hygiene issues

Hygiene issues

 **CAUTION!**

Health risk due to hygiene issues!

If you do not stick to the maintenance schedule or if the unit is not used for several weeks, bacteria and germs may start growing in the air filter and in the heat recovery unit.

- Change filters and clean the heat recovery unit in the recommended intervals.
- Change the air filters and clean the heat recovery unit after lengthy idle periods.

2.7 Risks caused by an unsuitable installation location

Unsuitable installation location

 **WARNING!**

Risks caused by an unsuitable installation location!

Installing the unit in an unsuitable location can lead to dangerous situations.

- The ventilation unit should preferably be installed in a thermally insulated, low-leakage building.
- Frost free and dry installation location.
- Install the optional outer casing or use other means (by others) to protect the unit from being tampered with by unauthorised individuals.
- The unit must remain accessible for maintenance and cleaning.

2.8 Qualified staff

Qualification

The work described in this manual has to be carried out by individuals with the qualification, training, knowledge and experience described below:

Facility manager

Facility managers have been instructed so that they are able to avoid any potential hazards related to the work under consideration. Facility managers must not carry out any jobs beyond regular operation unless explicitly stated in this manual and unless the system owner has specifically agreed to them. Instruction is provided by the HVAC contractor when the system is handed over.

Facility managers are responsible for cleaning the unit, for carrying out functional tests and regular checks, for maintenance and for smaller adjustments.

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.

Any work has to be carried out by individuals who can be expected to carry out their assigned duties reliably. Individuals whose reaction time is delayed due to alcohol, drugs or other medication must not carry out any work.

2.8.1 Personal protective equipment

Personal protective equipment is equipment that protects the user against health or safety risks at work.

Personal protective equipment must be worn for various types of work; the protective equipment required is listed in this manual together with the description of each type of work.

Description of personal protective equipment

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.

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

Packaging

Properly dispose of packaging material.

4 Installation

4.1 General installation information

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.

Duct 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).

4.2 Installing the ventilation unit

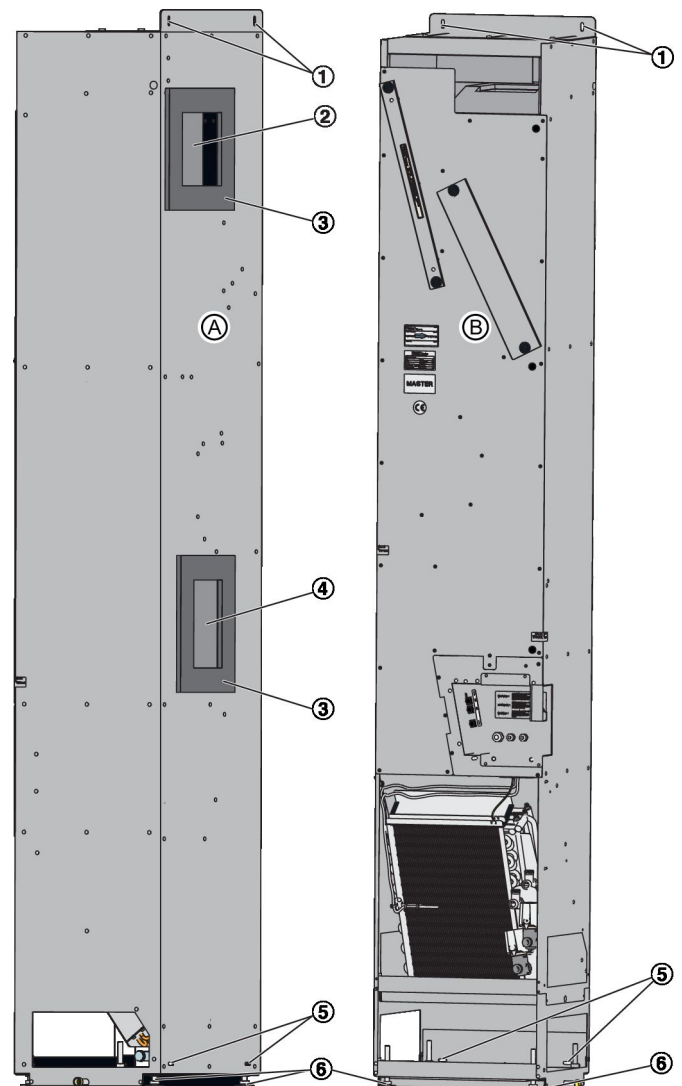


Fig. 8: Installation by example of SCHOOLAIR-V

- Ⓐ Side facing the wall
- Ⓑ Side facing the room
- ① Upper fixing holes
- ② Outdoor air opening
- ③ Seal, 50 x 10 mm (wall side)
- ④ Exhaust air opening
- ⑤ Lower fixing holes
- ⑥ Feet

Dimensions, the position of air openings and the position of fixing points may differ for each variant; drawings with project-specific information are provided together with the order documents.

Personnel:

- HVAC technician

Installing the ventilation unit

The ventilation unit is to be installed and fixed on the inside of an external wall, vertically, floor-standing. Façade openings for outdoor air and exhaust air are required. Screws and wallplugs for fixing the ventilation unit are not included in the supply package, but have to be selected by others and fit for the wall.

Install the unit in such a way that it rests completely on its feet. Use the fixing points only as an additional means of securing the unit against tipping.

Make sure that the unit can be connected to the pipe-work and to the mains supply.

1. ▶ Place the unit in such a way that the wall side (Fig. 8/A) faces the wall. The openings for the air (Fig. 8/2 and Fig. 8/4) must be aligned with the prepared openings in the external wall; adjust the feet if necessary.
2. ▶ Use suitable screws (\varnothing 6 mm) for the provided fixing holes (Fig. 8/1 and Fig. 8/5) to fix the unit to the external wall.
3. ▶ Adjust the feet, then tighten the nuts.
4. ▶ Protect the ventilation unit with the optional outer casing or with an outer casing provided by others.

The outer casing must prevent unauthorised individuals from reaching into the unit and from being injured (e.g. by electric shock). Make sure that the air can circulate around the unit even with the outer casing.

The interior of the ventilation unit must remain accessible for maintenance.

! NOTICE!

Contamination

If there is a lengthy gap between installation and commissioning of the unit, we recommend the following measures in order to avoid cumbersome cleaning procedures at the time of commissioning.

- Cover all openings of the unit, e.g. with plastic, to prevent the ingress of dust.
- Remove the filters and store them in a dry place, protected from dust; cover the filter openings.
- Switch off the power supply to the unit.

4.3 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.
- Fittings such as valves and lockshields are factory fitted.
- 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 In units without control system	G 1/2" union nut and flat seal, SW24	Screw connection (rigid)
		Flexible hoses (accessory)
Chilled water/hot water connection In units with FSL-CONTROL III control system	G 1/2" external thread and flat seal	Screw connection (rigid)
		Flexible hoses (accessory)
Flexible hoses (accessory)	Spigot Ø12 mm	Hose (by others)

Marking of 2-pipe heat exchangers

Symbol	Connection	Fitting ¹	Operating mode
V (blue)	Chilled water or hot water flow	Lockshield	Cooling or heating ²
R (blue)	Chilled water or hot water return	Control valve	

1) Only in units with FSL-CONTROL-III control system.

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

Marking of 4-pipe heat exchangers

Symbol	Connection	Fitting ¹	Operating mode
V (blue)	Chilled water flow	Lockshield	Cooling
R (blue)	Chilled water return		
V (red)	Hot water flow	Lockshield	Heating
R (red)	Chilled water return		

1) Only in units with FSL-CONTROL-III control system.

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.

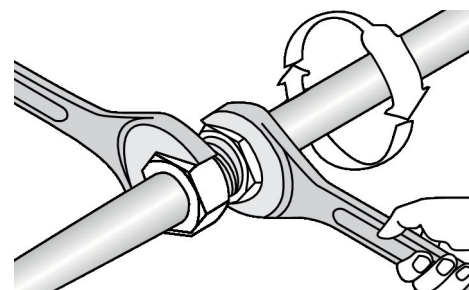


Fig. 9: Tightening the connection

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.

4.4 Making electrical connections

! 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 being switched on accidentally.
- 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

Use only cables that are 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 guidelines for working on electrical and electronic equipment as well as with any applicable local regulations.
- The connection data can be found on the rating plate or in the wiring diagrams.
- Protect any connections from physical damage.
- Feed cables through the cable glands on the ventilation unit.

- Ensure that the unit can be de-energised (all phases) for maintenance such that no voltage is present. This requires separators (e.g. fuses or RCBOs); the distance between contacts should be at least 3 mm.
- For units without integral controls from TROX follow the instructions of the controls provider.

Personnel:

- Skilled qualified electrician

! DANGER!

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

- Only skilled qualified electricians are allowed to work on the electrical system.
- Switch off the power supply before working on any electrical equipment.

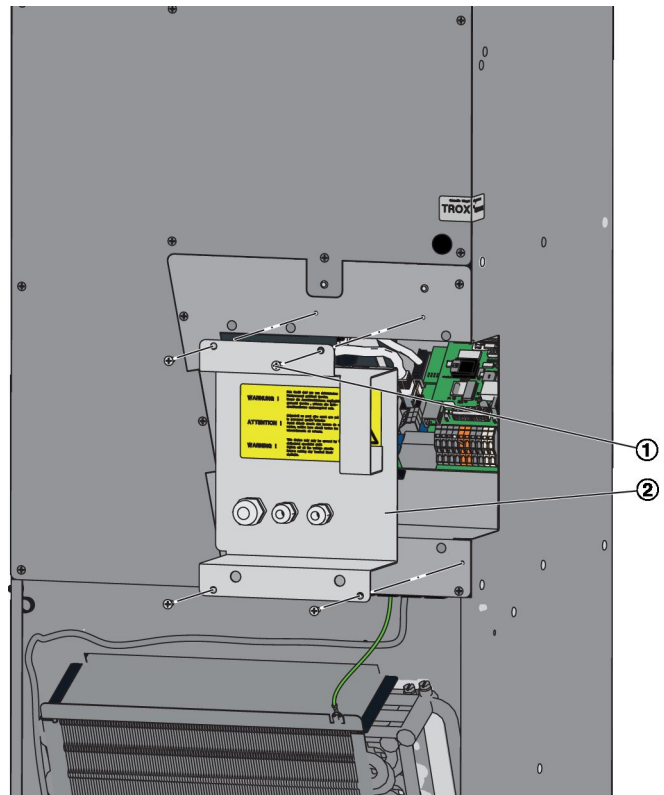


Fig. 10: Electrical connections

1. ▶ Take off the controls access panel (Fig. 10/2); to do so, loosen the Phillips screws (Fig. 10/1), then remove the panel.
2. ▶ Connect the ventilation unit according to the following information.

4.4.1 Connection of the supply voltage

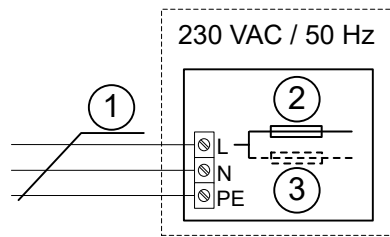


Fig. 11: Connection of the supply voltage

- 1 Connecting cable Ölflex Classic 100 3G 1.5 mm² ca. 1.0 m (supply package TROX)
- 2 Fuse 3.15 A
- 3 SCHOOLAIR-V-HV-EH only: fuse 9.0 A

⚠ DANGER!

Risk to life from electrical voltage!

The control box may not be opened, it is used for the internal electrical wiring and may only be opened by TROX Service personnel.

The electrical connection is made with the connecting cable leading from the control box.

4.4.2 Connection of the control panel

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.

Honeywell, 5-stage (0, 1, 2, 3, AUTO)

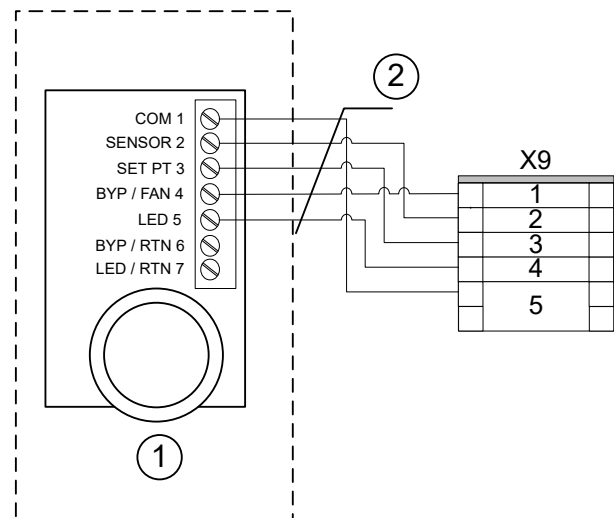


Fig. 12: Wiring of Honeywell control panel, 5-stage to terminal X9

- 1 Control panel with selector switch, for surface mounting, type: T7460F1000, TROX order no. M546FB8
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Schneider, without selector switch

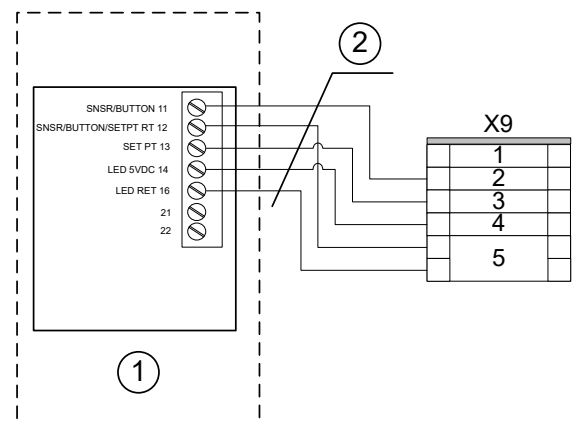


Fig. 13: Wiring of control panel STR 504 to terminal X9

- 1 Control panel without selector switch, for surface mounting, type: STR 504 TROX order no. M536BA4
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Titec, without selector switch

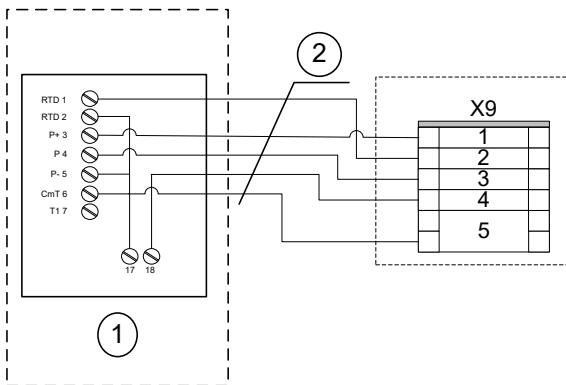


Fig. 14: Wiring of control panel Titec RTF3-NTC20k-P5k-T-L to terminal X9

- 1 Control panel without selector switch, type RTF3-NTC20k-P5k-T-L for surface mounting, TROX order no. A00000059067
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch

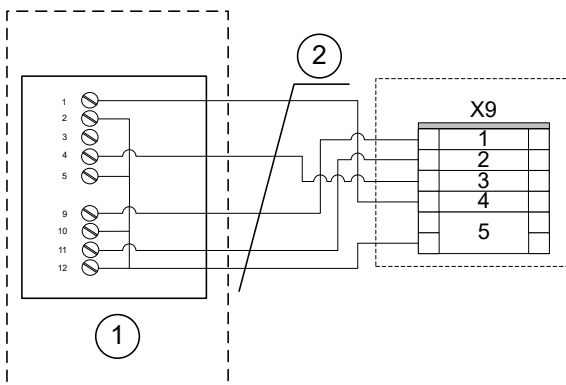


Fig. 15: Wiring of Thermokon control panel to terminal X9

- 1 Control panel without selector switch for surface mounting, type WRF04 PTD NTC 20k 5k gn, TROX order no. A00000079777
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Titec, without selector switch, Berker S.1

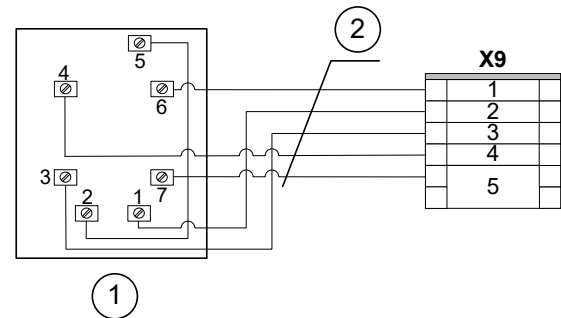


Fig. 16: Wiring of Berker S.1 control panel to terminal X9

- 1 Control panel without selector switch, flush mounted for switch programme Berker BS1 type: BS1-NTC10k-P5-T-L, TROX order no. A00000074476
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch, Berker S.1

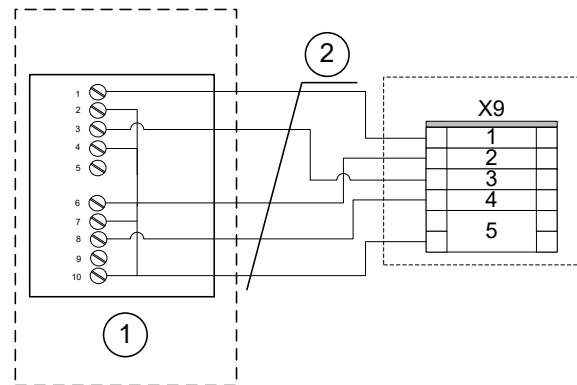


Fig. 17: Wiring of Thermokon control panel to terminal X9

- 1 Control panel without selector switch, for flush mounting, suitable for switch programme Berker S.1, type WRF07 PTD NTC 20k BType6 5k gn, TROX order no. A00000079778
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch, Busch Jäger Futura

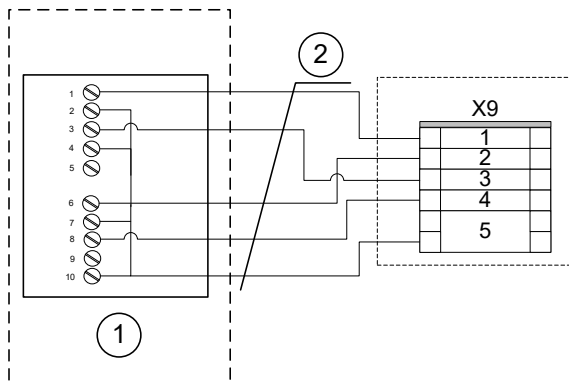


Fig. 18: Wiring of Thermokon control panel to terminal X9

- 1 Control panel without selector switch, for flush mounting, suitable for switch programme Busch Jäger Futura, type WRF07 PTD NTC 20k BType6 5k gn, TROX order no. A00000079779
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

4.4.3 Connection of external inputs and outputs

External switch inputs

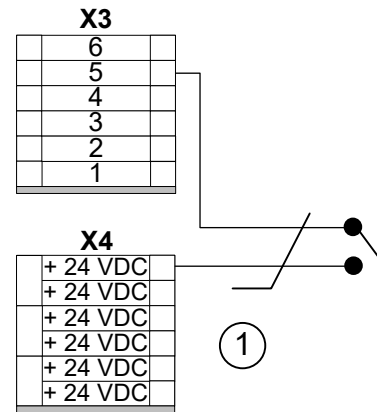


Fig. 19: Wiring example of window contact

- 1 Connecting cable LiYCY 2 x 0.5 mm² (by others)

Terminal connections X3

No.	Function	Switch	
		Open	Closed
1	Fume cupboard switch	Inactive	Active
2	Changeover ¹	Heating	Cooling
3	Operating enable	Off	Automatic
4	Fire emergency stop ¹	Off	Automatic
5	Window contact ¹	Off	Automatic
6	PIR sensor	Valid operating mode	Occupied

¹ cable break safety device

External switch outputs

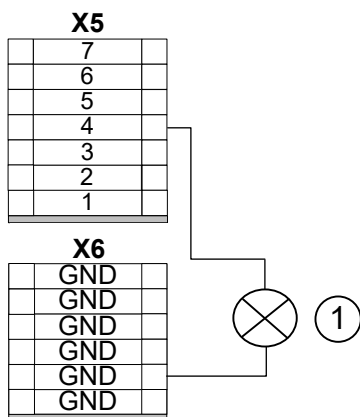


Fig. 20: Wiring example B alarm

1 Connecting cable LiYCY 2 x 0.5 mm² (by others)

Terminal connections X5

No.	Connection	Voltage / Current consumption
1	Requirements of coolant ¹	24 VDC, max. 250 mA
2	Requirements of heat transfer fluid ¹	
3	Operational readiness	
4	B alarm	
5	A alarm	
6	Enable heating ceiling	
7	Enable chilled ceiling	

¹ changeover mode only

4.4.4 Communication FSL-CONTROL III

4.4.4.1 Several controllers in a control zone

Up to 11 **[ERROR: Missing definition for variable "Product type"!]** devices can be connected in one control zone (1 master device and up to 10 slave devices).

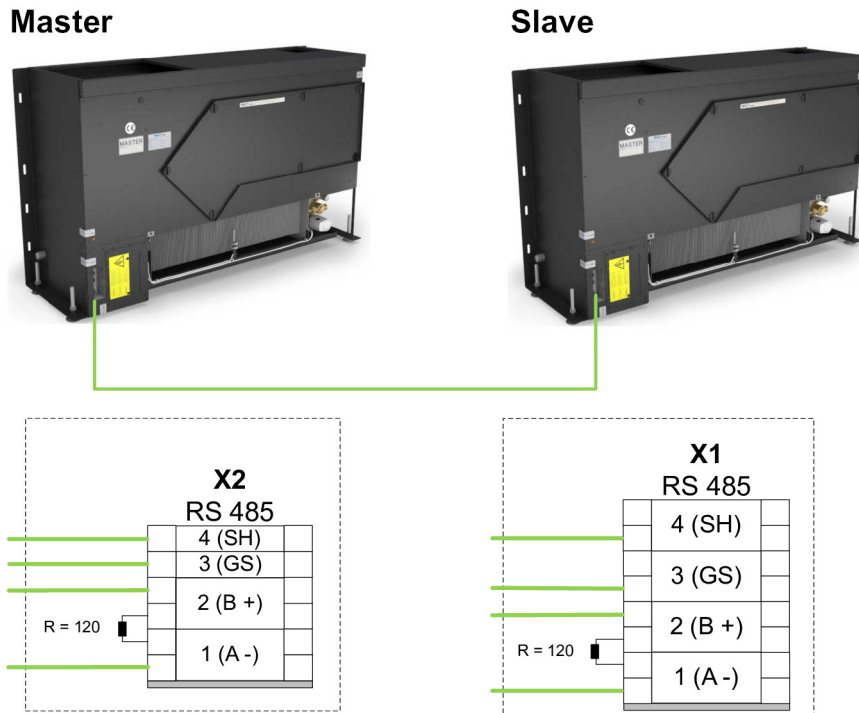


Fig. 21: **[ERROR: Missing definition for variable "Product type"!]** communication 2 devices

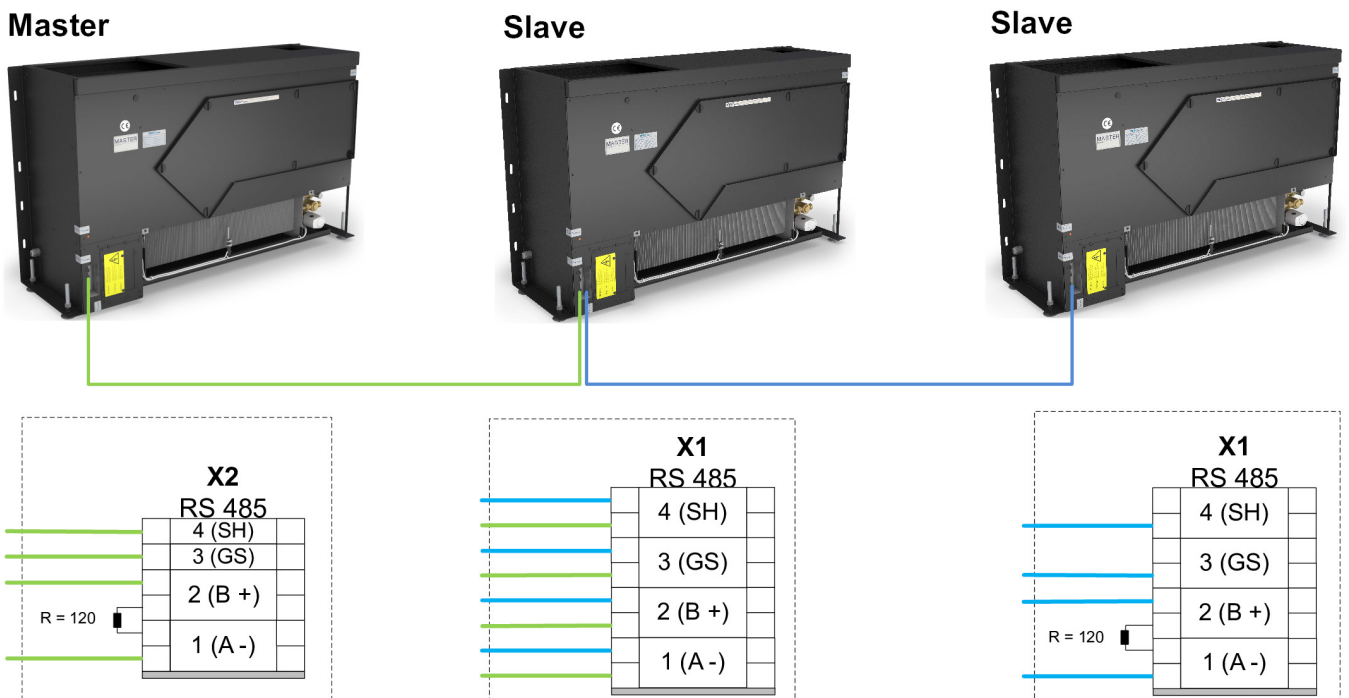


Fig. 22: **[ERROR: Missing definition for variable "Product type"!]** communication 3 devices

The master device must be installed on one of the two ends of the network (as the first or last device).

Terminal resistor

For smooth data exchange between the controllers, a resistance of 120 Ohm must be set on the first and last subscriber, remove the resistances in the other devices (if available).

Installation location of terminal resistor Fig. 21, Fig. 22

Master devices - Terminal block X2, terminals 1 and 2

Slave devices - Terminal block X1, terminals 1 and 2

Information on network connection

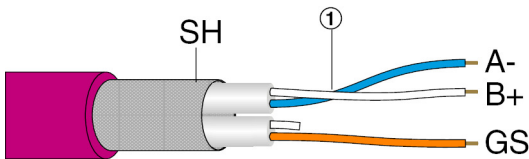


Fig. 23: Wiring

All network connections via shielded cables.

Note: For A- and B+, use a twisted pair ①!

Recommended network cable (by others): e.g. Uni-tronic BUS LD 2 x 2 x 0.25 mm² or equivalent

4.4.4.2 Connection to the central building management system (central BMS)

FSL-CONTROL III control supports the following communication protocols:

- Modbus RTU
- Modbus TCP
- BACnet MS/TP
- BACnet/IP



We recommend connecting all master devices to the central building management system. Slave devices can also be connected to the central building management system if the wiring is structured, i.e. Modbus TCP or BACnet IP.

Central BMS to master device with Modbus TCP / BACnet IP

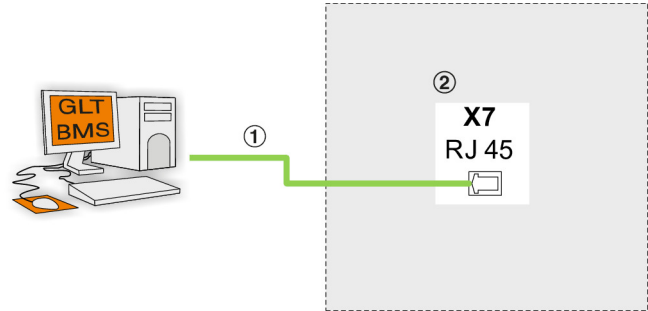


Fig. 24: Connection of central BMS to master device with Modbus TCP / BACnet IP

- 1 Network cable at least Cat. 5e with connector RJ45 (by others)
- 2 Interface X7 in terminal box

Central BMS to master device with Modbus RTU / BACnet MS/TP

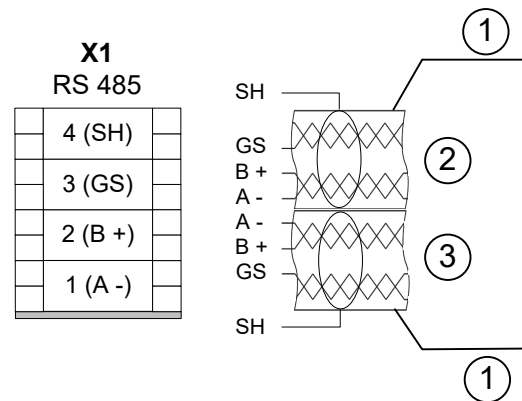
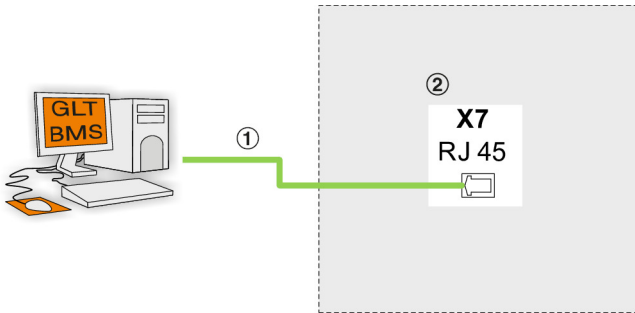


Fig. 25: Connection of central BMS to master device with Modbus RTU

- 1 Network cable Unitronic BUS LD 2 x 2 x 0.22 (or equivalent, by others)
- 2 (coming) from the central building management system
- 3 (going) to the next BUS subscriber of the central BMS
Count up the terminal position from the grey end plate (direction of the arrow)

Recommended network cable (by others): e.g. Uni-tronic BUS LD 2 x 2 x 0.25 mm² or equivalent,
Note: for A- und B+ always use a twisted pair

**Central BMS to slave device with Modbus RTU /
BACnet IP**

*Fig. 26: Connection of central BMS to slave device with
Modbus TCP*

- 1 Network cable at least Cat. 5e with connector RJ45
(by others)
- 2 Interface X7 in terminal box

4.4.4.3 Network with several control zones

Building a network

Control zones can be networked using one of four existing network protocols (Modbus RTU, Modbus TCP, BACnet MS/TP or BACnet IP). This requires a bus interface card to be connected to the **[ERROR: Missing definition for variable "Product type"!]** master controller in the factory.

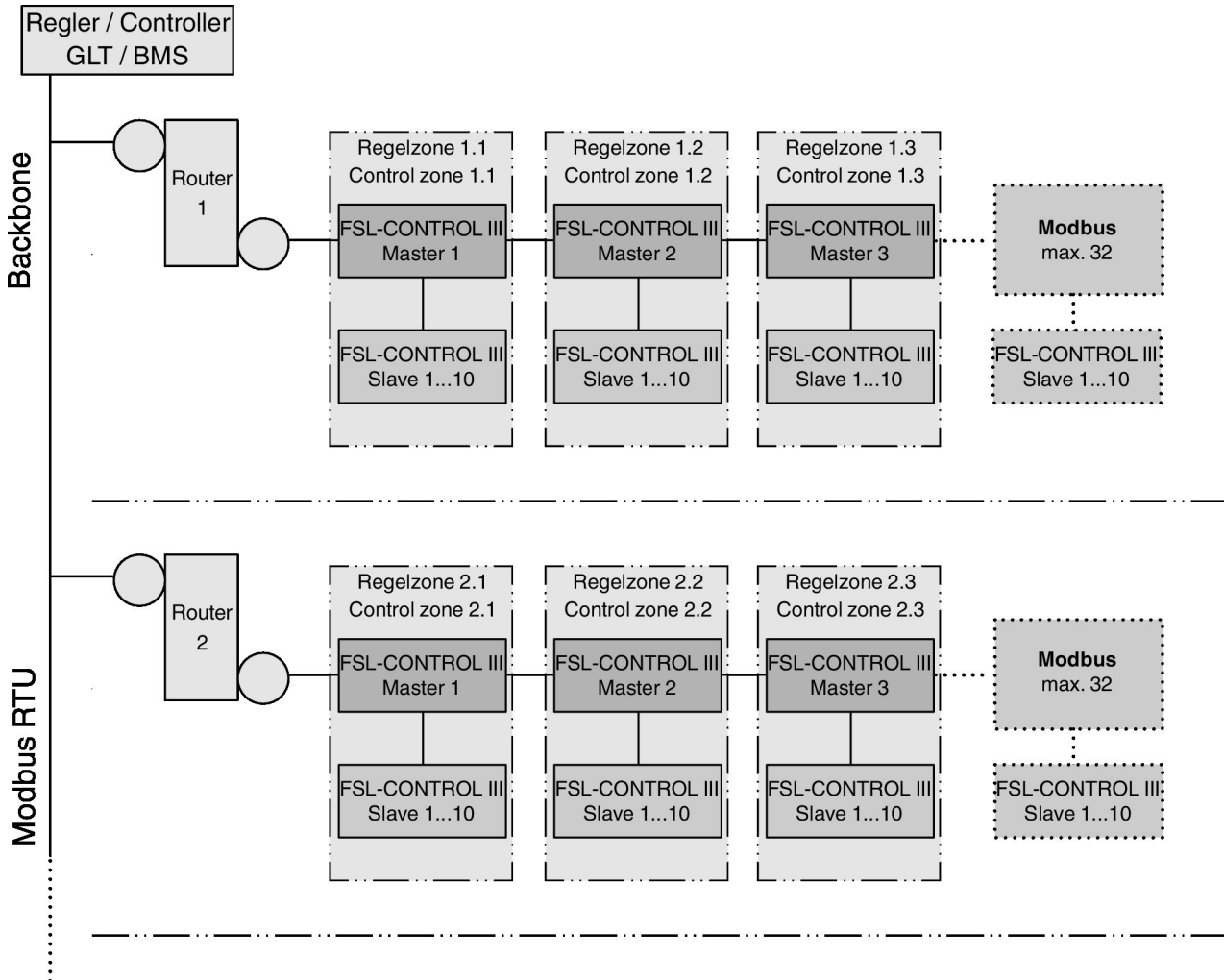


Fig. 27: **[ERROR: Missing definition for variable "Product type"!]** network configuration, example Modbus RTU; BACnet MS/TP



If the master controller is integrated in a central BMS (by others), it acts as a slave within the bus network, but as a master within the **[ERROR: Missing definition for variable "Product type"!]** system.

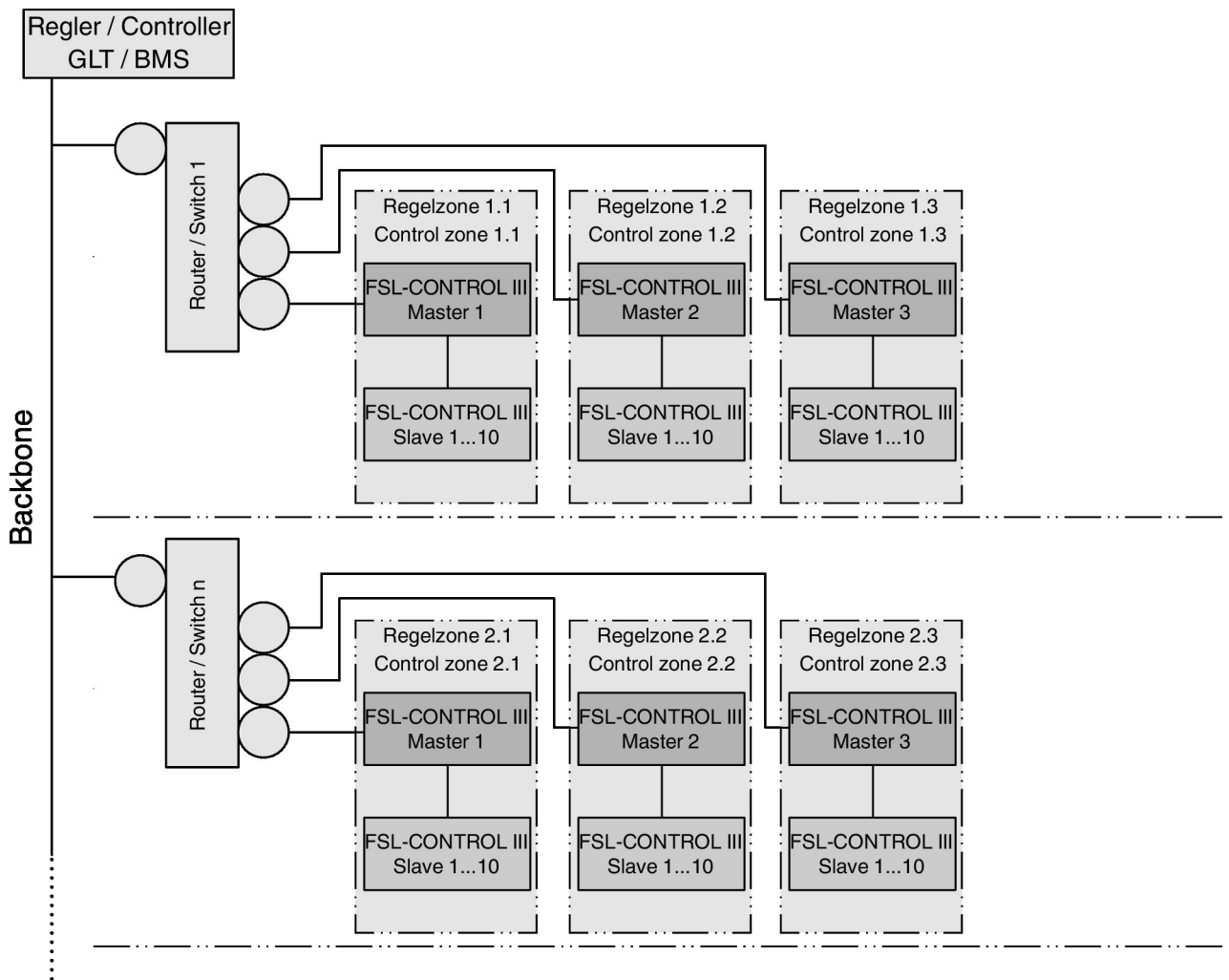


Fig. 28: **ERROR: Missing definition for variable "Product type"!** network configuration, Modbus TCP; BACnet IP

5 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.
- Professional connection of water pipes:
 - 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 does not leak.
- Professional electrical connections:
 - 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
 - ↳ 8.1.1 'Checking and replacing the filters' on page 34. 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 TROX FSL-CONTROL III control system

↳ Installation and configuration manual, FSL-CONTROL III single room control system.

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

6 Control panel settings

6.1 Analogue room control panel

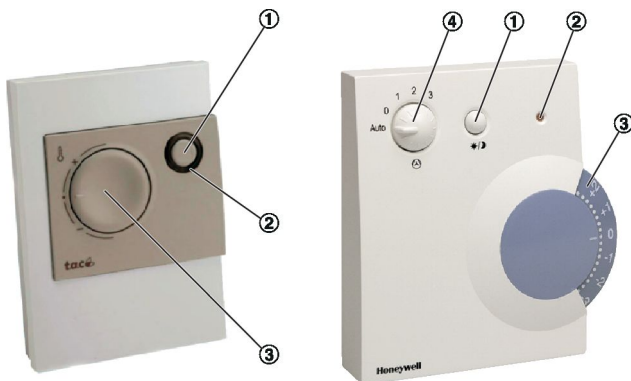


Fig. 29: Control panels

- ① Occupancy push button
- ② LED
- ③ Setpoint value adjuster
- ④ Fan stage selector

Function	Description	LED
Occupied/ Unoccupied ¹	If you want to change the operating mode from 'Occupied' to 'Standby' or vice versa, press the Occupancy push button briefly. This allows you, for example, to manually switch to 'Standby' mode when the room is not occupied. Start-up delay: 1 to 2 minutes in summer, 6 to 7 minutes in winter.	Standby: LED off Occupied: LED on
Boost	If you want to activate or deactivate rapid ventilation of the room, keep the Occupancy push button pressed (for 2-5 seconds).	LED flashes every second
Exercise	For quiet work, the silence in the room is estimated. Pressing the Occupancy button (7-10 seconds), the Exercise function is activated/deactivated. Here, fan stage 2 is set for 90 minutes.	LED flashes every 2 seconds
Overtime ¹	If you want to manually switch on the Overtime function while the system is in 'Standby' or 'Unoccupied' mode, press the Occupancy push button briefly. This allows you to set the ventilation unit to 'Occupied' mode for a previously set period of time if, for example, overtime is required after regular office hours. The overtime period can be configured. After the set period the unit resumes the previous operating mode (RTC/central BMS).	Standby: LED off Overtime: LED on
Changing the filter	Double blinking of the LED indicates that a filter change is required (the number of operating hours can be configured; factory setting: after 2500 h). Units with differential pressure sensor: Activated if the preset maximum differential pressure or the preset number of operating hours is reached. To reset the number of operating hours, either keep the occupancy push button pressed (> 10 sec) or use the web server	LED double blinking
Alarm	Frost alarm and hardware alarm.	LED flashes twice per second

¹) The room control panel is factory set to either the 'Occupied/Unoccupied' function or the 'Overtime' function. If you need to change this setting, contact the TROX Technical Service.

7 Control of the ventilation unit

Control of ventilation units

For units with TROX FSL-CONTROL III control system

↳ Installation and configuration manual, FSL-CONTROL III single room control system.

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

8 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 62

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 with the suction inlet.
- Rinse the heat recovery unit with hot water (40 °C max.), e.g. by using a commercially available shower head.
 - Do not use any organic solvents (such as acetone or methanol) to clean the heat recovery unit.
 - Do not put the heat recovery unit into a dishwasher.

8.1 Maintenance

8.1.1 Checking and replacing the filters

Personnel:

- Facility manager

Special tool:

- Commercially available vacuum cleaner

CAUTION!

Risk of allergic reaction to filter dust!

- Wear a dust mask when you change a filter.

As standard, filters have to be changed every 12 months; they have to be changed earlier in the following cases:

- The maximum differential pressure has been reached (only for units with differential pressure sensor).
- The filters have a technical defect or don't meet the required hygiene standard.

Use only original filters. Replacement filters can be ordered from the manufacturer; state the filter material number in your order (see page 2). The material number is given on the filter and in the replacement parts list ↪ 9 *'Replacement parts list'* on page 39.

1. ▶

DANGER!

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

- Switch off the power supply before you carry out maintenance or cleaning.
- Only skilled qualified electricians are allowed to work on the electrical system.

Switch off the supply voltage and secure it against being switched on accidentally before cleaning the unit.

- #### 2. ▶
- The ventilation unit has been protected by an outer casing (by others). Access to the outer casing has to be provided for any work.

Checking and changing extract air and outdoor air filters

- 3. ▶ Depending on the unit variant you may have to remove the inspection access panel or the filter cover, ↪ 1.1 'Variants' on page 5.
Pull out extract air and outdoor air filters.
- 4. ▶ Check the filters for damage, contamination and deposits.
- 5. ▶ Remove contamination in the ventilation unit with a commercially available vacuum cleaner.
- 6. ▶ If a filter is intact, free of contamination and deposits, and if it has been used for less than 1 year, put it back into the filter chamber.

If a filter has already been used for a year or if it does no longer meet the technical or hygiene requirements, replace it.

i
 When you insert a new filter, make sure that the labelling at the front of the filter remains visible.
 Once inserted, each filter must be flush with the surface as otherwise air will bypass the filter.

- 7. ▶ Fix the filter cover or the inspection access panel again (depending on unit variant).
 - 8. ▶ Switch on the power supply.
 - 9. ▶ If the filter operating hours counter in FSL-CONTROL III has been used, reset it after a filter change ↪ Installation and configuration manual FSL-CONTROL III.
- ⇒ Filter checking or filter change is complete.

i
 Dispose of used filters with residual waste.

8.1.2 Cleaning the heat exchanger and condensate drip tray

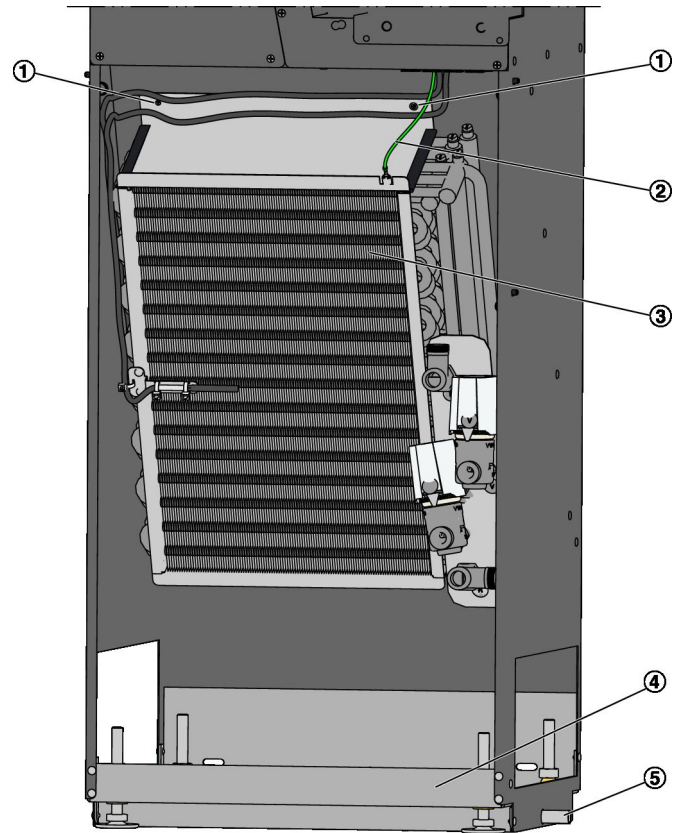


Fig. 30: Heat exchanger (SCHOOLAIR-V shown)

Personnel:

- Facility manager

Special tool:

- Commercially available vacuum cleaner or air compressor

Check the heat exchanger for contamination at least every 12 months. Clean the heat exchanger, if necessary.



Keep the heat exchanger clean as otherwise contamination will impair the efficiency of the ventilation unit.

1. ▶

DANGER!

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

- Switch off the power supply before you carry out maintenance or cleaning.
- Only skilled qualified electricians are allowed to work on the electrical system.

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

2. ▶ The ventilation unit has been protected by an outer casing (by others). Access to the casing has to be provided for cleaning.

Cleaning the heat exchanger

3. ▶ Depressurise the water-side connections and disconnect the pipes from the heat exchanger.



If you are using flexible hoses (optional), you can clean the heat exchanger without disconnecting the hoses.

Remove the protective earth conductor (Fig. 30/2) from the heat exchanger.

Loosen the two Phillips screws (Fig. 30/1); you can then lift the heat exchanger (Fig. 30/3) out of the unit.

4. ▶ Use a commercially available vacuum cleaner or compressed air to remove contamination from the heat exchanger.

NOTICE!

Be careful to not damage the fins of the heat exchanger.

5. ▶ Re-install the heat exchanger by following the steps in reverse order.

6. ▶ If necessary, refill the water system (operating pressure) and check for leaks.

Cleaning the condensate drip tray

7. ▶ ■ Clean the condensate drip tray (Fig. 30/4) with a commercially available cleaner or disinfectant.

- Check that the condensate drain (Fig. 30/5) (optional) is not blocked.

8. ▶ Switch on the power supply.

- ⇒ Cleaning of the heat exchanger and condensate drip tray is complete.

8.1.3 Cleaning the heat recovery unit

Personnel:

- Skilled qualified electrician

Special tool:

- Commercially available vacuum cleaner
- Compressor

1. ▶

DANGER!

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

- Switch off the power supply before you carry out maintenance or cleaning.
- Only skilled qualified electricians are allowed to work on the electrical system.

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

2. ▶ Depending on the unit variant you may have to remove the inspection access panel or the filter cover ↪ *Opening the cover plate on page 37.*

Variants FSL-V-ZAB / SCHOOLAIR-V / -V-1800 / -V-HE

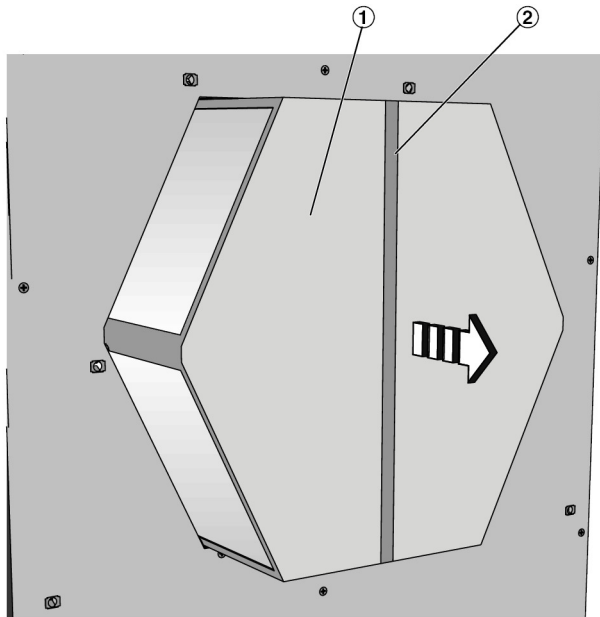


Fig. 31: Removing the heat recovery unit

3. ▶ Grasp the heat recovery unit (Fig. 31/1) by the lug (Fig. 31/2) and pull it out.

! NOTICE!

Risk of damage to the heat recovery unit!

Incorrect cleaning may damage the heat recovery unit beyond repair.

- Do not use any organic solvents (such as acetone or methanol) to clean the heat recovery unit.
- Do not put the heat recovery unit into a dishwasher.

Rinse the heat recovery unit (Fig. 31/1) with hot water (40 °C max.), e.g. by using a commercially available shower head.

Put the heat recovery unit into an upright position and let it dry out over night.

SCHOOLAIR-V-HV variants (rotary heat exchanger for heat recovery)

4. ▶ Do not remove the heat recovery unit.
The counter flow function is usually sufficient to keep the heat recovery unit clean. Should this self cleaning not suffice, you may clean the heat recovery unit with compressed air; intervals depend on the degree of contamination.
5. ▶ Remove contamination in the ventilation unit with a commercially available vacuum cleaner.
6. ▶ Place the heat recovery unit onto the rails and push it back into the opening.
7. ▶ Fix the inspection access panel or the unit cover again, ↪ on page 38.

! NOTICE!

Be sure to insert the protective conductor (Fig. 33/5) when you fix the cover plate.

8. ▶ Switch on the power supply.
⇒ The heat recovery unit is clean.

8.1.3.1 Opening the cover plate

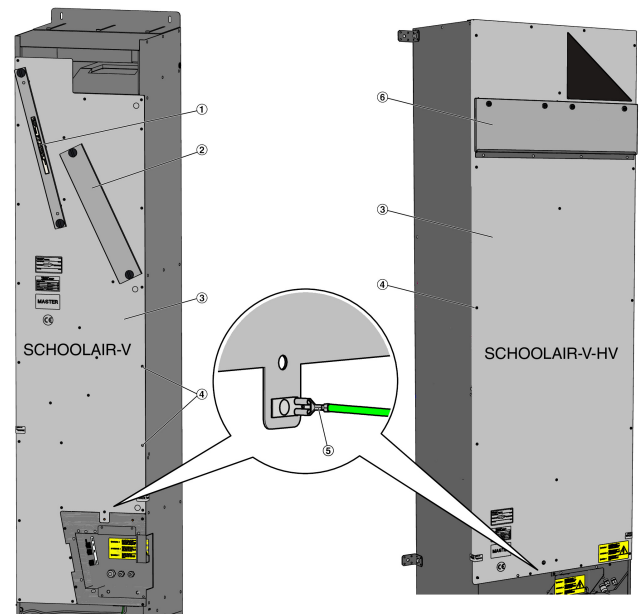


Fig. 32: Removing the cover plate (SCHOOLAIR-V and SCHOOLAIR-V-HV only)

Personnel:

- Facility manager

Preparation

1. ▶ **! DANGER!**
Danger of electric shock! Do not touch any live components! Electrical equipment carries a dangerous electrical voltage.
 - Switch off the power supply before you carry out maintenance or cleaning.
 - Only skilled qualified electricians are allowed to work on the electrical system.

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

2. ▶ The ventilation unit has been protected by an outer casing (by others). Access to the outer casing has to be provided for any work.

SCHOOLAIR-V:

3. ▶ Remove the extract air filter (Fig. 32/1) and remove the cover (Fig. 32/2) from the outdoor air filter chamber ↪ on page 34.

SCHOOLAIR-V-HV:

4. ▶ Remove the inspection access panel (↪ on page 34/6).
5. ▶ Remove the cover plate (Fig. 32/3) by loosening all the Phillips screws (Fig. 32/4) on the plate.

Disconnect the protective conductor (Fig. 32/5) when you remove the plate.

⇒ The cover plate has been removed.

! NOTICE!

Risk of damage due to incorrect handling

Be careful to not damage the glass fibre fabric or the insulation when you clean or maintain the unit after the cover plate has been opened or removed.

8.1.3.2 Closing the cover plate

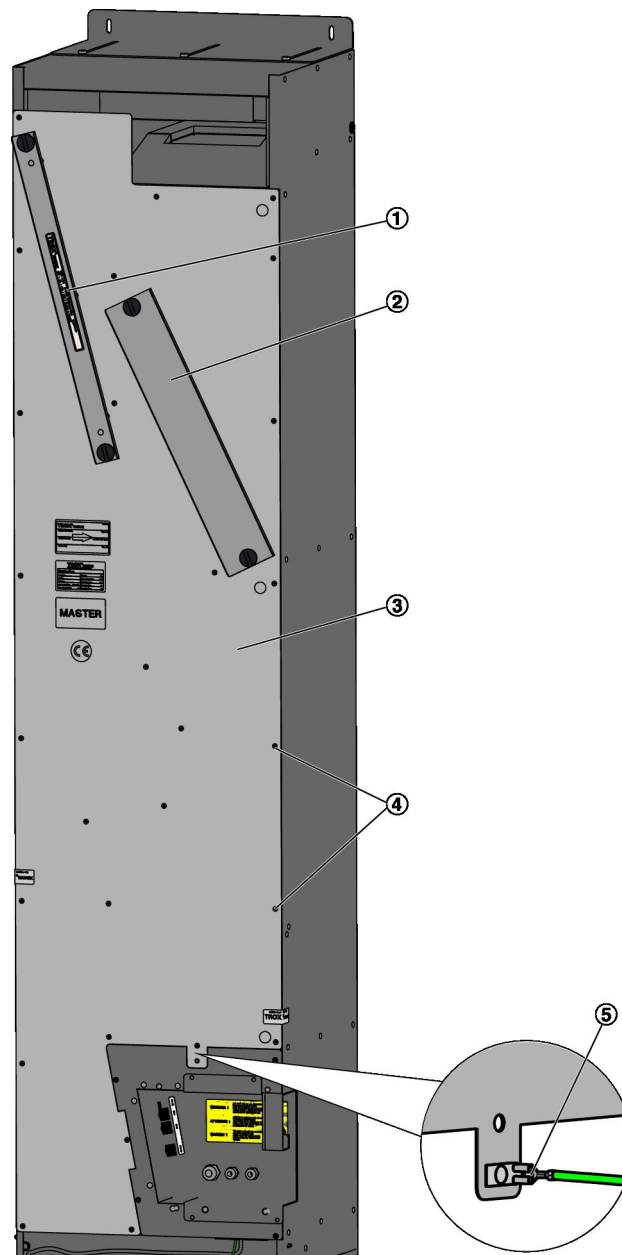


Fig. 33: Fixing the cover plate

Personnel:

- Facility manager

Maintenance is complete and all parts have been correctly replaced.

1. ▶ Attach the protective earth conductor (Fig. 33/5) to the cover plate, then put the panel back onto the ventilation unit (Fig. 33/3). Fix the cover plate with the Phillips screws (Fig. 33/4).
2. ▶ Insert the extract air filter (Fig. 33/1) (Fig. 33/2) and remove the cover from the outdoor air filter chamber Fig. 33.
3. ▶ Switch on the power supply.

⇒ The cover plate has been fixed and the power supply has been switched on.

9 Replacement parts list

FSL-V-ZAB/SEK	-	↳	40
SCHOOLAIR-V	-	↳	42
SCHOOLAIR-V-1800	-	↳	44
SCHOOLAIR-V-HE	-	↳	46
SCHOOLAIR-V-HV	-	↳	48

9.1 FSL-V-ZAB/SEK

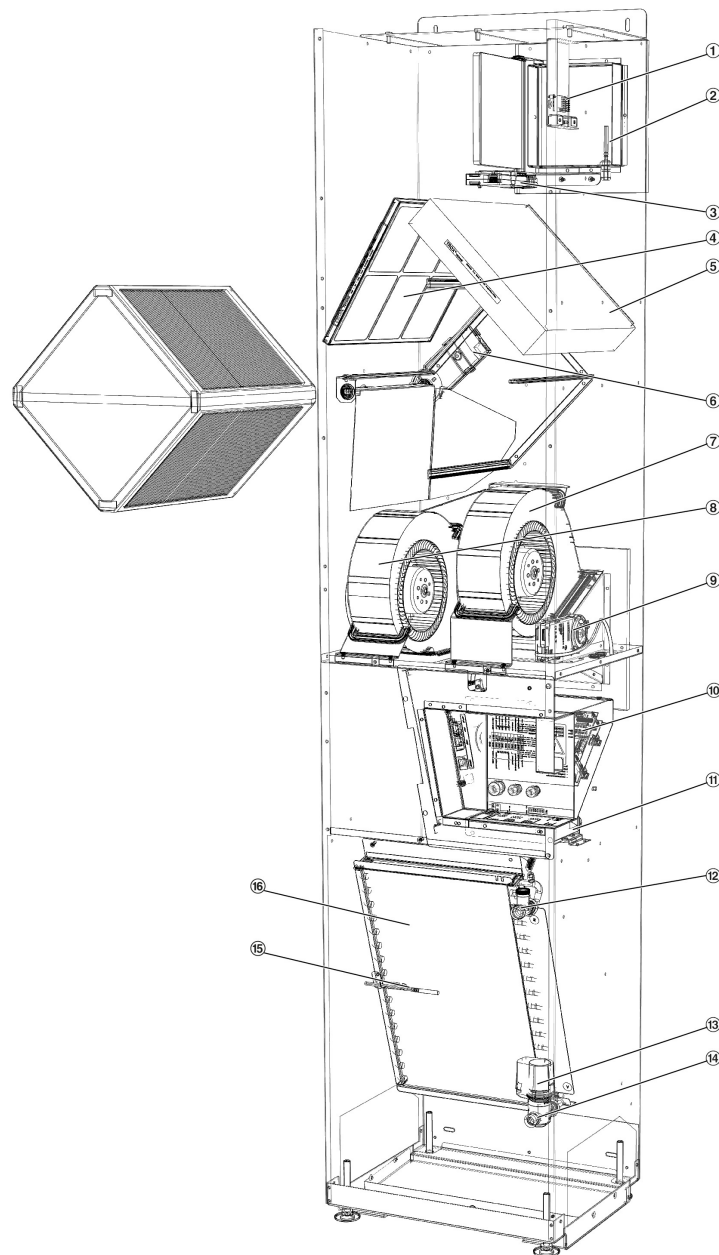


Fig. 34: FSL-V-ZAB/SEK replacement parts; illustration shows the ventilation unit with the heat recovery unit removed

**Ordering replacement parts**

You can identify order-specific components of the ventilation unit either by a code on the component itself or by the commission number on the rating plate ↗ 'Rating plate' on page 51. TROX Service: ↗ 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	CO ₂ sensor	A00000075813
2	Outdoor air temperature sensor	M546EI4
3	Actuator for outdoor air damper	M466EQ6
4	Extract air filter ISO coarse 50%	FMP-COARSE-50%-C17/ PADx239x305
5	Outdoor air filter ISO ePM1 65%	FP-ePM1-65%-NWO/ 252x306x50/STR
6	Actuator for bypass damper	A00000028181
7	Extract air centrifugal fan	M546FD6
8	Supply air centrifugal fan	M546FD6
9	Actuator for exhaust air damper	M466EQ6
10	Controller FSL-CONTROL III	A00000075513
	Power supply unit FSL-CONTROL III	A00000062678
	Power supply filter FSL-CONTROL III	A00000075465
	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494
11	SKM module for controlling the outdoor air dampers	M536ED0
12	Lockshield	M431AQ4
13	Thermoelectric valve actuator	A00000036448
14	Straight-way valve	Order-specific
15	Supply air temperature sensor	A00000054037
16	2-pipe or 4-pipe heat exchanger	See no. on the heat exchanger
–	Replacement part bag of quick release fasteners (10x)	A00000072484

9.2 SCHOOLAIR-V

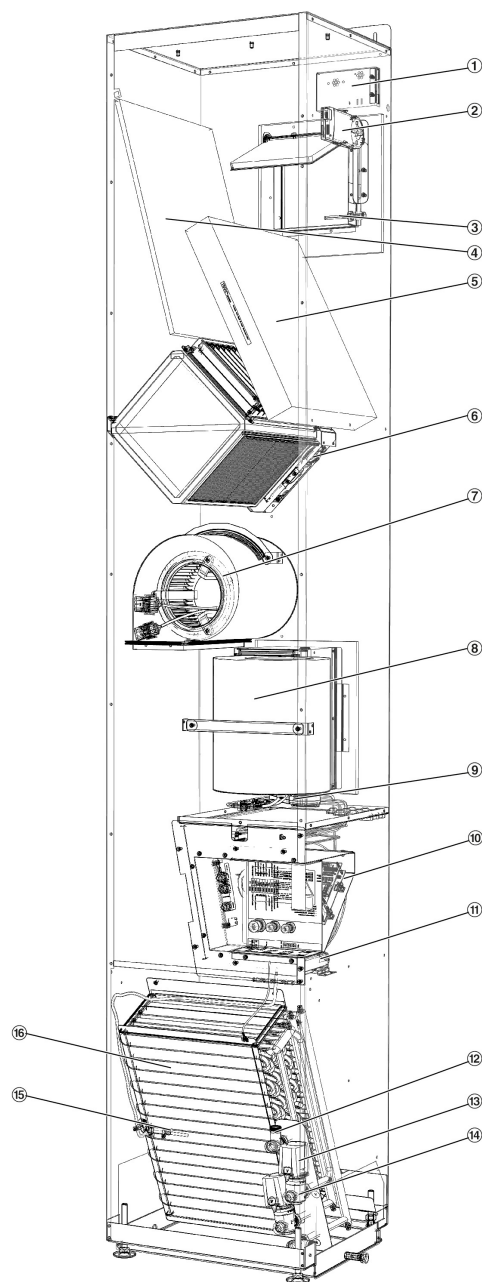


Fig. 35: SCHOOLAIR-V replacement parts

Ordering replacement parts

You can identify order-specific components of the ventilation unit either by a code on the component itself or by the commission number on the rating plate 'Rating plate' on page 51. TROX Service: 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	CO ₂ sensor	A00000075813
2	Actuator for outdoor air damper	M466EQ6

No.	Description	Replacement part no.
3	Outdoor air temperature sensor	M546EI4
4	Extract air ISO coarse 50%	FMP-COARSE-50%-C17/ PADx429x345
5	Outdoor air filter ISO ePM1 65%	FP-ePM1-65%-NWO/ 370x348x50/STR
6	Actuator for bypass damper	A00000018566
7	Supply air centrifugal fan	M546FD6
8	Extract air centrifugal fan	M546FD6
9	Actuator for exhaust air damper	M466EQ6
10	Controller FSL-CONTROL III	A00000075513
	Power supply unit FSL-CONTROL III	A00000062678
	Power supply filter FSL-CONTROL III	A00000075465
	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494
11	SKM module for controlling the outdoor air dampers	M536ED0
12	Lockshield	M431AQ4
13	Thermoelectric valve actuator	A00000036448
14	Straight-way valve	Order-specific
15	Supply air temperature sensor	A00000054037
16	2-pipe or 4-pipe heat exchanger	See no. on the heat exchanger
–	Replacement part bag of quick release fasteners (10x)	A00000072484

9.3 SCHOOLAIR-V-1800

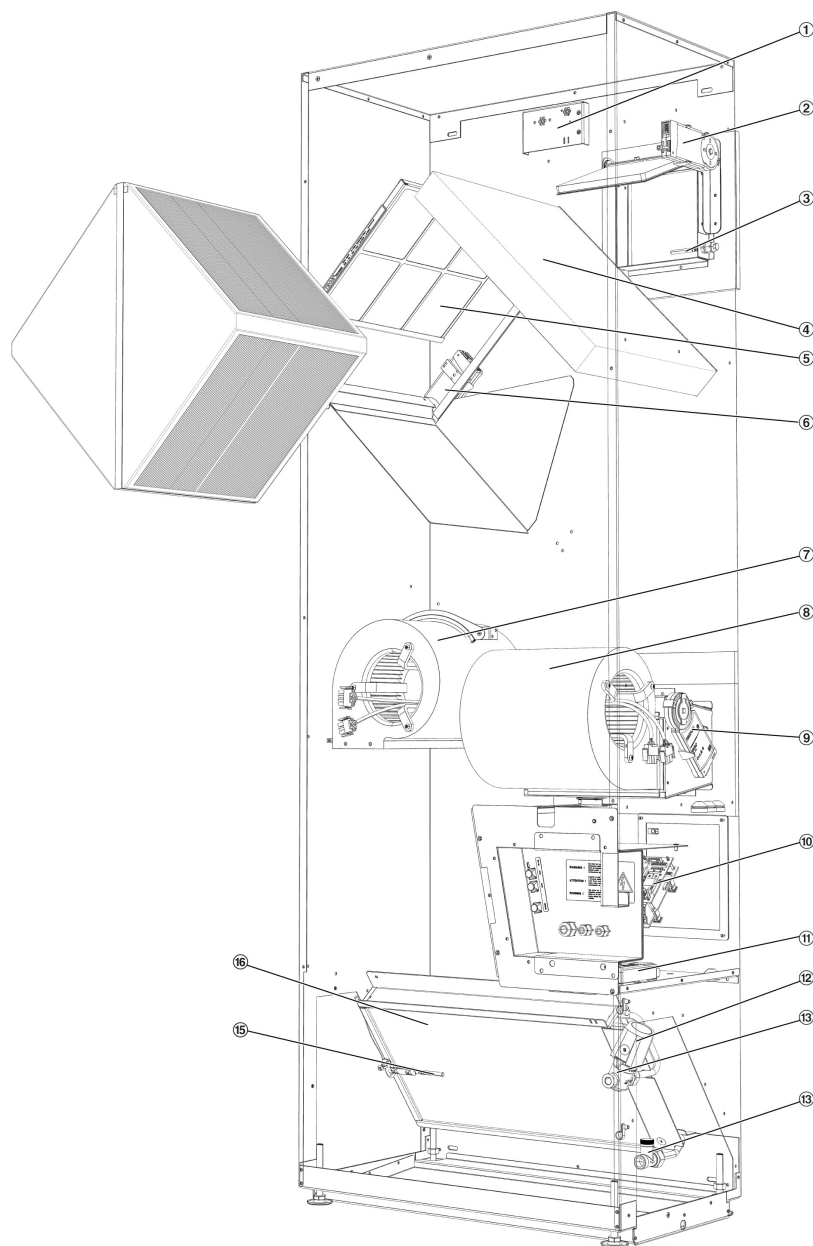


Fig. 36: Replacement parts SCHOOLAIR-V-1800, heat recovery unit removed

Ordering replacement parts

You can identify order-specific components of the ventilation unit either by a code on the component itself or by the commission number on the rating plate 'Rating plate' on page 51. TROX Service: 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	CO ₂ sensor	A00000075813
2	Actuator for outdoor air damper	M466EQ6

No.	Description	Replacement part no.
3	Outdoor air temperature sensor	M546EI4
4	Outdoor air filter ISO ePM1 65%	FP-ePM1-65%-NWO/ 421x346x50/STR
5	Extract air ISO coarse 50%	FMP-COARSE-50%-C17/ PADx264x345
6	Actuator for bypass damper	A00000028181
7	Supply air centrifugal fan	M546FG0
8	Extract air centrifugal fan	M546FG0
9	Actuator for exhaust air damper	M466EQ6
10	Controller FSL-CONTROL III	A00000075513
	Power supply unit FSL-CONTROL III	A00000062678
	Power supply filter FSL-CONTROL III	A00000075465
	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494
11	SKM module for controlling the outdoor air dampers	M536ED0
12	Thermoelectric valve actuator	A00000036448
13	Straight-way valve	Order-specific
14	Lockshield	M431AQ4
15	Supply air temperature sensor	A00000054037
16	2-pipe or 4-pipe heat exchanger	See no. on the heat exchanger
–	Replacement part bag of quick release fasteners (10x)	A00000072484

9.4 SCHOOLAIR-V-HE

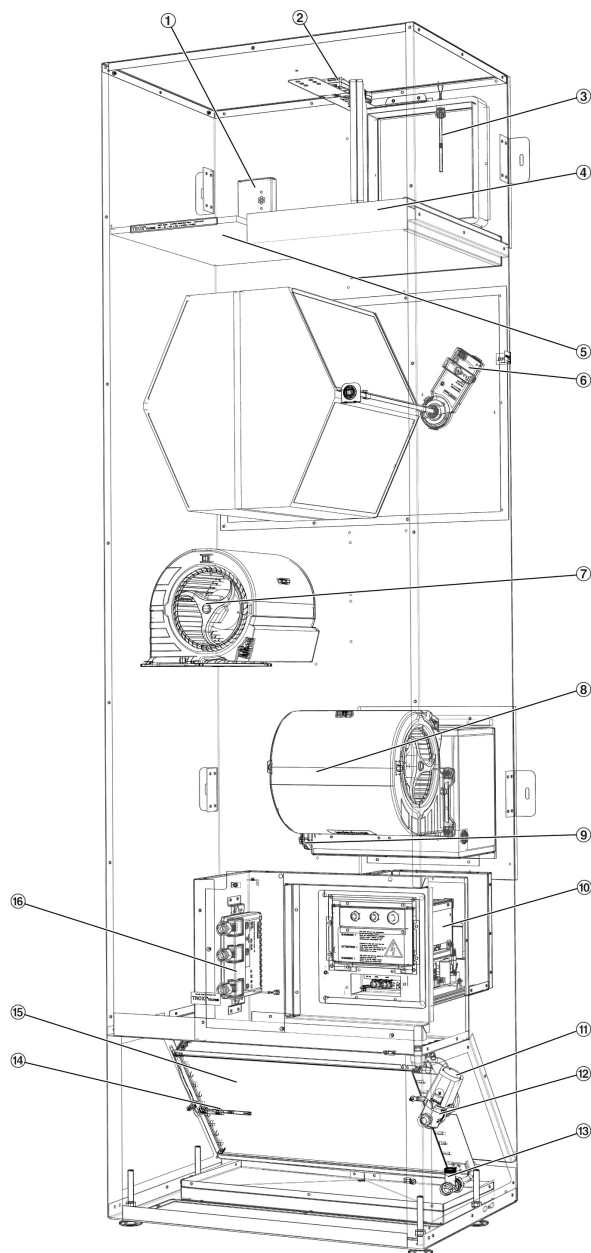


Fig. 37: SCHOOLAIR-V-HE replacement parts



Ordering replacement parts

You can identify order-specific components of the ventilation unit either by a code on the component itself or by the commission number on the rating plate ☞ 'Rating plate' on page 51. TROX Service: ☞ 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	CO ₂ sensor	A00000075813
2	Actuator for outdoor air damper	M466EQ6

No.	Description	Replacement part no.
3	Outdoor air temperature sensor	M546EI4
4	Outdoor air filter ISO ePM1 65%	FP-ePM1-65%-NWO/ 295x394x50/STR
5	Extract air ISO coarse 50%	FMP-COARSE-50%-C17/ PADx247x362
6	Actuator for bypass damper	A00000028181
7	Supply air centrifugal fan	A00000036047
8	Extract air centrifugal fan	A00000036047
9	Actuator for exhaust air damper	M466EQ6
10	Controller FSL-CONTROL III	A00000075513
	Power supply unit FSL-CONTROL III	A00000062678
	Power supply filter FSL-CONTROL III	A00000075465
	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494
11	Thermoelectric valve actuator	A00000036448
12	Straight-way valve	Order-specific
13	Lockshield	M431AQ4
14	Supply air temperature sensor	A00000054037
15	2-pipe or 4-pipe heat exchanger	See no. on the heat exchanger
16	SKM module for controlling the outdoor air dampers	M536ED0
17	Heat recovery unit	A00000056156
–	Replacement part bag of quick release fasteners (10x)	A00000072484

9.5 SCHOOLAIR-V-HV

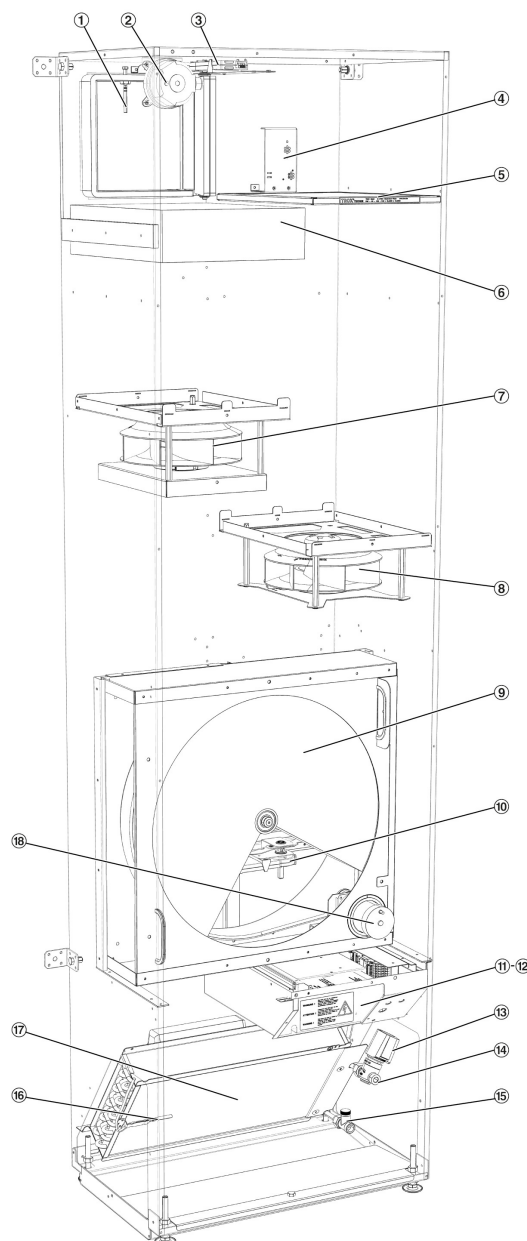


Fig. 38: SCHOOLAIR-V-HV replacement parts

Ordering replacement parts

You can identify order-specific components of the ventilation unit either by a code on the component itself or by the commission number on the rating plate 'Rating plate' on page 51. TROX Service: 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	Outdoor air temperature sensor	M546E14
2	Differential pressure monitoring of outdoor air filter	A00000064140

No.	Description	Replacement part no.
3	Actuator for outdoor air damper	M466EQ6
4	CO ₂ sensor	A00000075813
5	Extract air ISO coarse 55%	FMP-COARSE-50%-C17/ PADx265x361
6	Outdoor air filter ISO ePM1 65%	FP-ePM1-65%-NWO/ 385x380x90/STR
7	Supply air centrifugal fan	A00000062752
8	Extract air centrifugal fan	A00000062752
9	Rotary heat exchanger for heat recovery	A00000062896
10	Actuator for exhaust air damper	M466EQ6
11	Controller FSL-CONTROL III	A00000075513
	Power supply unit FSL-CONTROL III	A00000062678
	Power supply filter FSL-CONTROL III	A00000075465
	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494
12	SKM module for controlling the outdoor air dampers	M536ED0
13	Thermoelectric valve actuator	A00000036448
14	Straight-way valve	Order-specific
15	Lockshield	M431AQ4
16	Supply air temperature sensor	A00000054037
17	2-pipe or 4-pipe heat exchanger	See no. on the heat exchanger
18	Speed controller 24 V (rotor)	A00000062863
–	Replacement part bag of quick release fasteners (10x)	A00000072484

10 Technical data

10.1 Technical data

Technical data sheets

An illustration and the technical data have already been provided for information and acceptance by the customer. We recommend that you keep those documents with this manual.

Item	Unit	FSL	SCHOOLAIR					
		-V-ZAB/SEK	-V-2L	V-4L	-V-1800	-V-HE	-V-HV	
Max. operating pressure, water side	bar	6						
Max. operating temperature	°C	75						
Max. operating temperature with flexible connecting hoses	°C	55						
Supply voltage	V AC	230 ±10%						
Supply voltage, frequency	Hz	50/60						
Protection level	IP	21						
Width	mm	400	397		600			
Height	mm	1800	2160	2350	1800	2000	2200	
Depth	mm	320	359		408			
Volume flow rate	m³/h	60-150	150-320		150-350	150-360	250-600	
Total heating capacity ¹⁾	W	2460	5470	5760	5630	6020	4780	
Heating capacity per room	W	471	1422	1680	1005	900	3300	
Total cooling capacity ²⁾	W	688	–	1440	1590	1685	1750	
Cooling capacity per room	W	408	–	850	935	965	1470	
Heat recovery efficiency	%	61	51		56	84	75	
Power consumption (nominal volume flow rate)	W	27	44		48	40	76	
Rating	VA	240	226		217	592	647	
Weight	kg	60	85		85	90	145	

1) Sizing data: Standard outdoor air temperature, supply air temperature: 40 °C, max. volume flow rate

2) Sizing data: Standard outdoor air temperature, supply air temperature: 18 °C, max. volume flow rate

Rating plate

TROX [®] TECHNIK	
Heinrich-Trox-Platz/D-47504 Neukirchen-Vluyn	
Geräte-Typ:	
Herstelljahr:	Schutzart:
Kom.-Nr.:	max. Wassertemperatur:
Serien-Nr.:	max. Betriebsdruck:
Versorgungsspannung:	Filterklasse Zuluft:
max. Leistungsaufnahme:	Filterklasse Abluft:

Fig. 39: The rating plate is affixed to the cover plate.

- ① Type of unit
- ② Year of manufacture
- ③ Commissioning no.
- ④ Serial number
- ⑤ Supply voltage
- ⑥ Max. power consumption
- ⑦ Protection level
- ⑧ Max. water temperature
- ⑨ Max. operating pressure
- ⑩ Supply air filter class
- ⑪ Extract air filter class

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Appendix

EU declaration of conformity

EC/EU Declaration of Conformity

TROX[®] TECHNIK
The art of handling air

Manufacturer

TROX GmbH
Heinrich-Trox-Platz
47504 Neukirchen-Vluyn,
Germany

Person who is authorised to compile the technical file and is established in the Community

Jan Heymann, TROX GmbH

Description and identification of the machinery

Product / Product type	Decentralised ventilation units FSL-V-ZAB/SEK; SCHOOLAIR-V / -V-1800 / -V-HE / -V-HV
Function	Vertical under sill units with FSL Control II Decentralised ventilation units are used to create a comfortable room temperature and to ventilate rooms such as offices, meeting rooms, or classrooms in schools.

We declare that the above mentioned product fulfils all the relevant provisions of the following EC/EU Directives:

2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)
2014/35/EU	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

Applied harmonised standards:

EN 349:1993+A1	Safety of machines - Minimum gaps to avoid crushing of parts of the human body safety of machines - Avoidance of unexpected start-up
EN 1037:1995+A1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005)
EN 60204-1:2006/A1	Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings
EN 547-2:1996+A1	Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation
EN 1005-3:2002+A1	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)
EN ISO 13857:2008	Safety of machinery - Human body measurements - Part 3: Anthropometric data
EN 547-3:1996+A1	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
EN 1005-2:2003+A1	Safety of machinery - Human physical performance - Part 1: Terms and definitions
EN 1005-1:2001+A1	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2008)
EN ISO 13732-1:2008	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 12100:2010-11	

Neukirchen-Vluyn, 4 October 2017



Jan Heymann
Authorised representative, CE-marked products, TROX GmbH

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Product information according to ErP directive

FSL-V-ZAB/SEK

Product information






The art of handling air

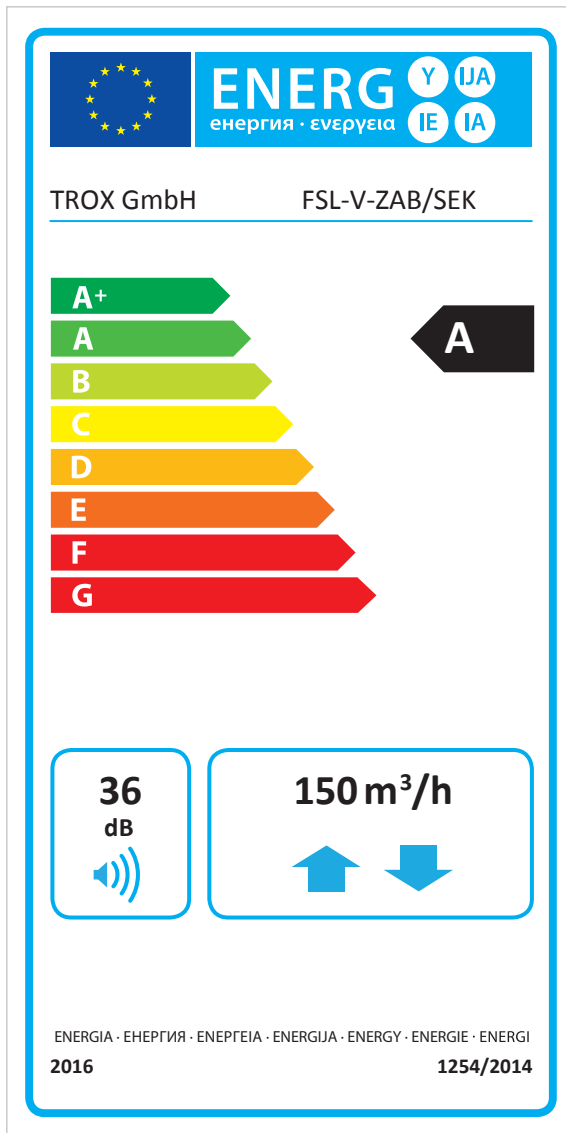
a) Manufacturer's name	TROX GmbH Heinrich-Trox-Platz 47504 Neukirchen-Vluyn, Germany	Phone +49 (0)2845 2020 Fax +49 (0)2845 202265 E-mail trox@trox.de Internet www.troxtechnik.com
b) Model identifier	V-ZAB/SEK-2L-398x1800x318 V-ZAB/SEK-4L-398x1800x318	

Product information with regard to residential ventilation units according to Regulation (EU) No 1254/2014, Article 3 (1)

	Information requirement	Technical data for the supplied product
c)	Specific energy consumption (SEC)	
	Cold	-66,60 kWh/(m ² × a)
	Average	-35,77 kWh/(m² × a) ⇔ Energy efficiency class A
	Warm	-15,47 kWh/(m ² × a)
d)	Type	Bidirectional
e)	Type of drive installed	Multi-speed drive
f)	Heat recovery system (HRS)	Recuperative
g)	Thermal efficiency of HRS	51 %
h)	Maximum flow rate (\dot{V}_{max})	150 m ³ /h
i)	Electric power input at maximum flow rate \dot{V}_{max}	29 Watt
j)	Sound power level L_{WA} at \dot{V}_{Rfr}	36 dB(A)
k)	Reference flow rate (\dot{V}_{Rfr})	105 m ³ /h
l)	Reference pressure difference	0 Pa
m)	Specific power input (SPI) at \dot{V}_{max}	0,113 W/(m ³ /h)
n)	Control factor	Local demand control
	Control typology	Non-ducted ventilation units
o)	Internal leakage rate at (\dot{V}_{Rfr}) and 100 Pa	8 %
	External leakage rate at (\dot{V}_{Rfr}) and 100 Pa	4 %
p)	Mixing rate	< 2 %
q)	Filter warning ⓘ	On the control panel - (LED double blinking)
s)	Disassembly instructions	www.trox.de
t)	Airflow sensitivity to pressure variations at \dot{V}_{max} and +20 Pa	+3 %
	Airflow sensitivity to pressure variations at \dot{V}_{max} and -20 Pa	- 3 %
u)	Indoor/outdoor air tightness	0 m ³ /h
v)	Annual electricity consumption (AEC)	1,11 kWh/(m ² × a)
w)	Annual heating energy saving (AHS)	
	Cold	74,07 kWh/(m ² × a)
	Average	37,86 kWh/(m ² × a)
	Warm	17,12 kWh/(m ² × a)

 ⓘ Filters have to be changed regularly! This will increase the energy efficiency of the unit, reduce the electricity consumption of the fans and protect our environment in the long term.

FSL-V-ZAB/SEK energy label



SCHOOLAIR-V

Product information




TROX[®] TECHNİK
The art of handling air

a) Manufacturer's name	TROX GmbH Heinrich-Trox-Platz 47504 Neukirchen-Vluyn, Germany	Phone +49 (0)2845 2020 Fax +49 (0)2845 202265 E-mail trox@trox.de Internet www.troxtechnik.com
b) Model identifier	SCHOOLAIR-V-2/KM/397x359x2160/R SCHOOLAIR-V-4/KM/397x359x2160/R SCHOOLAIR-V-2/KO/397x359x2160/R SCHOOLAIR-V-4/KO/397x359x2160/R	

Product information with regard to non-residential ventilation units according to Regulation (EU) No 1253/2014 Article 4 (2)

	Information requirement	Technical data for the supplied product
c)	Type	Non-residential ventilation units
		Bidirectional
d)	Type of drive installed	Variable speed drive (VSD)
e)	Heat recovery system (HRS)	Other (Recuperative)
f)	Thermal efficiency of heat recovery	46 %
g)	Nominal flow rate (\dot{V}_{nom})	0,069 m ³ /s ↔ 250 m ³ /h
h)	Electric power input at \dot{V}_{nom}	0,045 kW
i)	SFP _{int} at \dot{V}_{nom}	480 W/(m ³ /s)
j)	Face velocity of the filters at \dot{V}_{nom}	0,54 m/s
k)	Nominal external pressure	0 Pa - (Non-ducted unit)
l)	Pressure drop of ventilation components	
	• HR _{SUP} / HR _{ETH}	39 Pa / 45 Pa
	• ODA-filter / ETH-filter	19 Pa / 9 Pa
n)	Static efficiency of fans used in accordance with Regulation (EU) No 327/2011	N.a. - (The fan used is not covered by EU directive 327/2011)
o)	Internal leakage rate at \dot{V}_{nom} and 100 Pa	5,5 %
	External leakage rate at \dot{V}_{nom} and 100 Pa	2,5 %
p)	Annual energy consumption of the outdoor air filter at 3000 h/a	15 kWh/a
q)	Filter warning ⓘ	On the control panel - (LED double blinking)
r)	Sound power level of case-radiated noise, including supply air and extract air terminal units, at \dot{V}_{nom}	41 dB(A)
s)	Disassembly instructions	www.trox.de

 ⓘ Filters have to be changed regularly! This will increase the energy efficiency of the unit, reduce the electricity consumption of the fans and protect our environment in the long term.

SCHOOLAIR-V-1800

Product information



TROX[®] TECHNIK
The art of handling air

a) Manufacturer's name	TROX GmbH Heinrich-Trox-Platz 47504 Neukirchen-Vluyn, Germany	Phone +49 (0)2845 2020 Fax +49 (0)2845 202265 E-mail trox@trox.de Internet www.troxtechnik.com
b) Model identifier	SCHOOLAIR-V-2/KM/604x370x1800/R SCHOOLAIR-V-4/KM/604x370x1800/R SCHOOLAIR-V-2/KO/604x370x1800/R SCHOOLAIR-V-4/KO/604x370x1800/R	

Product information with regard to non-residential ventilation units according to Regulation (EU) No 1253/2014 Article 4 (2)

	Information requirement	Technical data for the supplied product
c)	Type	Non-residential ventilation units
		Bidirectional
d)	Type of drive installed	Variable speed drive (VSD)
e)	Heat recovery system (HRS)	Other (Recuperative)
f)	Thermal efficiency of heat recovery	54 %
g)	Nominal flow rate (\dot{V}_{nom})	0,069 m ³ /s ↔ 250 m ³ /h
h)	Electric power input at \dot{V}_{nom}	0,042 kW
i)	SFP _{ext} at \dot{V}_{nom}	405 W/(m ³ /s)
j)	Face velocity of the filters at \dot{V}_{nom}	0,48 m/s
k)	Nominal external pressure	0 Pa - (Non-ducted unit)
l)	Pressure drop of ventilation components	
	• HR _{SUP} / HR _{ETH}	22 Pa / 24 Pa
	• ODA-filter / ETH-filter	18 Pa / 16 Pa
n)	Static efficiency of fans used in accordance with Regulation (EU) No 327/2011	N.a. - (The fan used is not covered by EU directive 327/2011)
o)	Internal leakage rate at \dot{V}_{nom} and 100 Pa	13,0 %
	External leakage rate at \dot{V}_{nom} and 100 Pa	7,5 %
p)	Annual energy consumption of the outdoor air filter at 3000 h/a	14 kWh/a
q)	Filter warning ⓘ	On the control panel - (LED double blinking)
r)	Sound power level of case-radiated noise, including supply air and extract air terminal units, at \dot{V}_{nom}	40 dB(A)
s)	Disassembly instructions	www.trox.de

ⓘ ⓘ Filters have to be changed regularly! This will increase the energy efficiency of the unit, reduce the electricity consumption of the fans and protect our environment in the long term.

SCHOOLAIR-V-HV

Product information



TROX® **TECHNIK**
The art of handling air

a) Manufacturer's name

TROX GmbH	Phone +49 (0)2845 2020
	Fax +49 (0)2845 202265
Heinrich-Trox-Platz	E-mail trox@trox.de
47504 Neukirchen-Vluyn, Germany	Internet www.troxtechnik.com

b) model identifier

SCHOOLAIR-V-HV2/KM/600x2200x408/R
 SCHOOLAIR-V-HV4/KM/600x2200x408/R
 SCHOOLAIR-V-HV2/KO/600x2200x408/R
 SCHOOLAIR-V-HV4/KO/600x2200x408/R

	Information requirement	Technical data for the supplied product
c)	Type	Non-residential ventilation units
		Bidirectional ventilation unit
d)	Drive type	Speed control
e)	Heat recovery (WRG)	Other (regenerative)
f)	Thermal efficiency of the heat recovery	75 %
g)	Nominal flow rate ($V_{pt, nom}$)	0.111 m ³ /s ↔ 400 m ³ /h
f)	electrical power input at V_{nom}	0.082 kW
i)	$SV_{L_{gr}}$ at \dot{V}_{nom}	350 W/(m ³ /s)
j)	upstream velocity of the filters at \dot{V}_{Nom}	1.05 m/s
k)	Nominal external pressure	0 Pa - (unit without duct connection)
	pressure loss of the ventilation component	
l)	• WRG _{SUP} / WRG _{ETH}	45 Pa/ 51 Pa
	• ODA-filter / ETH-filter	38 Pa / 38 Pa
n)	Static efficiency of fans in accordance with EU directive 327/2011	60 %
o)	Internal leakage air ratio at $\dot{V}_{Nominal}$ and 150 Pa	5 %
	External leakage air ratio at $\dot{V}_{Nominal}$ and 150 Pa	1 %
p)	Annual power consumption of the outdoor air filters at 3000 h/year	20 kWh/a
q)	Filter warning ⓘ	On the control panel - (Status LED double blinking)
r)	casing-sound power level incl. supply air and return air on the room end at \dot{V}_{Nom}	42 dB(A)
s)	Information on dismantling	www.trox.de

ⓘ ⓘ Filters have to be changed regularly! This will improve the energy efficiency of the unit, reduce the power consumption of the fans and protect our environment in the long term.

Declaration of hygiene conformity



Declaration of Hygiene Conformity

**Decentralised Ventilation Units
Types SCHOOLAIR-B · SCHOOLAIR-D ·
SCHOOLAIR-V**

Object of the inspection

TROX GmbH, Heinrich-Trox-Platz, D-47504 Neukirchen-Vluyn, Germany, hereby confirm that the decentralised ventilation units of types SCHOOLAIR-B/-D/-V meet the hygiene requirements specified by the standards and regulations listed below.

- European standard
– EN 13779 (09/2007)
- German standards
– VDI 6022, part 1 (07/2011)
– VDI 6035 (09/2009)
- Austrian standards
– ÖNORM H 6021 (09/2003)
- Swiss SWKI regulations
– VA104-01 (04/2006)

For the purpose of this declaration of conformity a sample of each type mentioned above was viewed at the TROX GmbH factory, Heinrich-Trox-Platz, 47504 Neukirchen-Vluyn, Germany, and related data sheets, technical literature, and inspection reports were appraised.

Summary of the test result

The examination of the above-mentioned sample equipment and the appraisal of the available documents have shown that the hygiene requirements specified by the above-mentioned standards and regulations are met.

We hereby confirm that the decentralised ventilation units of types SCHOOLAIR-B/-D/-V meet the hygiene requirements of the specified standards and regulations.

Neukirchen-Vluyn, Germany, 08 November 2011



Dipl.-Ing. Dirk Scherder
trained according to VDI 6022, category A
Product Management

Dipl.-Ing. Jan Heymann
Manager Quality Systems

Certificate



Commissioning report/Maintenance report

Building:	Floor:	Unit:
Commissioning: <input type="checkbox"/>	Maintenance: <input type="checkbox"/>	Date: __ . __ . 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 🔧 35	X ¹	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 🔧 34	X ¹	X		<input type="checkbox"/>	<input type="checkbox"/>
Checking the heat recovery unit (random check)	Check seals, adjust or replace if necessary; clean the heat recovery unit; check and clean water drain	X ¹	X		<input type="checkbox"/>	<input type="checkbox"/>
Checking fan functions (random check)	Different fan stages			X	<input type="checkbox"/>	<input type="checkbox"/>
Checking activation 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"/>
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 has formed

Comment:	
Next maintenance scheduled for:	
Signature: (Technician)	
Company: (Stamp)	

TROX[®] TECHNİK

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