



Decentralised ventilation units

SCHOOLAIR-D / -D-HV



TROX[®] TECHNİK
The art of handling air

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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 information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

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

- Non-compliance with this manual
- 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.

The obligations agreed in the order, the general terms and conditions, the manufacturer's terms of delivery, and the legal regulations in effect at the time the contract is signed shall apply.

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1 Ventilation unit overview

1.1 Variants

1.1.1 SCHOOLAIR-D

Components of the ventilation unit



Fig. 1: SCHOOLAIR-D ventilation unit

- | | | | |
|---|--|-----|---|
| ① | Fixing bracket for fixing the unit to the ceiling and wall | ⑪ | Cable glands (master unit only; for wiring by others) |
| ② | Casing | ⑫ | Control equipment box |
| ③ | Water connections | ⑬ | Controls access panel |
| ④ | 2-pipe or 4-pipe heat exchanger (optional) | ⑭ | Network connections |
| ⑤ | Height-adjustable frame | ⑮ | Mains cable |
| ⑥ | Ceiling plate | SEH | Single room exhaust air |
| ⑦ | Supply air slot diffuser | SET | Single room extract air |
| ⑧ | Extract air slot diffuser | SRO | Single room outdoor air |
| ⑨ | Seal | SRS | Single room supply air |
| ⑩ | Supply air temperature sensor (optional) | SEC | Secondary air (optional) |

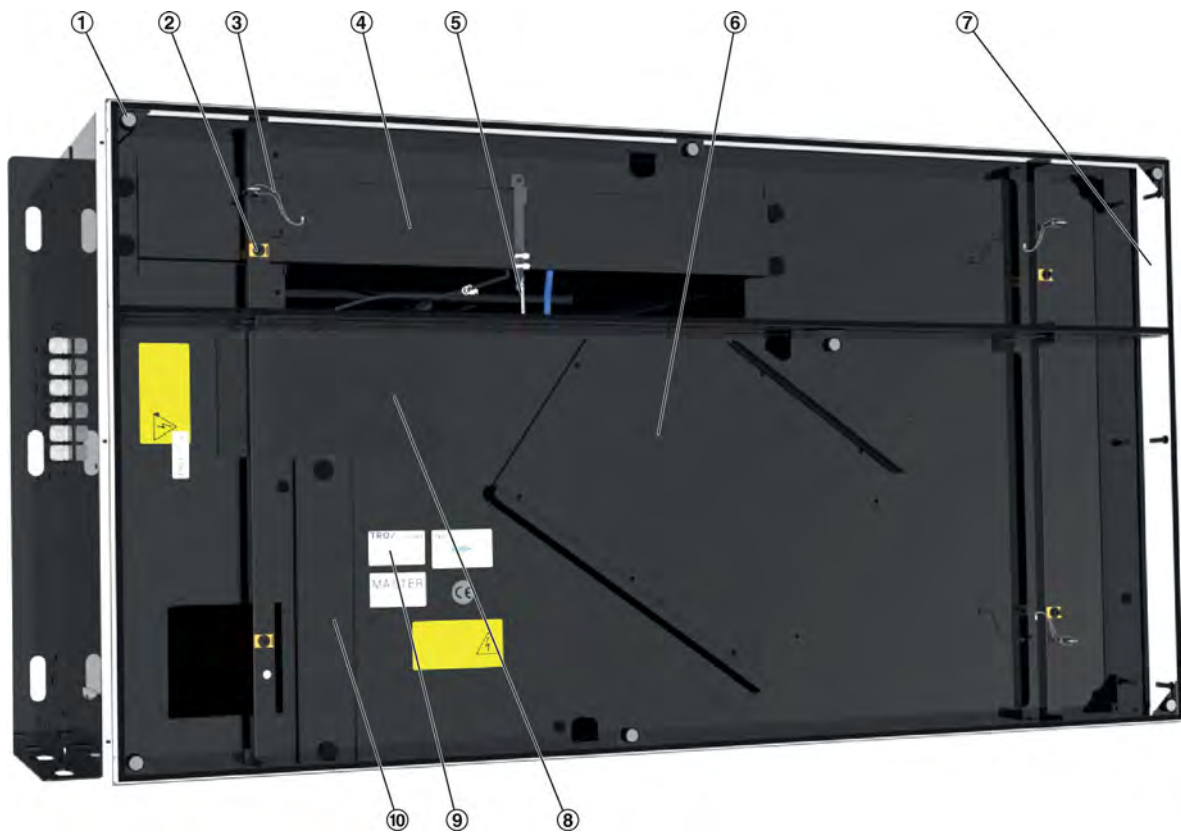


Fig. 2: SCHOOLAIR-D (with the ceiling plate removed)

- | | |
|--|---|
| ① Magnets to hold the ceiling plate in place | ⑥ Recuperative heat exchanger inspection access panel |
| ② Screws for fixing the ceiling plate (4 pieces; to be screwed in while the slot diffusers are in place) | ⑦ Height-adjustable frame |
| ③ Safety cable to secure the ceiling plate | ⑧ Extract air filter (non-woven fibres) |
| ④ Condensate drip tray | ⑨ Rating plate |
| ⑤ Supply air temperature sensor (optional) | ⑩ Cover of fine dust filter chamber ISO ePM1 65% |

1.1.2 SCHOOLAIR-D-HV

Components of the ventilation unit

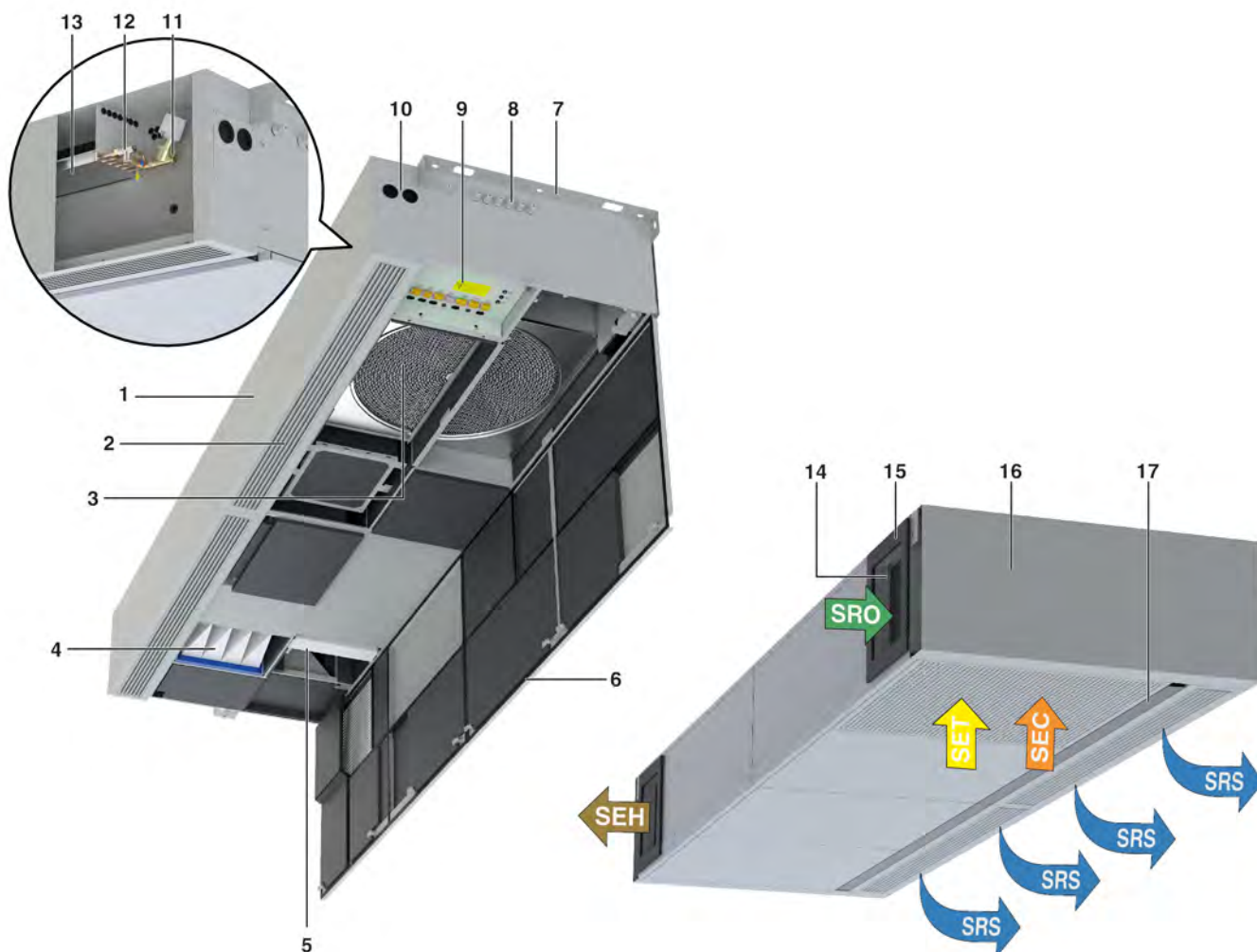


Fig. 3: SCHOOLAIR-D-HV ventilation unit

- | | | | |
|----|---|-----|---|
| 1 | Casing | 12 | Lockshield (flow heat exchanger) |
| 2 | Supply air grille | 13 | 2-pipe heat exchanger |
| 3 | Rotary heat exchanger for heat recovery | 14 | Outdoor air temperature sensor (optional) |
| 4 | Outdoor air filter ISO ePM1 60% | 15 | Seal |
| 5 | Extract air filter ISO coarse 90% | 16 | Side cover (only installation situation -F) |
| 6 | Inspection access panel (4 pieces) | 17 | Cover strips |
| 7 | Fixing bracket | SEH | Single room exhaust air |
| 8 | Cable penetration | SET | Single room extract air |
| 9 | Controls access panel | SRO | Single room outdoor air |
| 10 | Water connections | SRS | Single room supply air |
| 11 | Valve (return heat exchanger) | SEC | Secondary air (optional) |

1.2 Schematic illustration of the airflows

SCHOOLAIR-D

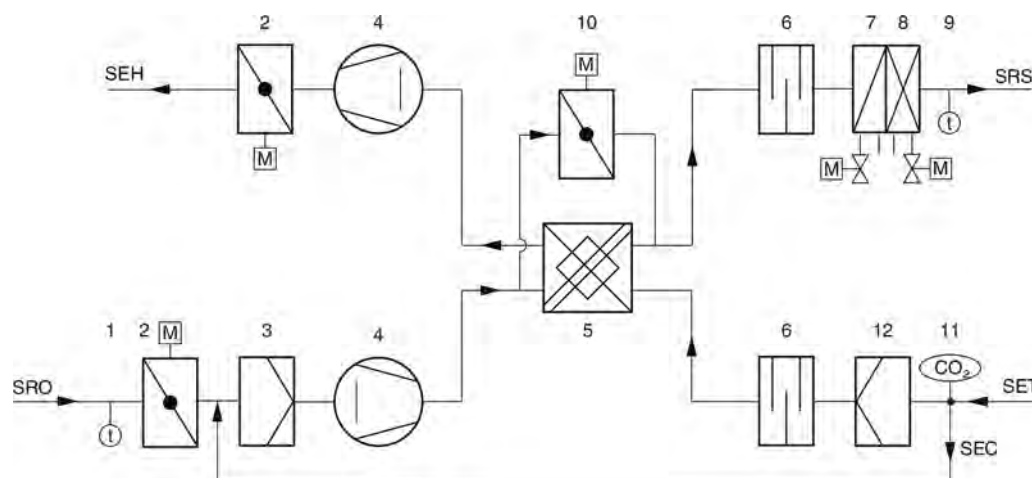


Fig. 4: SCHOOLAIR-D ventilation diagram

- | | | | |
|---|---|-----|---------------------------------------|
| 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 ISO ePM1 65% | 12 | Extract air filter (non-woven fibres) |
| 4 | Fan (supply air and extract air) | SEH | Single room exhaust air |
| 5 | Recuperative heat exchanger | SET | Single room extract air |
| 6 | Sound attenuators | SRO | Single room outdoor air |
| 7 | Heating coil (optional) | SRS | Single room supply air |
| 8 | Cooling coil (optional) | SEC | Secondary air (optional) |
| 9 | Supply air temperature sensor (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. 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 (for 4-pipe systems this is optional).

The extract air first passes a 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 indoor 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 indoor 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.

SCHOOLAIR-D-HV

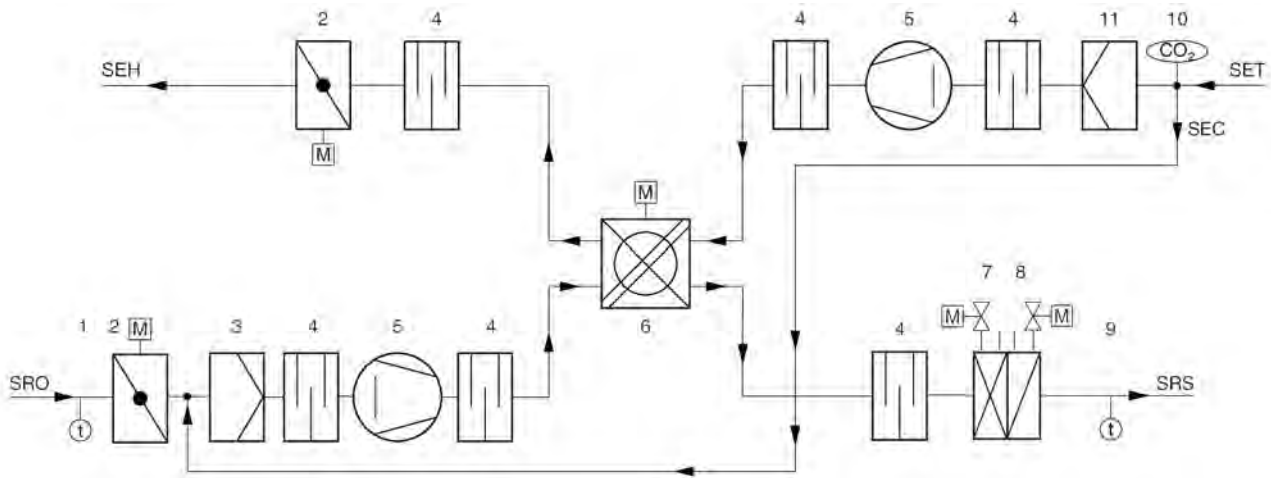


Fig. 5: SCHOOLAIR-D-HV ventilation diagram

- | | | | |
|---|---|-----|--|
| 1 | Outdoor air temperature sensor (optional) | 9 | Supply air temperature sensor (optional) |
| 2 | Shut-off damper with actuator (exhaust air and outdoor air) | 10 | CO ₂ sensor (optional) |
| 3 | Outdoor air filter ISO ePM1 65% | 11 | Extract air filter ISO coarse 90% |
| 4 | Sound attenuators | 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 | Cooling coil (optional) | SRS | Single room supply air |
| 8 | Heating 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 supply air is heated or cooled by the heat exchanger before it is discharged to the room as a mixed air flow.

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 indoor 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 indoor 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.

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.

Instructed person

Instructed persons have been adequately advised or supervised to enable them to avoid any potential hazards related to the work under consideration. Instruction is provided by a qualified expert in the respective field.

A person instructed in the use of the AHU may carry out the following jobs:

- Visual inspections
- Replace filter elements
- Clean filter chambers
- Clean heat exchangers
- Clean fans

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 against crushing, falling parts, and from slipping on slippery ground.

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.

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.

4.2 Ventilation unit installation

4.3 SCHOOLAIR-D

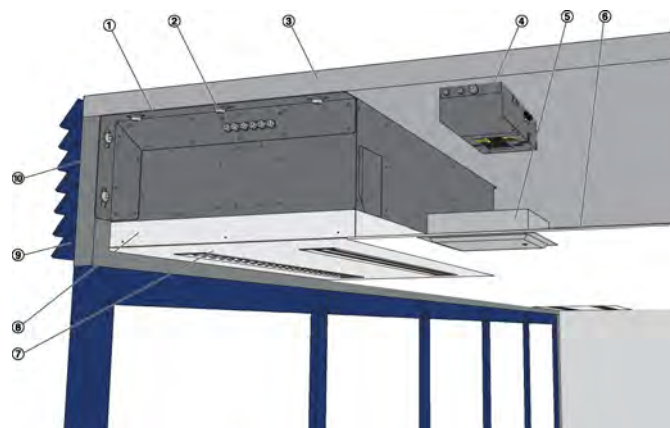


Fig. 6: SCHOOLAIR-D installation example

- ① SCHOOLAIR-D
- ② Fixing screws (by others)
- ③ Load-bearing structure, e.g. concrete ceiling
- ④ Control equipment box
- ⑤ Controls access panel on the control equipment box (by others)
- ⑥ Suspended ceiling
- ⑦ Ceiling plate
- ⑧ Height-adjustable frame (optional)
- ⑨ Weather protection for the extract air and exhaust air opening (by others)
- ⑩ External wall, with exhaust air and extract openings

Personnel:

- HVAC technician

Tool:

- Lifting equipment, e.g. scissor lift
 - Install the ventilation unit before you create the suspended ceiling.
 - Fix the ventilation unit to both the ceiling and an external wall. Openings for outdoor air and exhaust air are required in the external wall (see approval drawing).
 - The ventilation unit weighs approx. 100 kg (including contained water), so be sure to choose a suspension system that is suitable for the entire weight and material.
 - Make sure that the unit can be connected to the pipework and to the mains supply.
1. ▶ Fix the suspension system to ceiling and external wall, e.g. bolt anchors, washers and nuts (slotted holes 20 x 60 mm). Be sure to align the outdoor air and exhaust air openings in the external wall with the openings of the ventilation unit. If you intend to install more than one unit, it is best to use a drill template.

SCHOOLAIR-D

2. ▶ Lift the ventilation unit with suitable lifting equipment, e.g. a scissor lift. To avoid damage to the unit, either remove the ceiling plate before you lift the unit, or at least put cardboard underneath the unit.
 3. ▶ Fix the ventilation unit to the suspension system so that it can still be moved a little. Then adjust the position of the ventilation unit with regard to the external wall (air openings aligned, drilled holes aligned) and fix it with screws so that the air openings are tight.
 4. ▶ Tighten all screws.
 5. ▶ Fix the external control equipment box where it is suitable. The control equipment box has to remain accessible even after the suspended ceiling has been closed (e.g. through an access panel).
2. ▶ Loosen the 6 screws (Fig. 7 /2) on opposite sides of the frame (Fig. 7 /1). Adjust the height of the frame, then tighten the screws again.
 3. ▶ Fix the ceiling plate again, ↻ on page 54 .

! 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.

Adjusting the height-adjustable frame

The ventilation unit is fitted with a height-adjustable frame to compensate for an up to 29 mm difference between the ceiling plate and the suspended ceiling.

1. ▶ Remove the ceiling plate, ↻ on page 50 .

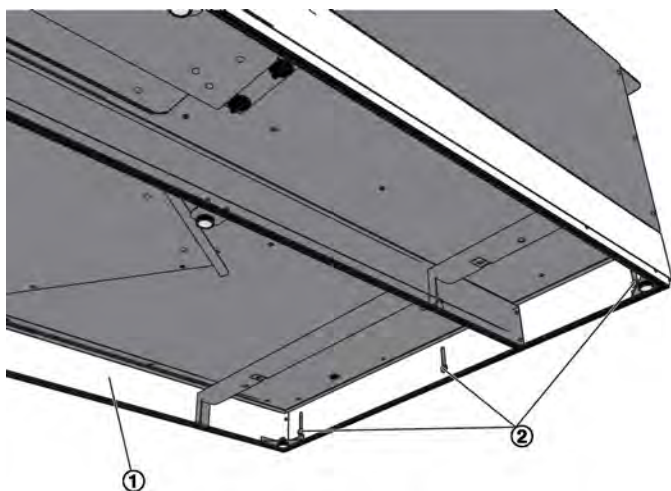


Fig. 7: Frame adjustment

4.4 SCHOOLAIR-D-HV

Assembly types

The SCHOOLAIR-D-HV ventilation unit can be mounted in two different ways.

- | | |
|---------------------|--|
| Direct assembly | - Here, the device is screwed directly to the ceiling with anchors and threaded rods, ↪ <i>Chapter 4.4.1 'Direct assembly on the ceiling' on page 17</i> . |
| Door frame assembly | - Here, the first step is to screw the two-piece door frame to the ceiling. The ventilation unit can be subsequently inserted and screwed into the door frame. Door frame installation is especially advantageous if the suspended ceiling is to be completed before the air handling unit is installed or if the unit is to be installed at a distance from the external wall. For door frame assembly, ↪ <i>Chapter 4.4.2 'Door frame assembly' on page 24</i> |

4.4.1 Direct assembly on the ceiling

Personnel:

- HVAC technician

Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

Tool:

- Assembly lift at least 200 kg load capacity
- Impact drill
- Mounting iron with tip

Materials:

- Threaded rods M10
- Heavy-duty anchor M10
- Self-locking nuts M10 (supply package)
- Body washers M10 (supply package)
- Shims (supply package)



DANGER!

Danger of death from the fall of units!

The device components weigh approximately 180-200 kg each and can cause serious injury or even death if they fall. Therefore, proceed with caution during installation and observe the following points:

- Be careful when handling the device components.
- Handle devices with at least two people. For carrying with a transport aid, use at least 4 persons.
- Stand clear of suspended loads!
- In the event of deviations on site that are not described in these instructions, TROX must be consulted.
- Particular attention should be paid to making the fixing points.
 - Fixing only to load-bearing components, static calculation if necessary.
 - Observe the following installation instructions exactly and use all specified fixing points.
 - Only use fixing material approved for the wall/ceiling type.

- Install the ventilation unit before you create the suspended ceiling.
- Fix the ventilation unit to both the ceiling and an external wall. Openings for outdoor air and exhaust air are required in the external wall (see approval drawing).
- The ventilation unit weighs approx. 400 kg (including contained water), so be sure to choose a suspension system that is suitable for the entire weight and material.
- Make sure that the unit can be connected to the pipework and to the mains supply.

Note on the assembly procedure: The SCHOOLAIR-D-HV unit consists of 2 components, which are mounted one after the other on the ceiling and wall. Make sure that the components are not mixed up and that they are mounted in the correct order. The mounting points required for assembly can either be marked in advance (↪ *Appendix D 'Assembly drawing of SCHOOLAIR-D-HV' on page 80*) and drilled, or drilled in the course of assembly (when lifting with the assembly lift).

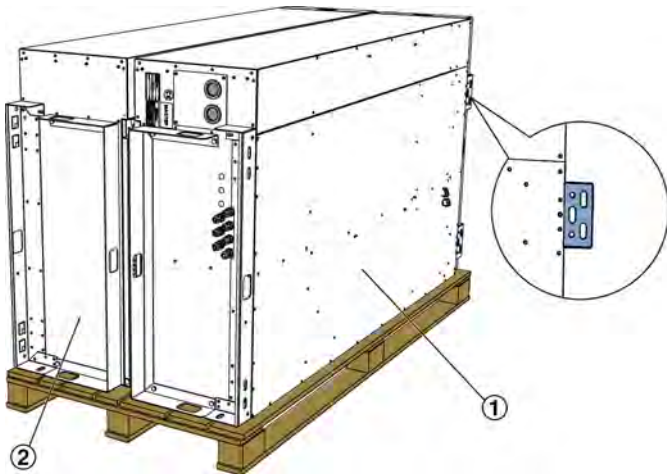


Fig. 8: Delivery state

- 1 Component 1 (assembled first)
- 2 Component 2

Prepare component 1

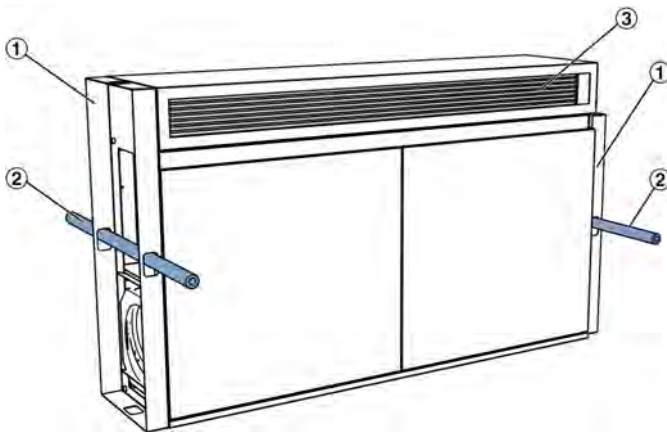


Fig. 9: Transport with transport aids

1. ▶ Before assembly, transport the device component 1 (Fig. 8 /1) to the assembly location. For this purpose, the device can be transported using the transport aids (Fig. 9 /1). For example, with round slings for forklift transport. Alternatively, tubes (Fig. 9 /2) (provided by others) can be inserted into the transport aids with which the unit can be lifted.

The supply air grilles (Fig. 9 /3) and cover strips are packed in one of the device components. Remove them and store them for later assembly.

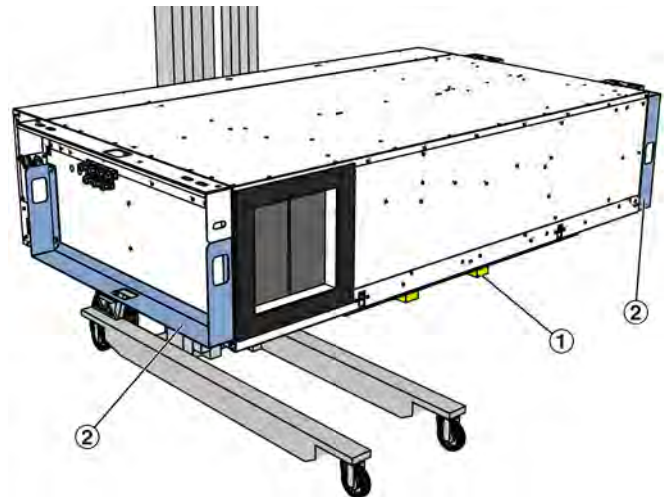


Fig. 10: Place component 1 on assembly lift

2. ▶ Move the assembly lift (Fig. 10 /1) to the place where the ceiling assembly is to be carried out. Place component 1 on the assembly lift with the covers facing downwards. Make sure that the painted surface of the device is not damaged; e.g., place cardboard between the lift and the device to protect it.

⚠ DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

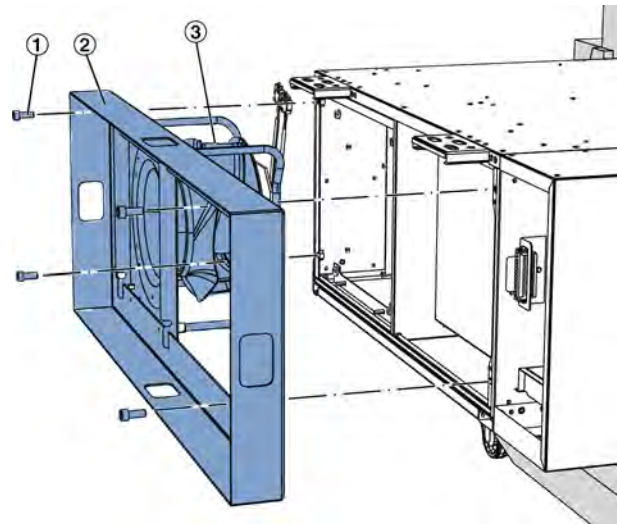


Fig. 11: Transport aids with fan

3. ▶ Remove the transport aids (Fig. 10 /2) from both ends of component 1. To do so, loosen the screws (Fig. 11 /1) and remove the transport aids. At the disconnection point, the fan (Fig. 11 /3) is also pulled out of the device. Store the fan and screws for later assembly. Screw the screws of the transport aid back into the unit.

Fix component 1 into place

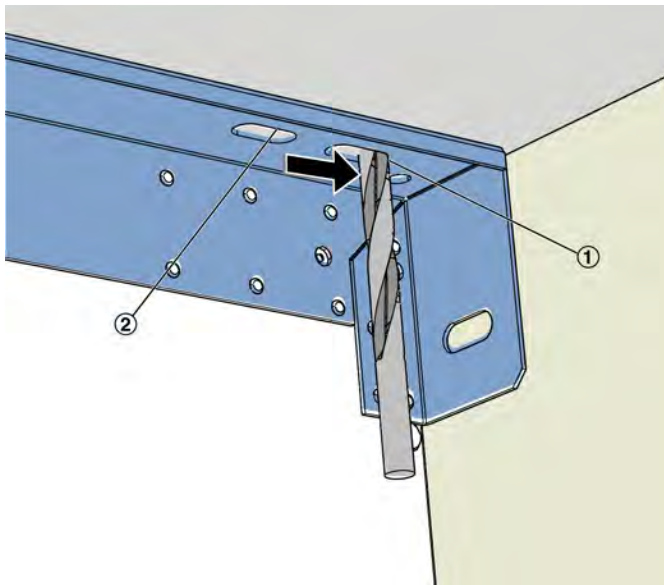


Fig. 12: Drill the fixing points

- 1 Standard fixing point
- 2 Alternative fixing point, e.g., if the other one cannot be used

4. ▶

i Drill hole arrangement
 ↪ Appendix D 'Assembly drawing of SCHOOLAIR-D-HV' on page 80 .

Lift component 1 to the ceiling with the lift and drill holes for heavy-duty anchors.

Attention: When drilling the holes, make sure that the drill bit is placed in the slotted holes facing the wall. In this way, the device can still be pressed to the wall (to compress the seal) later.

Blow out drill holes, install heavy-duty anchors and screw in threaded rods.

Required fixing points for component 1 (Fig. 13 and Fig. 14)

Ceiling slab - 6 suspension points

Wall - 1 anchoring point (fixing only at assembly step 17)

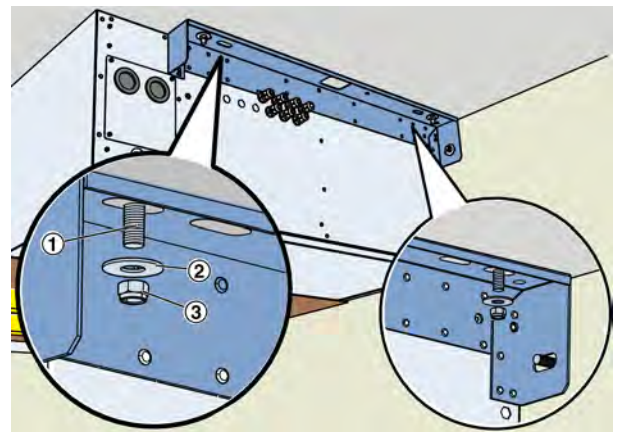


Fig. 13: Fixing outside component 1

- 5. ▶ Fasten the unit to the ceiling threaded rods (Fig. 13 /1) with body washers (Fig. 13 /2) and self-locking nuts (Fig. 13 /3) so that it can still be moved slightly.

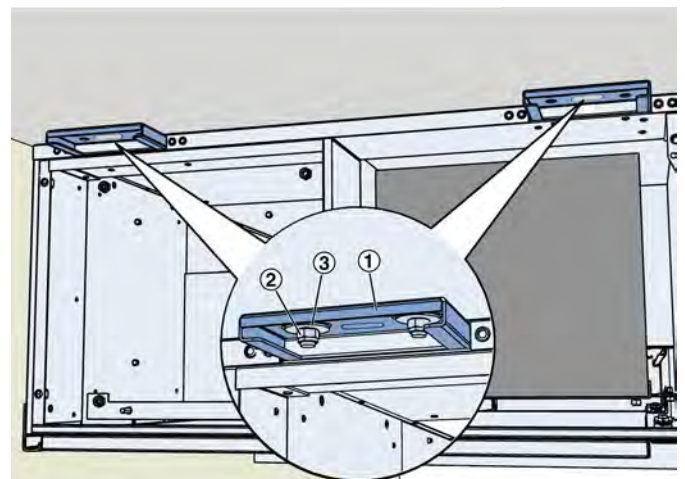


Fig. 14: 4 fixtures on the two lugs on device component 1

6. ▶

i Drill hole arrangement
 ↪ Appendix D 'Assembly drawing of SCHOOLAIR-D-HV' on page 80 .

Attention: When drilling the holes, make sure that the drill bit is placed in the slotted holes facing the wall. In this way, the device can still be pressed to the wall (to compress the seal) later. When drilling, protect the device from dust.

The threaded rods must not protrude beyond the lugs (Fig. 14 /1) otherwise they will collide with component 2. Otherwise, shorten the threaded rods before the assembly of device component 2.

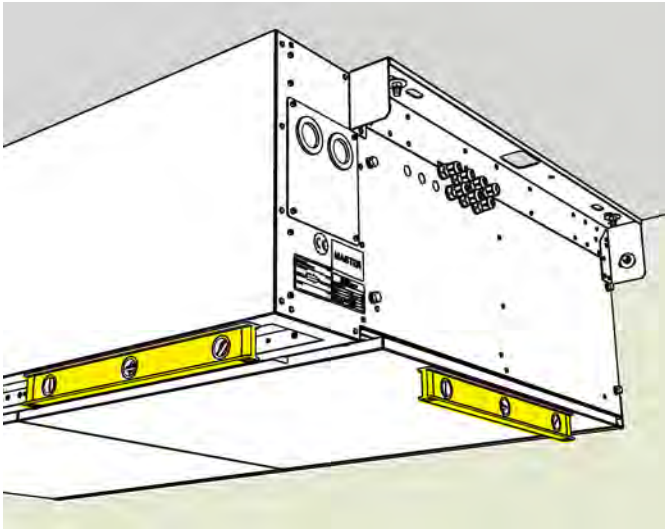


Fig. 15: Alignment of SA-D-HV

7. ▶ Align the device component in a horizontal position and tighten the nuts of all ceiling fixtures; the device component hangs freely suspended (not pressed against the ceiling) so that it can still be aligned later.

Important: The screw connections of the lugs (Fig. 14) are no longer accessible after the assembly of device component 2.

8. ▶ Carefully open the cover of component 1 adjacent to component 2, ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .

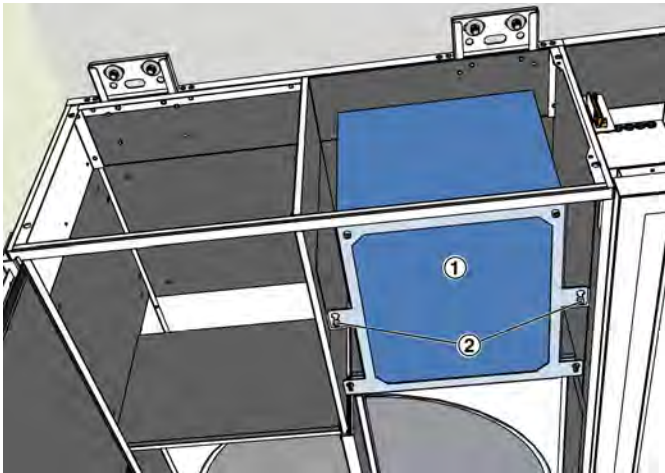


Fig. 16: Remove the sound attenuator from component 1

9. ▶ Dismantle the silencer (Fig. 16 /1) in component 1 by slightly loosening the two hexagon socket screws (Fig. 16 /2) and then pulling out the sound attenuator. Store the sound attenuator for later assembly.

Prepare component 2

10. ▶ Before assembly, transport the device component 2 to the assembly location.



Fig. 17: Place component 2 on assembly lift

11. ▶ Move the assembly lift (Fig. 17 /1) to the place where the ceiling assembly is to be carried out. Place component 2 on the assembly lift with the covers facing downwards. Make sure that the painted surface of the device is not damaged; e.g., place cardboard between the lift and the device to protect it.

! DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

12. ▶ Remove the two transport aids (Fig. 17 /2) from component 2 and screw the screws back into the unit.

Fix component 2 into place

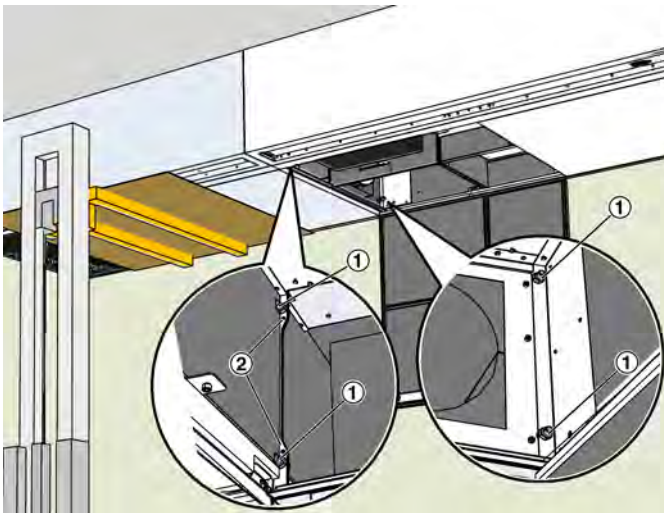


Fig. 18: Position component 2 next to component 1

13.▶ Required fixing points for component 2

- Component 1 - Component 2 is attached to component 1 with 4 screws and nuts.
- Ceiling slab - 2 suspension points (opposite side to component 1)
- Wall - 1 anchoring point (opposite side to component 1)

Position component 2 next to component 1 with the lift.

Using the holes (Fig. 18 /2) and the tip of the mounting iron, align the two components.

Loosely connect the two components with screws (Fig. 18 /1).

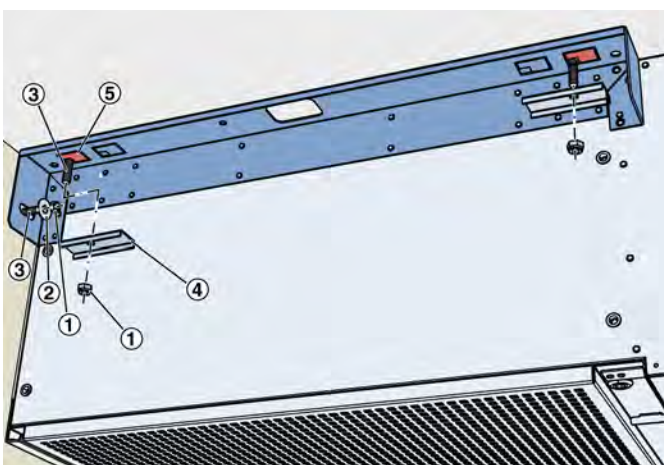


Fig. 19: Fix component 2 to the ceiling

14.▶



Drill hole arrangement

↳ Appendix D 'Assembly drawing of SCHOOLAIR-D-HV' on page 80 .

Drill holes for heavy-duty anchors and blow out drill holes. Then break out the sheet metal part (Fig. 19 /5) at both ceiling fixing holes (movement space for aligning the unit).

Install heavy-duty anchors and screw in the threaded rods (Fig. 19 /3).

15.▶ Fix the unit with shims (Fig. 19 /4) and nuts (Fig. 19 /1) so that it can still be moved a little.

Then align device component 2 with device component 1 and tighten the screw connections between the two device components.

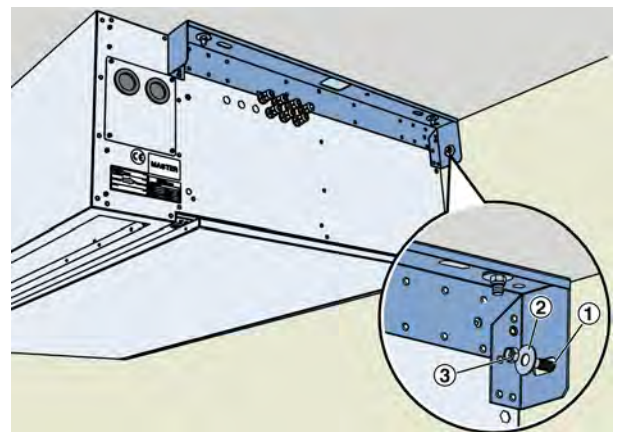


Fig. 20: SA-D-HV_Montage-BT-1_07

16.▶ Then align the entire unit and pull it slightly towards the wall with the wall fastening. The tightness between the wall duct and the air connection of the unit must be guaranteed.

17.▶ Tighten all fixing points and connecting screws.

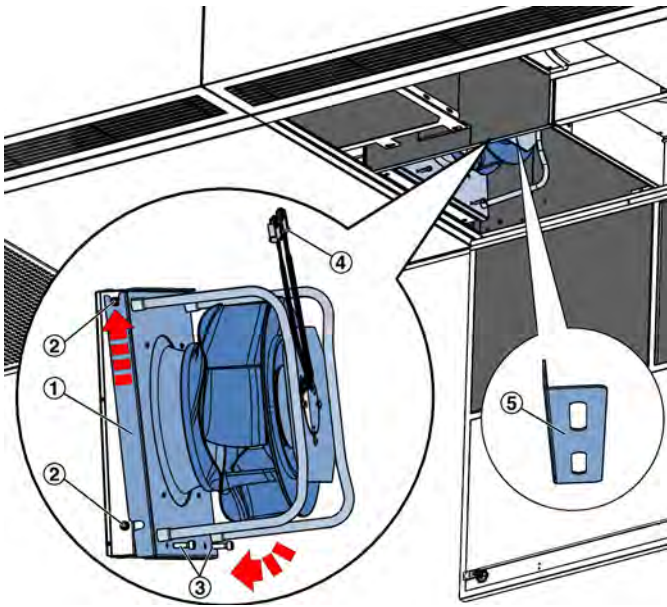


Fig. 21: Assembly of the fan

18. ▶ Put the fan assembly (Fig. 21 /1) on the upper bolts (Fig. 21 /1) first, then swing it onto the lower bolts. Fasten the fan with screws (Fig. 21 /3). Insert the connection plug (Fig. 21 /4) of the fan in the socket, secure the cable to the holder (Fig. 21 /5) with cable ties.

Attention: It must be ensured that the cable cannot drag on the impeller.

19. ▶ Opening inspection access panel 2 on component 2, ↗ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .

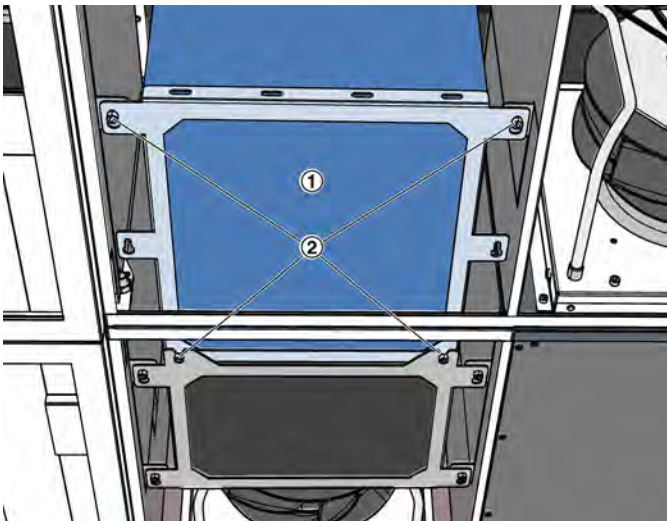


Fig. 22: Inserting the sound attenuator

20. ▶ Insert the sound attenuator (Fig. 22 /1) and fix it into place with 4 screws (Fig. 22 /1).

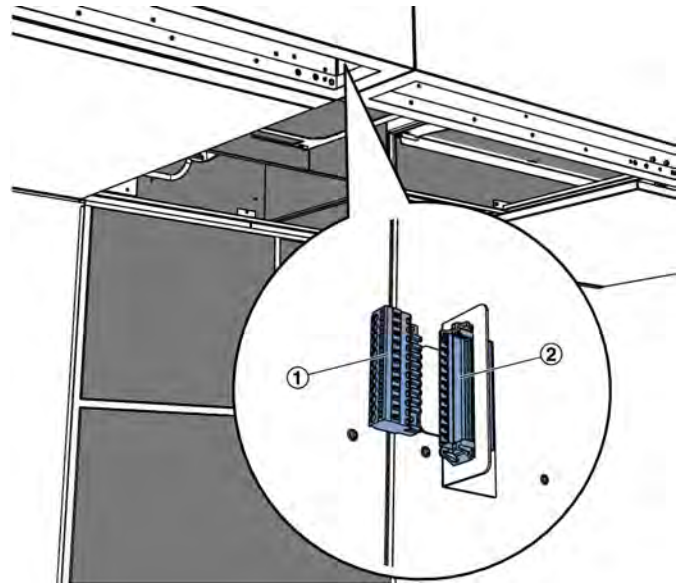


Fig. 23: Establish electrical connections

21. ▶ Insert the plug (Fig. 23 /1) into the socket (Fig. 23 /2) of the air outlets.

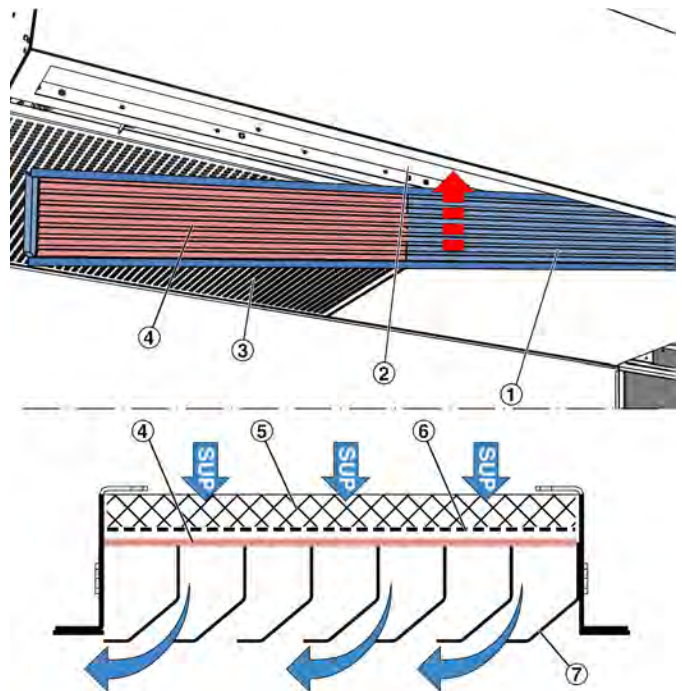


Fig. 24: Inserting the ventilation grille

22. ▶ Insert the supply air grilles (Fig. 24 /1) on both components by pushing them into the casing (Fig. 24 /2) at a slight angle and twisting them into position. When inserting, make sure that the grille with the blanking plate (Fig. 24 /4) is inserted in the area of the intake opening (Fig. 24 /3) and that the fins (Fig. 24 /7) face the room end. The filter flow (Fig. 24 /5) lies on the perforated plate (Fig. 24 /6).

23. ▶ Electrical wiring, ↗ 4.6 'Making electrical connections' on page 33

- 24. ▶ Connecting the heat exchanger, ↪ 4.5 'Connecting the water pipes' on page 32
- 25. ▶ Closing the inspection access panel, ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54

Installing attachments

For integration into the ceiling, the following lateral attachments can be mounted:

- Ceiling joint rail
- Side panel
- Side inspection access

Assembly of ceiling joint rail

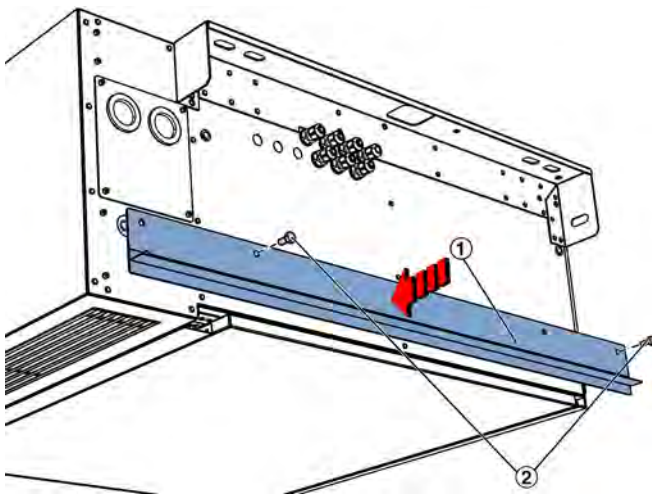


Fig. 25: Fixing the ceiling joint rail into place

Fasten the two ceiling connection rails to the device with 2 screws each.

Assembly of the side panel

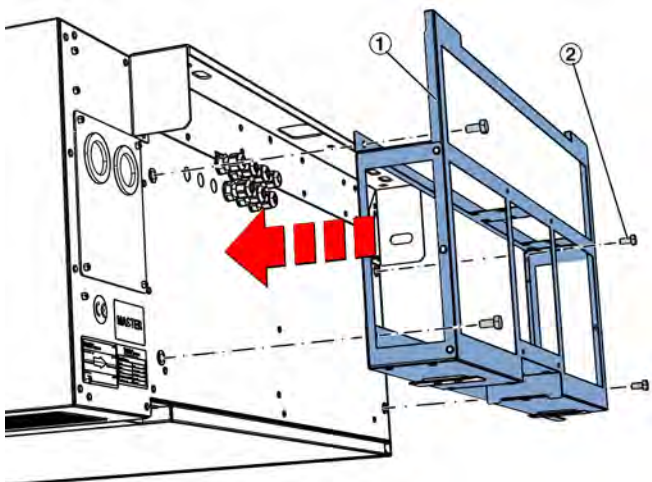


Fig. 26: Fixing the frame into place

Secure the two frames (Fig. 26 /1) to the device with 4 screws (Fig. 26 /2) each.

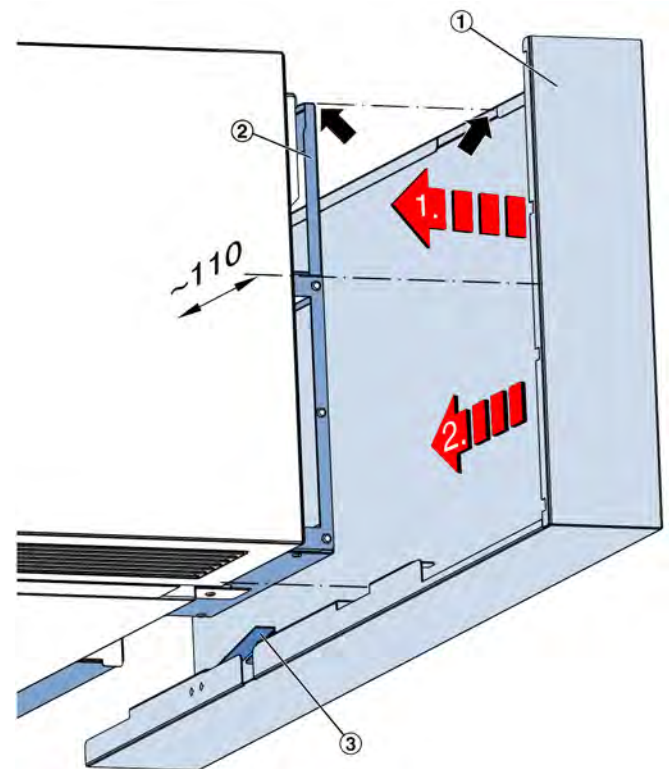


Fig. 27: Pushing the cover open

Place the side panel (Fig. 27 /1) on the frame (Fig. 27 /2) from the side and then push it on until the spring clip (Fig. 27 /3) engages with an audible click on the frame.

Assembly of the side inspection access

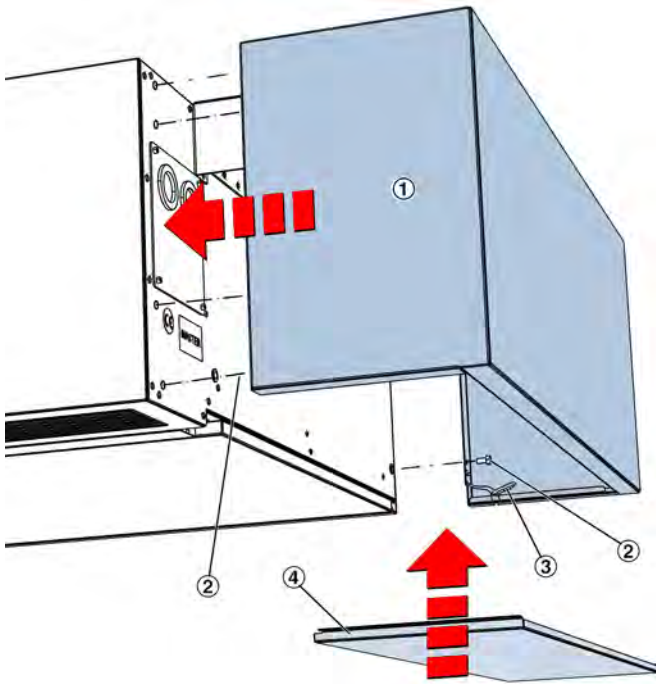


Fig. 28: Fixing the side inspection access into place

Secure the two plates (Fig. 28 /1) to the device with 6 screws (Fig. 28 /2) each. Hook and insert the safety rope (Fig. 28 /3) into the inspection access panels (Fig. 28 /4).

4.4.2 Door frame assembly

Personnel:

- HVAC technician

Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

Tool:

- Assembly lift at least 200 kg load capacity
- Impact drill
- Mounting iron with tip

Materials:

- Threaded rods M10
- Heavy-duty anchor M10
- Nuts M10
- Body washers M10

DANGER!

Danger of death from the fall of units!

The device components weigh approximately 180-200 kg each and can cause serious injury or even death if they fall. Therefore, proceed with caution during installation and observe the following points:

- Be careful when handling the device components.
- Handle devices with at least two people. For carrying with a transport aid, use at least 4 persons.
- Stand clear of suspended loads!
- In the event of deviations on site that are not described in these instructions, TROX must be consulted.
- Particular attention should be paid to making the fixing points.
 - Fixing only to load-bearing components, static calculation if necessary.
 - Observe the following installation instructions exactly and use all specified fixing points.
 - Only use fixing material approved for the wall/ceiling type.

- Install the door frame before making the suspended ceiling.
- The wall openings for outside air and exhaust air must be prepared accordingly and can be connected to the door frame air ducts.
- The ventilation unit is fixed exclusively to the door frame after completion of the suspended ceiling.
- The ventilation unit with door frame weighs approx. 480 kg (including contained water), so be sure to choose a suspension system that is suitable for the entire weight and material.
- Make sure that the unit can be connected to the pipework and to the mains supply.

Note regarding assembly sequence: First, the door frame is fixed to the ceiling and after completion of the suspended ceiling, the ventilation unit is inserted into the door frame and fixed into place. The door frame and ventilation unit each consist of 2 components that are mounted one after the other on the ceiling and wall. Make sure that the components are not mixed up and that they are mounted in the correct order.

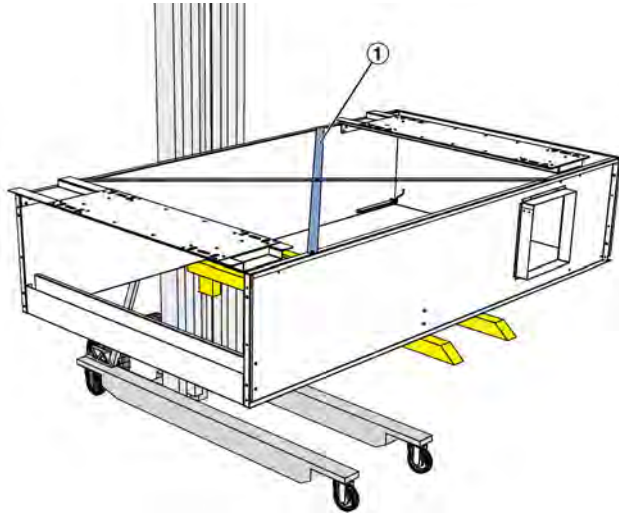


Fig. 29: Placing door frame component 1 on the assembly lift

1. ▶ Move the assembly lift to the place where the ceiling assembly is to be carried out. Place door frame component 1 on the assembly lift with the cross (Fig. 10 /1) facing upwards. Make sure that the lacquered surface of the door frame is not damaged. For protection, place e.g. cardboard between the lift and the device.

! DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

Attaching door frame component 1 to the ceiling

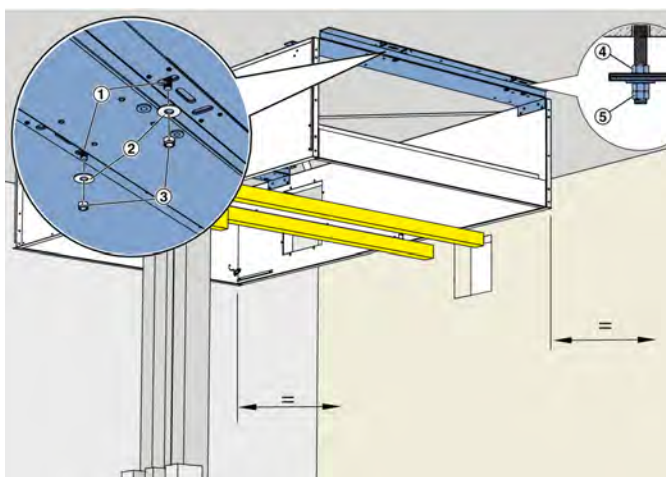


Fig. 30: Mark and drill fixing points

2. ▶ Lift component 1 to the ceiling with the lift and align it, ensuring that it is parallel to the walls.

Required fixing points for door frame component 1 (Fig. 13 and Fig. 14)

Ceiling - 8 suspension points 1 hole per slab
slab - group of 3 slotted holes

Mark the holes in the door frame on the ceiling with a pencil or felt-tip pen.



Mark all holes, so that if a hole cannot be drilled, e.g. because of a safety iron, another hole can be drilled next to it.

Lower the door frame again with the lift and drill holes in the ceiling.

Blow out the drill holes, mount the heavy-duty anchor and screw in the threaded rods and, if necessary, screw on one nut per threaded rod as a stop (Fig. 30 /4).

Move door frame component 1 back to the assembly position with the lift and fasten it to the threaded rods (Fig. 30 /1) with body washers (Fig. 30 /2) and nuts (Fig. 30 /3).

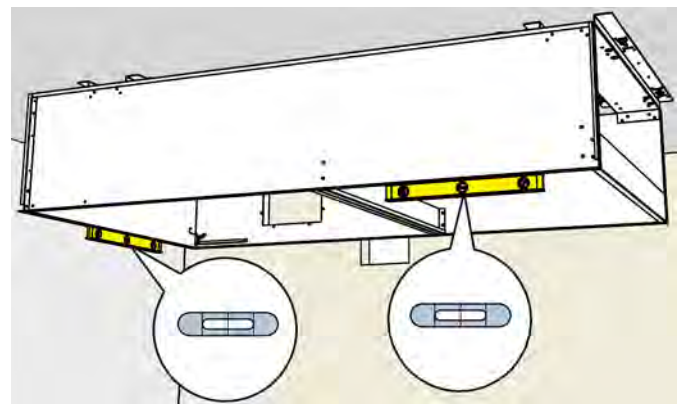


Fig. 31: Alignment of SA-D-HV

3. ▶ Align the device component in a horizontal position and tighten the nuts of all ceiling fixtures; the door frame component hangs freely suspended (not pressed against the ceiling) so that it can still be aligned later. Secure nuts with lock nuts (Fig. 30 /5).

Prepare component 2

4. ▶ Before assembly, transport the device component 2 to the assembly location.



Fig. 32: Place component 2 on assembly lift

5. ▶ Move the assembly lift (Fig. 17 /1) to the place where the ceiling assembly is to be carried out. Place component 2 on the assembly lift with the covers facing downwards. Make sure that the lacquered surface of the device is not damaged. For protection, place e.g. cardboard between the lift and the device.

! DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

Fix component 2 into place

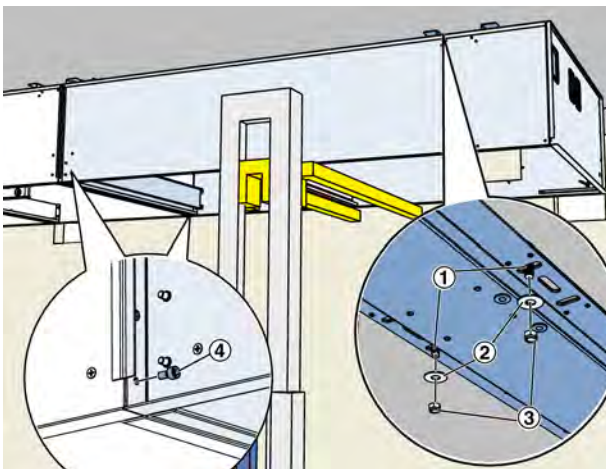


Fig. 33: Position component 2 next to component 1

6. ▶ Required fixing points for door frame component 2
 Component 1 - Component 2 is attached to component 1 with 6 screws.
 Ceiling slab - 4 suspension points

Position door frame component 2 with the lift next to door frame component 1 and align it flush, taking care to ensure that it is parallel to the walls.

Mark the holes in the door frame on the ceiling with a pencil or felt-tip pen.



Mark all holes, so that if a hole cannot be drilled, e.g. because of a safety iron, another hole can be drilled next to it.

Lower the door frame again with the lift and drill holes in the ceiling.

Blow out drill holes, install heavy-duty anchors and screw in threaded rods.

Move door frame component 2 back to the assembly position with the lift and fasten it to the threaded rods (Fig. 33 /1) with body washers (Fig. 33 /2) and self-locking nuts (Fig. 33 /3) so that it can still be moved somewhat.

7. ▶ Align both door frame components and connect them with six M5x10 screws (Fig. 33 /1).

Then align the entire door frame level and parallel to the walls.

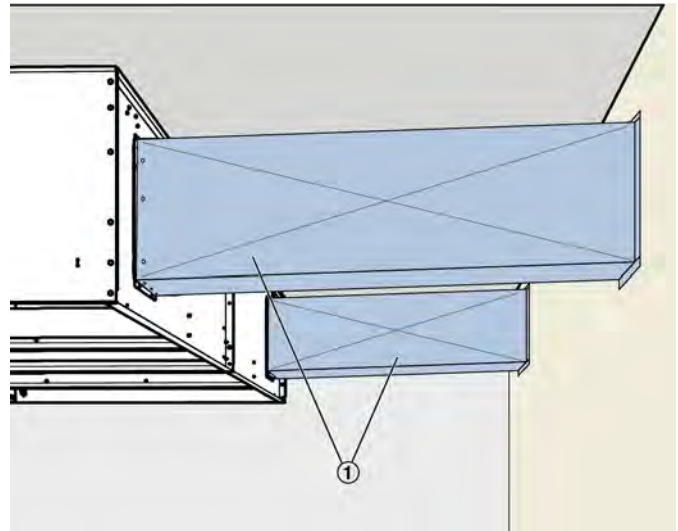


Fig. 34: Connecting the ductwork to the door frame

8. ▶ Make a duct (Fig. 34 /1) between the frame and the wall opening. In the process, make sure that the connections are tight. Condensation must be prevented by suitable measures, e.g. insulation of the pipes.

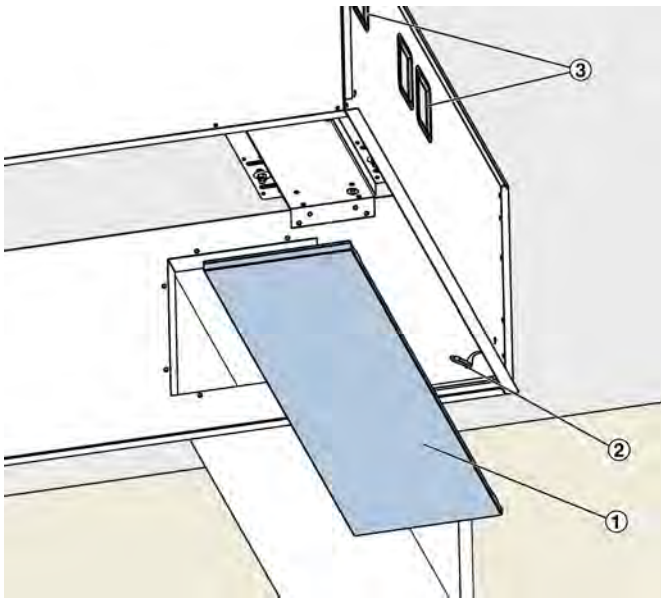


Fig. 35: Inserting the side panels

9. ▶ Hook the side panels (Fig. 35 /1) onto the safety cable (Fig. 35 /2) and insert them.



Preparing device assembly

For an easier installation of the ventilation unit (if necessary, also at a different point in time as the door frame installation), we recommend preparing the connections for water, electricity and communication and inserting them into the openings provided for this purpose on the door frame (Fig. 35 /3).

Installing the ventilation unit into the door frame

- Fix the ventilation unit only to the door frame.
- The connection options for piping, energy supply and communication must be prepared.

Note regarding the assembly sequence: Ventilation unit consists of 2 components that are inserted one after the other into the door frame. Make sure that the components are not mixed up and that they are mounted in the correct order.

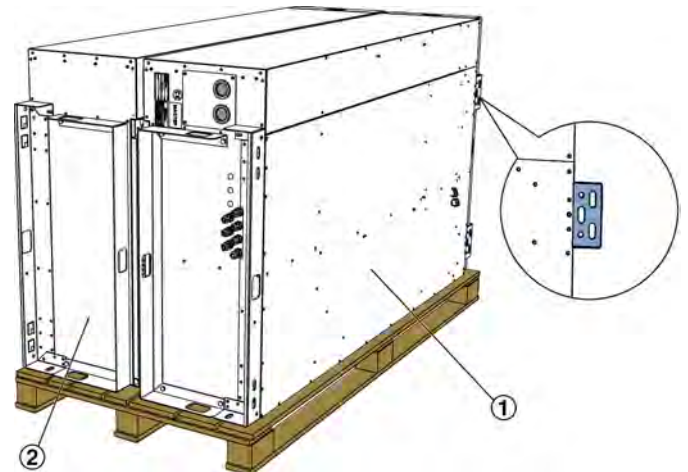


Fig. 36: Delivery state

- 1 Component 1 (assembled first)
- 2 Component 2

Prepare component 1

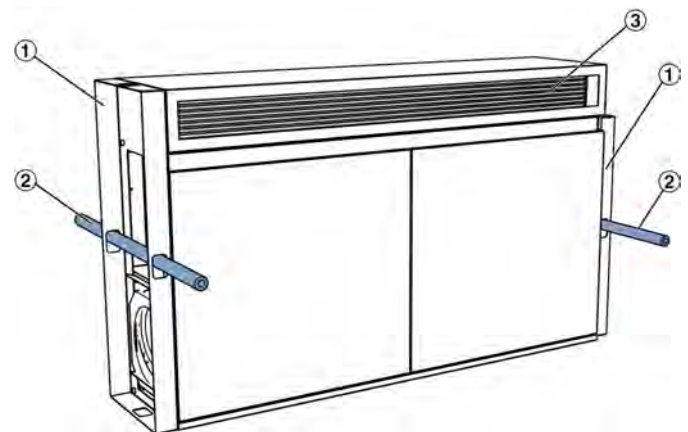


Fig. 37: Transport with transport aids

1. ▶ Before assembly, transport the device component 1 (Fig. 8 /1) to the assembly location. For this purpose, the device can be transported using the transport aids (Fig. 9 /1). For example, with round slings for forklift transport. Alternatively, tubes (Fig. 9 /2) (provided by others) can be inserted into the transport aids with which the unit can be lifted.

The supply air grilles (Fig. 9 /3) and cover strips are packed in one of the device components. Remove them and store them for later assembly.

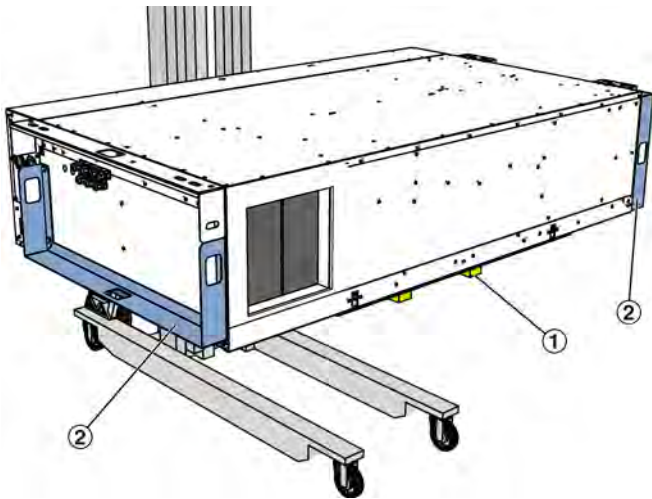


Fig. 38: Place component 1 on assembly lift

2. ▶ Move the assembly lift (Fig. 10 /1) to the place where the ceiling assembly is to be carried out. Place component 1 on the assembly lift with the covers facing downwards. Make sure that the lacquered surface of the device is not damaged. For protection, place e.g. cardboard between the lift and the device.

! DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

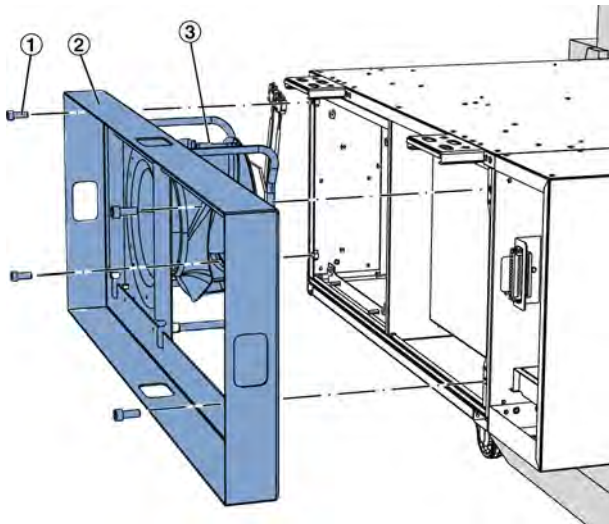


Fig. 39: Transport aids with fan

3. ▶ Remove the transport aids (Fig. 10 /2) from both ends of component 1. To do so, loosen the screws (Fig. 11 /1) and remove the transport aids. At the disconnection point, the fan (Fig. 11 /3) is also pulled out of the device. Store the fan and screws for later assembly. Screw the screws of the transport aid back into the unit.

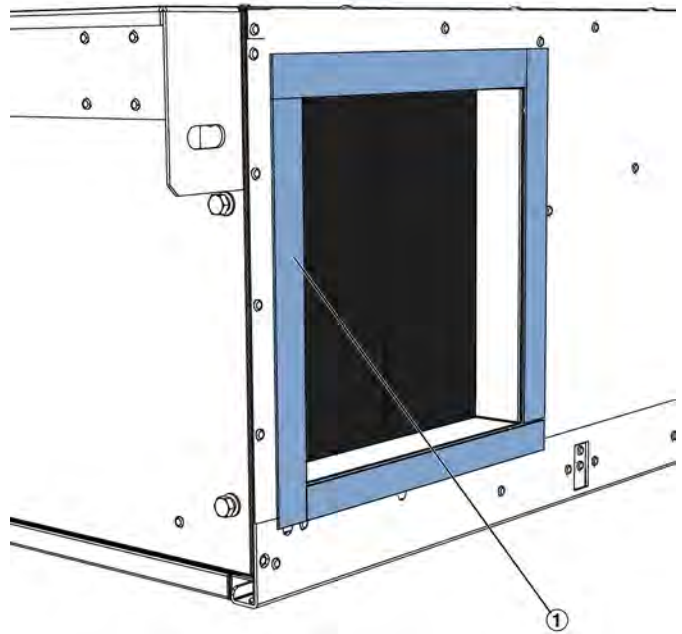


Fig. 40: Gluing the seal

4. ▶ Glue the Kompri sealing tape included in supply package around the air connection (Fig. 40 /1).

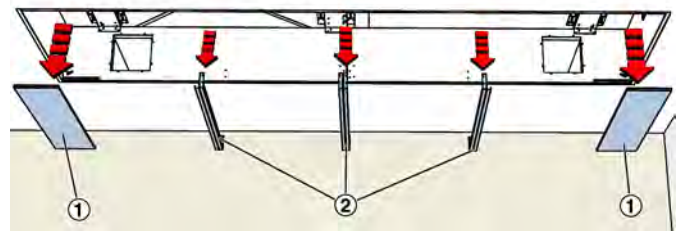


Fig. 41: Door frame installed in closed suspended ceiling

5. ▶ Remove the side panels (Fig. 41 /1) from the door frame and store them for later use. Dismantle the cross bars (Fig. 41 /2) by loosening the screws.

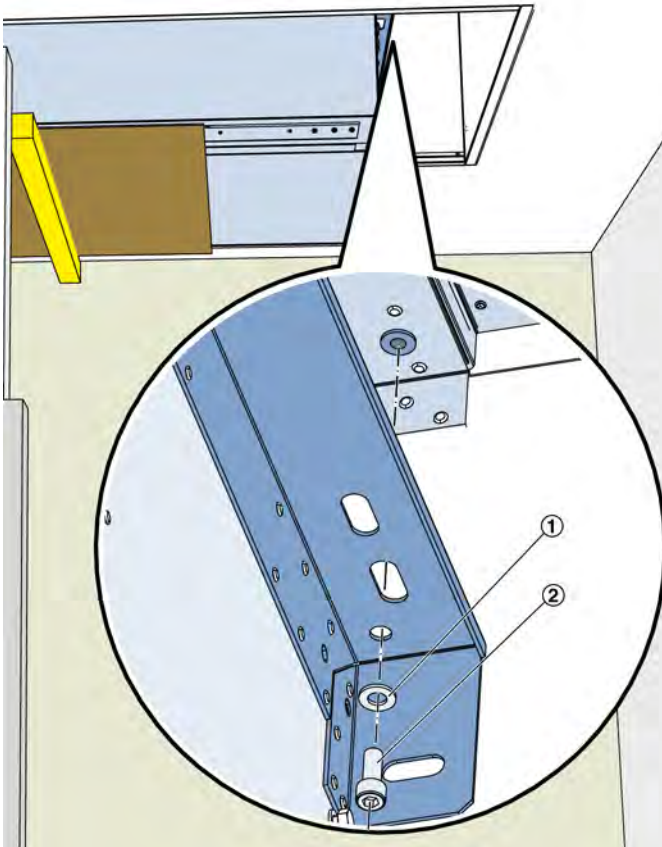


Fig. 42: Insert component 1 into the door frame and screw it into place.

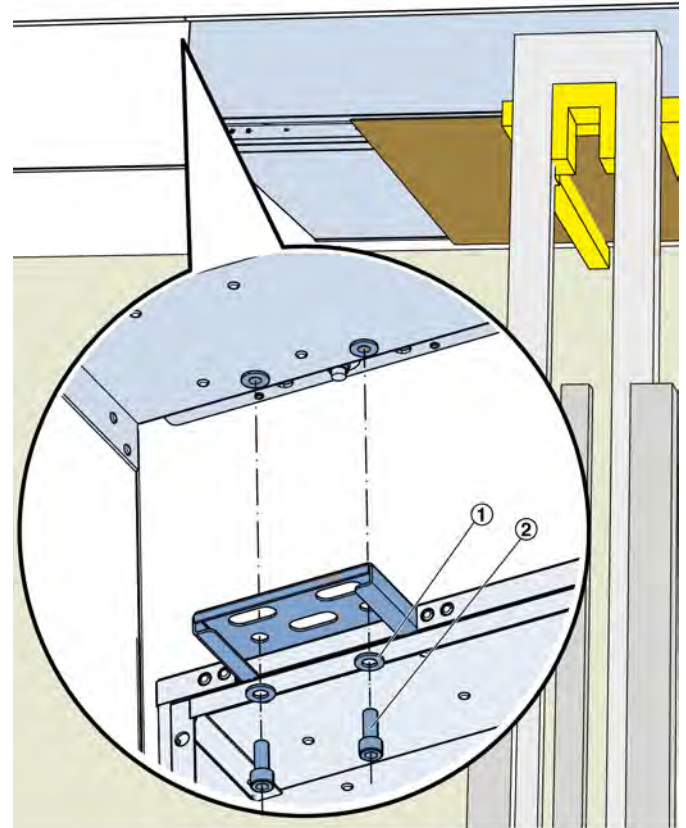


Fig. 43: Insert component 1 into the door frame and screw it into place.

6. ▶ Insert component 1 with the lift into the door frame and screw it to the door frame with a total of 6 M10x25 screws (Fig. 42 /1) and washers (Fig. 42 /1). Tighten the connecting screws between the ventilation unit and the frame with 47 Nm.
7. ▶ Carefully open the cover of component 1 adjacent to component 2, ↗ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .

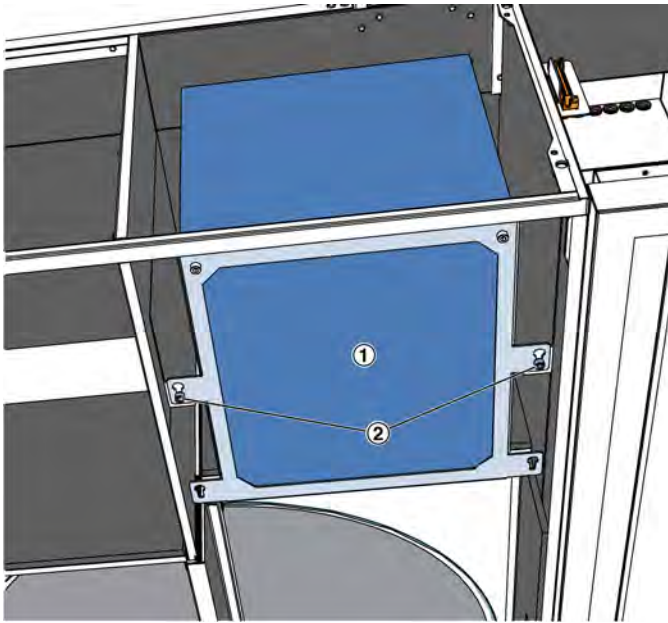


Fig. 44: Remove the sound attenuator from component 1

8. ▶ Dismantle the silencer (Fig. 16 /1) in component 1 by slightly loosening the two hexagon socket screws (Fig. 16 /2) and then pulling out the sound attenuator. Store the sound attenuator for later assembly.

Prepare component 2

9. ▶ Before assembly, transport the device component 2 to the assembly location.

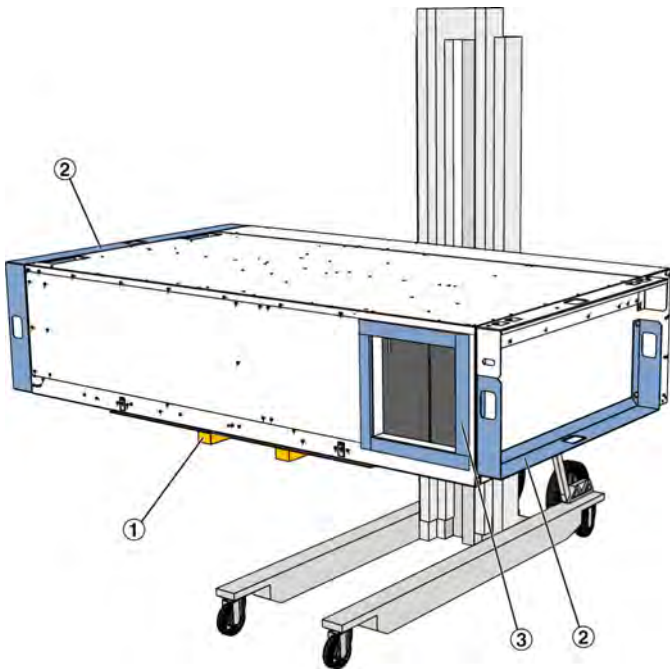


Fig. 45: Place component 2 on assembly lift

10. ▶ Move the assembly lift (Fig. 17 /1) to the place where the ceiling assembly is to be carried out. Place component 2 on the assembly lift with the covers facing downwards. Make sure that the lacquered surface of the device is not damaged. For protection, place e.g. cardboard between the lift and the device.

DANGER!

Place the device component with the centre of mass centrally on the assembly lift!

11. ▶ Remove the two transport aids (Fig. 17 /2) from component 2 and screw the screws back into the unit.
12. ▶ Glue the Kompri sealing tape included in supply package around the air connection (Fig. 17 /3).

Fix component 2 into place

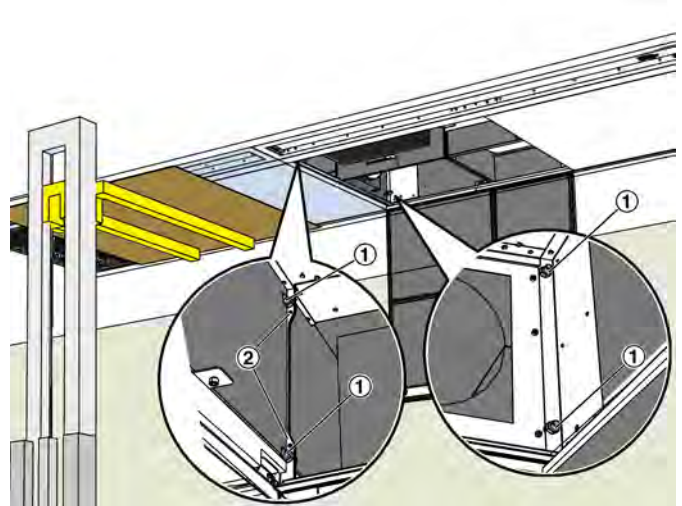


Fig. 46: Insert component 2 and screw it onto component 1.

13. ▶ Required fixing points for component 2

Component 1	- Component 2 is attached to component 1 with 4 screws and nuts.
Frame	- 2 suspension points (opposite side to component 1)

Position component 2 next to component 1 with the lift.

Using the holes (Fig. 18 /2) and the tip of the mounting iron, align the two components.

Loosely connect the two components with screws (Fig. 18 /1).

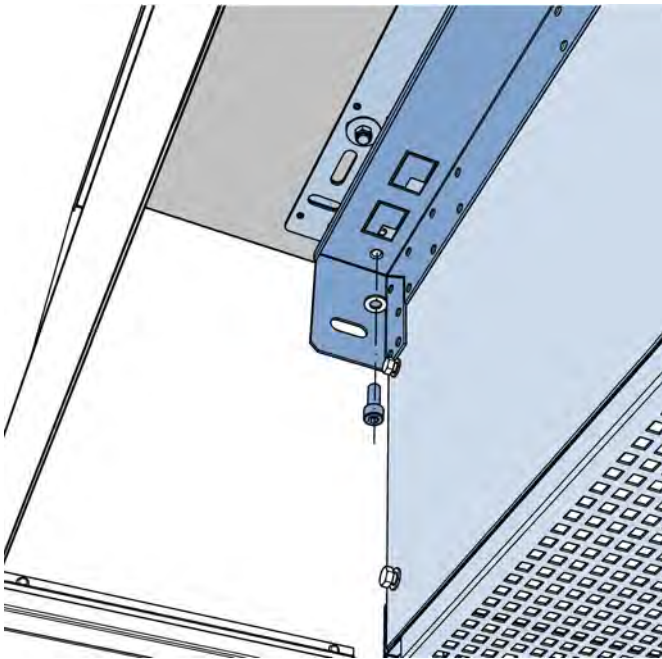


Fig. 47: Screw component 2 to the door frame.

14. ▶ Screw component 2 to the door frame with M10 x 25 screws and washers.
15. ▶ Tighten all fixing points and connecting screws. Tighten the connecting screws between the ventilation unit and the frame with 47 Nm.
16. ▶ Then carry out assembly steps 18 to 22, ↪ side 22
17. ▶ Electrical wiring, ↪ 4.6 'Making electrical connections' on page 33
18. ▶ Connecting the heat exchanger, ↪ 4.5 'Connecting the water pipes' on page 32
19. ▶ Closing the inspection access panel, ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54

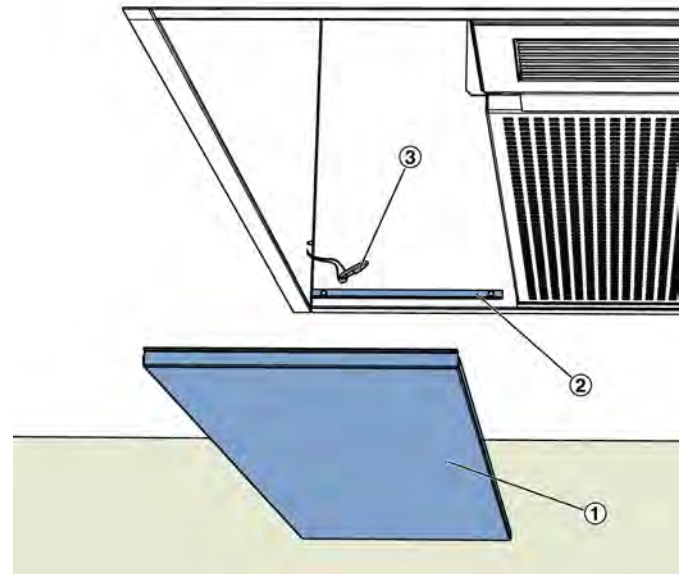


Fig. 48: Inserting the side panel

20. ▶ Hook the two side panels (Fig. 48 /1) onto the safety cables (Fig. 48 /3) and place them on the angle (Fig. 48 /3).

4.5 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.
- Control components such as valves and lockshields are pre-fitted by hand at the factory.
- Control valves are fitted in the return pipe, lockshields in the flow pipe; this improves the control behaviour.
- Devices that produce condensate (see heat exchanger layout) 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 on	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 on	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	Control valve	

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.

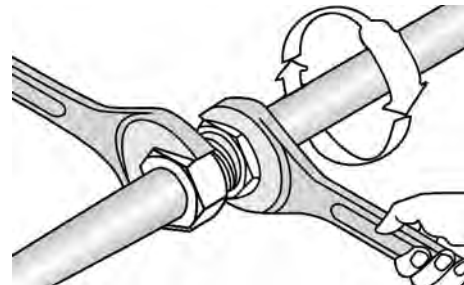


Fig. 49: Tightening the connection

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.

4.5.1 Water connections of SCHOOLAIR-D-HV

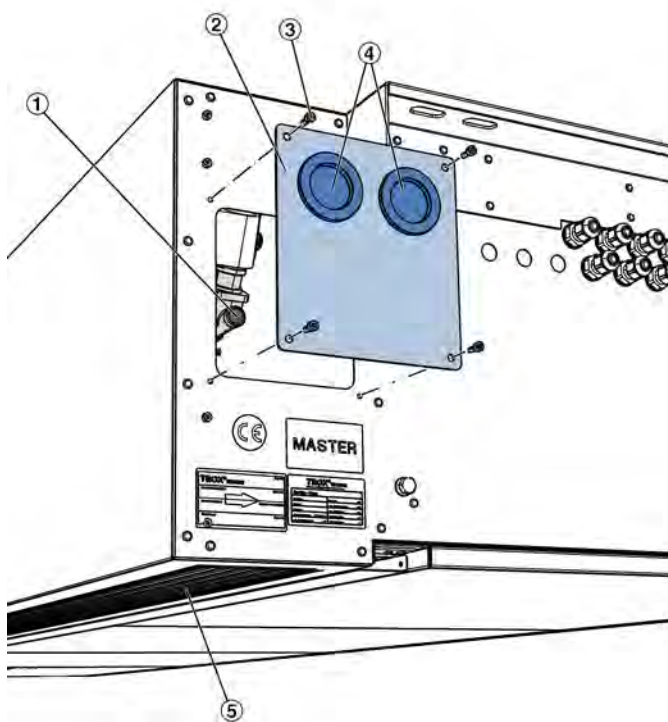


Fig. 50: Connecting the water pipes



Using flexible hoses (accessories) to establish the water connection will make it easier to clean and connect the heat exchanger.

For the water connection (Fig. 50 /1), place the flexible connection hoses or pipes through the casing bushing (Fig. 50 /4). To do so, cut them crosswise. For easier assembly, the cover (Fig. 50 /2) can be dismantled by loosening the screws (Fig. 50 /3). In addition, the supply air grille (Fig. 50 /5) can be removed.

4.6 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.

4.6.1 Connection for the supply voltage

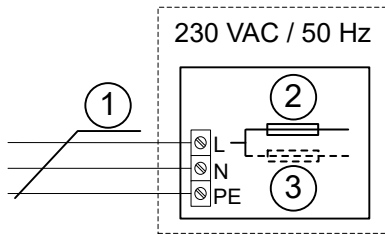


Fig. 51: Connection for the supply voltage

- 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 10 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.

Control panel and communication connection

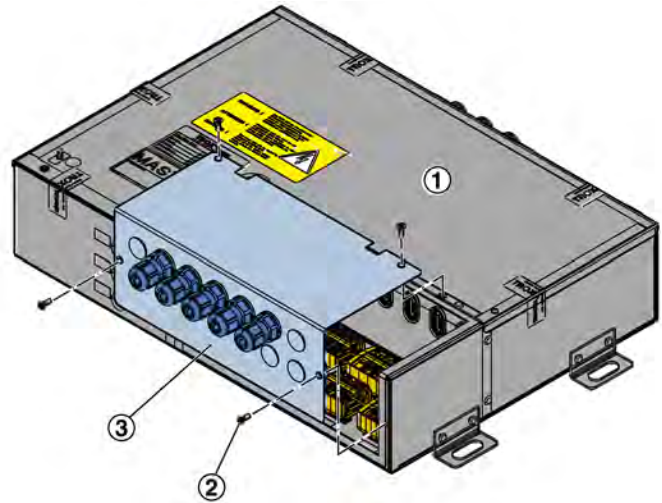


Fig. 52: Electrical connections of SCHOOLAIR-D

1. ▶ Take off the controls access panel (Fig. 52 /3); to do so, loosen the Phillips screws (Fig. 52 /2), then remove the panel.

Do not open the panel of the 230 V box (Fig. 52 /1).

2. ▶ Connect the ventilation unit according to the following information.

4.6.2 SCHOOLAIR-D control equipment box

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.

4.6.2.1 SCHOOLAIR-D-HV terminals

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.

Control panel and communication connection

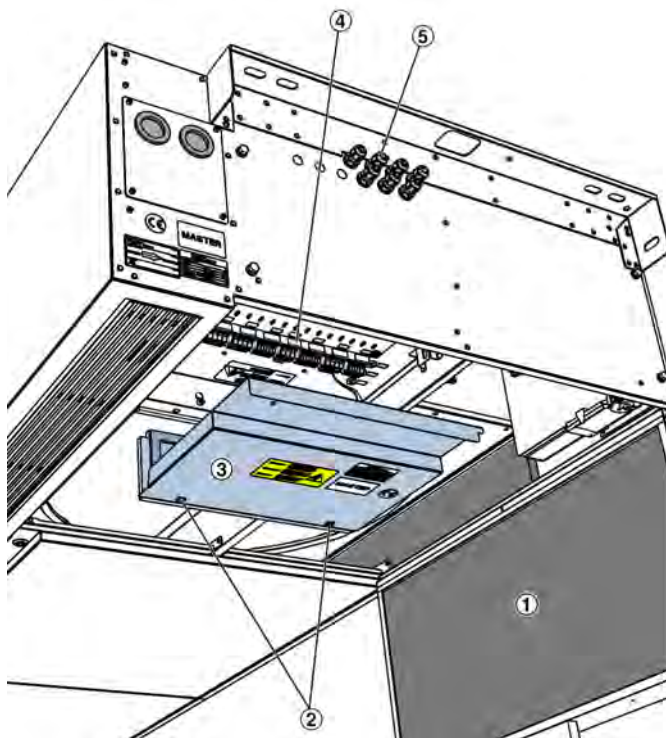


Fig. 53: Electrical connections of SCHOOLAIR-D-HV

1. ▶ Open the inspection access panel (Fig. 53 /1) of the ventilation unit ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .
2. ▶ Dismantle the controls access panel (Fig. 53 /3) by loosening the quarter-turn fasteners (Fig. 53 /2) and removing the panel.

! DANGER!

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

The 230 volt connection area below the connection terminals (Fig. 53 /4) must not be opened.

3. ▶ Connect the ventilation unit to the terminals (Fig. 53 /4) according to the following information. When doing so, lay the connection lines through the casing bushings (Fig. 53 /5) and lay a line reserve (approx. 30 cm) in the device.

4.6.3 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.

Schneider, digital

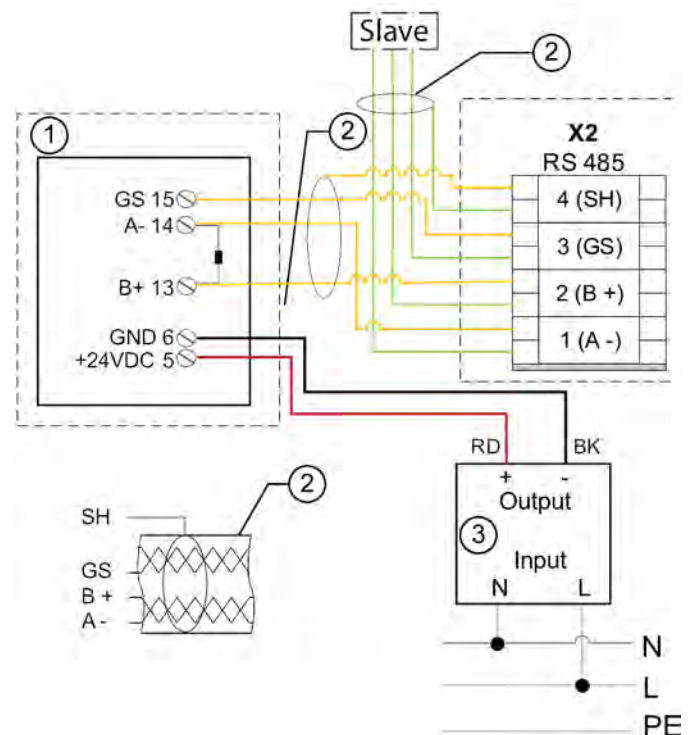


Fig. 54: Wiring of a digital control panel, type Schneider, to terminal X2

- 1 Control panel, surface mounted, type: TM172DCLWT, TROX order no. A00000086157
- 2 E.g., Unitronic BUS LD 2 × 2 × 0.22 (by others) (or equivalent, also by others)
- 3 Power supply unit, Traco Power, type TIW24-124, TROX Order no. : A000033832

All network connections via shielded cables.

Attention: For A- und B+, always use a twisted pair

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

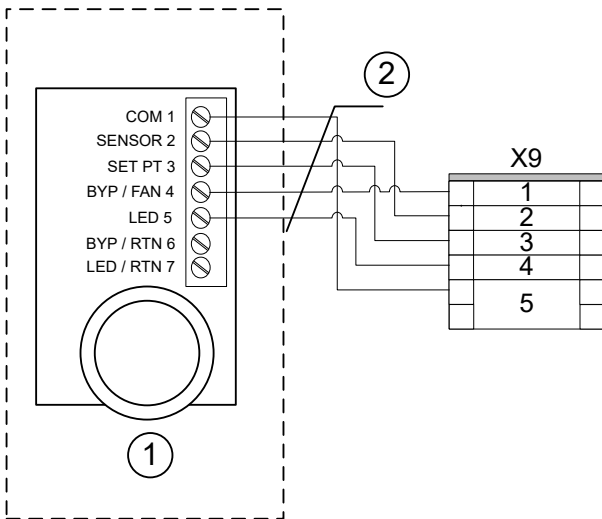


Fig. 55: Wiring of Honeywell control panel, 5-stage to terminal X9

- 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

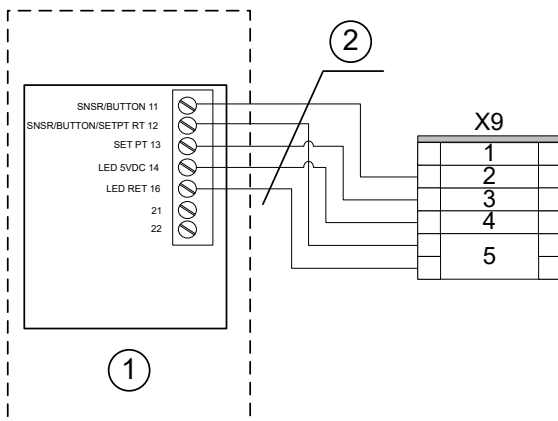


Fig. 56: Wiring of control panel STR 504 to terminal X9

- 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)

Thermokon, with selector switch, 5-stage

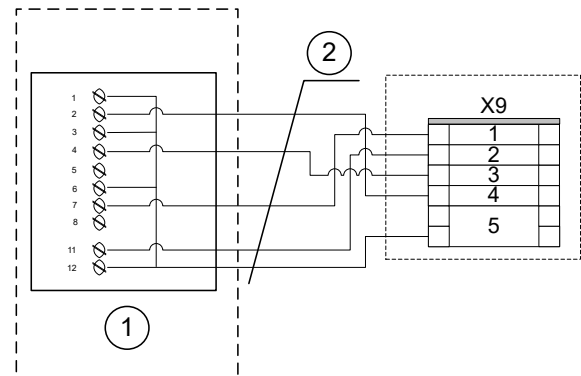


Fig. 57: Wiring of Thermokon control panel (5-stage) to terminal X9

- 1 Control panel with selector switch, for surface mounting, type WRF04 PSTD NTC20k 5k FS5 gn 5V SA, TROX order no. A00000082515
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch

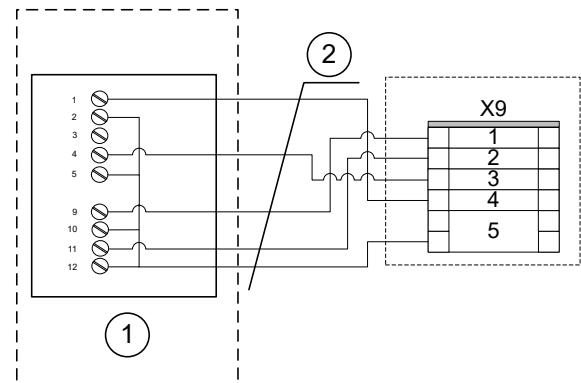


Fig. 58: Wiring of Thermokon control panel to terminal X9

- 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)

Thermokon, without selector switch, Berker S.1 or Q.3

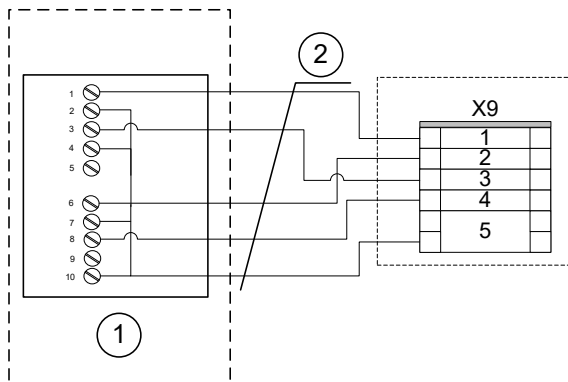


Fig. 59: Wiring of Thermokon control panel to terminal X9

- 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
- 1 Control panel without selector switch, for flush mounting, suitable for switch programme Berker Q.3, type WRF07 PTD NTC 20k BType6 5k gn, TROX order no. A00000081579
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch, without set-point value adjuster, Gira E2

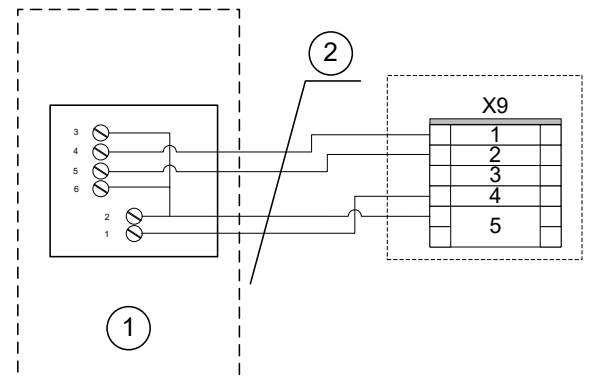


Fig. 61: Wiring of Thermokon control panel to terminal X9

- 1 Control panel without selector switch, for flush mounting, suitable for switch programme Busch Jäger Futura, type WRF06 TD NTC 20k, TROX order no. A00000081503
- 2 LiYCY 5 x 0.5 mm² shielded (by others)

Thermokon, without selector switch, Busch Jäger Futura

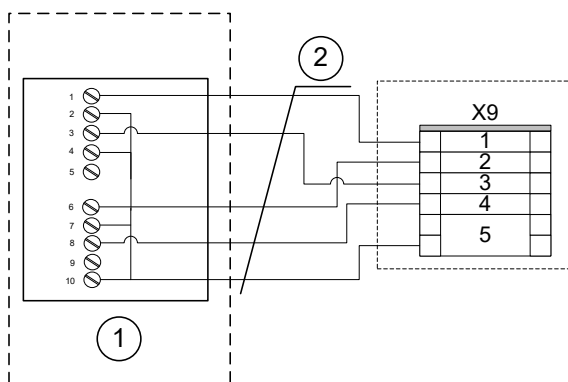


Fig. 60: Wiring of Thermokon control panel to terminal X9

- 1 Control panel without selector switch, for flush mounting, suitable for switch program 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)

4.6.4 Connection of external inputs and outputs

External switch inputs

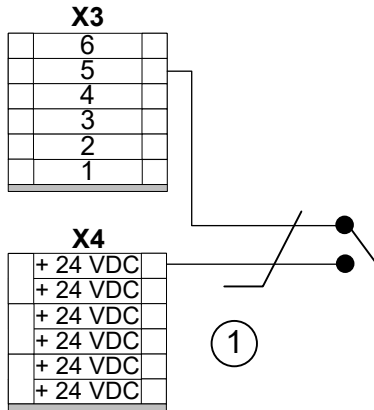


Fig. 62: Wiring example of window contact

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

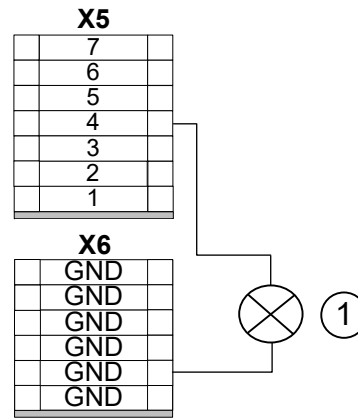


Fig. 63: Wiring example B alarm

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

4.6.5 Communication FSL-CONTROL III

4.6.5.1 Several controllers in a control zone

Up to 11 FSL CONTROL III devices can be connected in one control zone (1 master device and up to 10 slave devices).

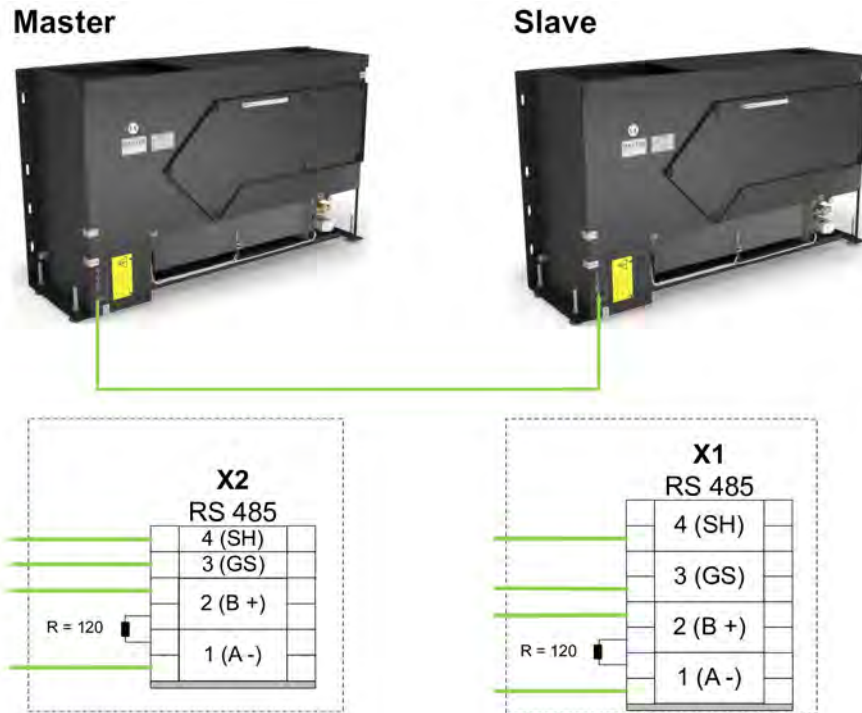


Fig. 64: FSL CONTROL III communication 2 devices



Fig. 65: FSL CONTROL III 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. 64 , Fig. 65

Master devices - Terminal block X2, terminals 1 and 2

Slave devices - Terminal block X1, terminals 1 and 2

Information on network connection

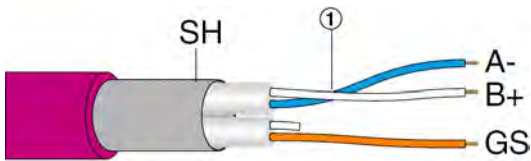


Fig. 66: Wiring

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

4.6.5.2 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

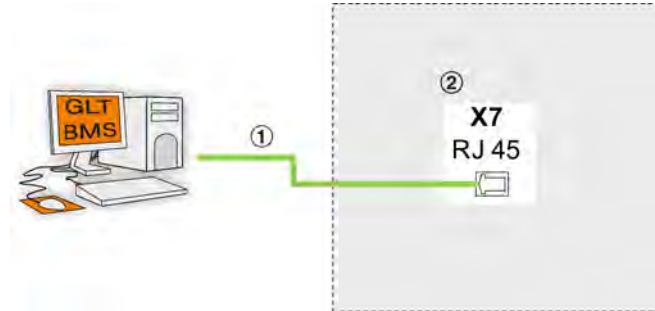


Fig. 67: Connection of central BMS to master device with Modbus TCP / BACnet IP

- 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

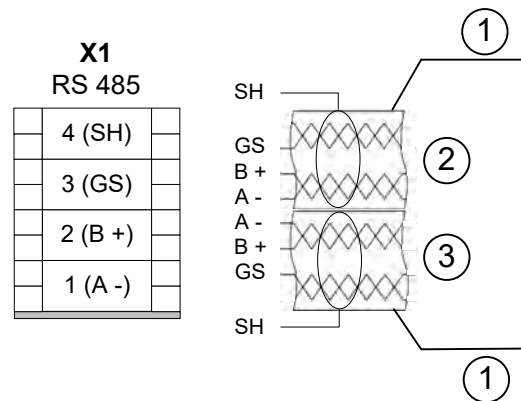
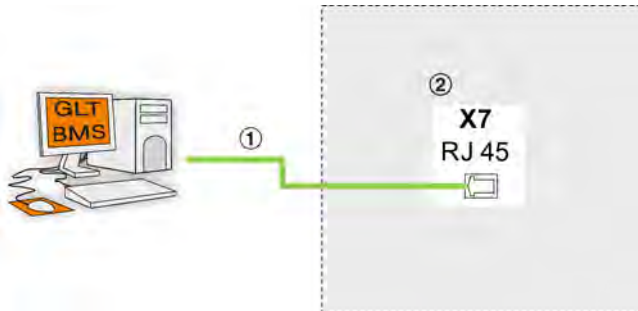


Fig. 68: Connection of central BMS to master device with Modbus RTU

- 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 0.22 mm² or equivalent,

Note: for A- und B+ always use a twisted pair

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

*Fig. 69: 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

4.6.5.3 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 FSL CONTROL III master controller in the factory.

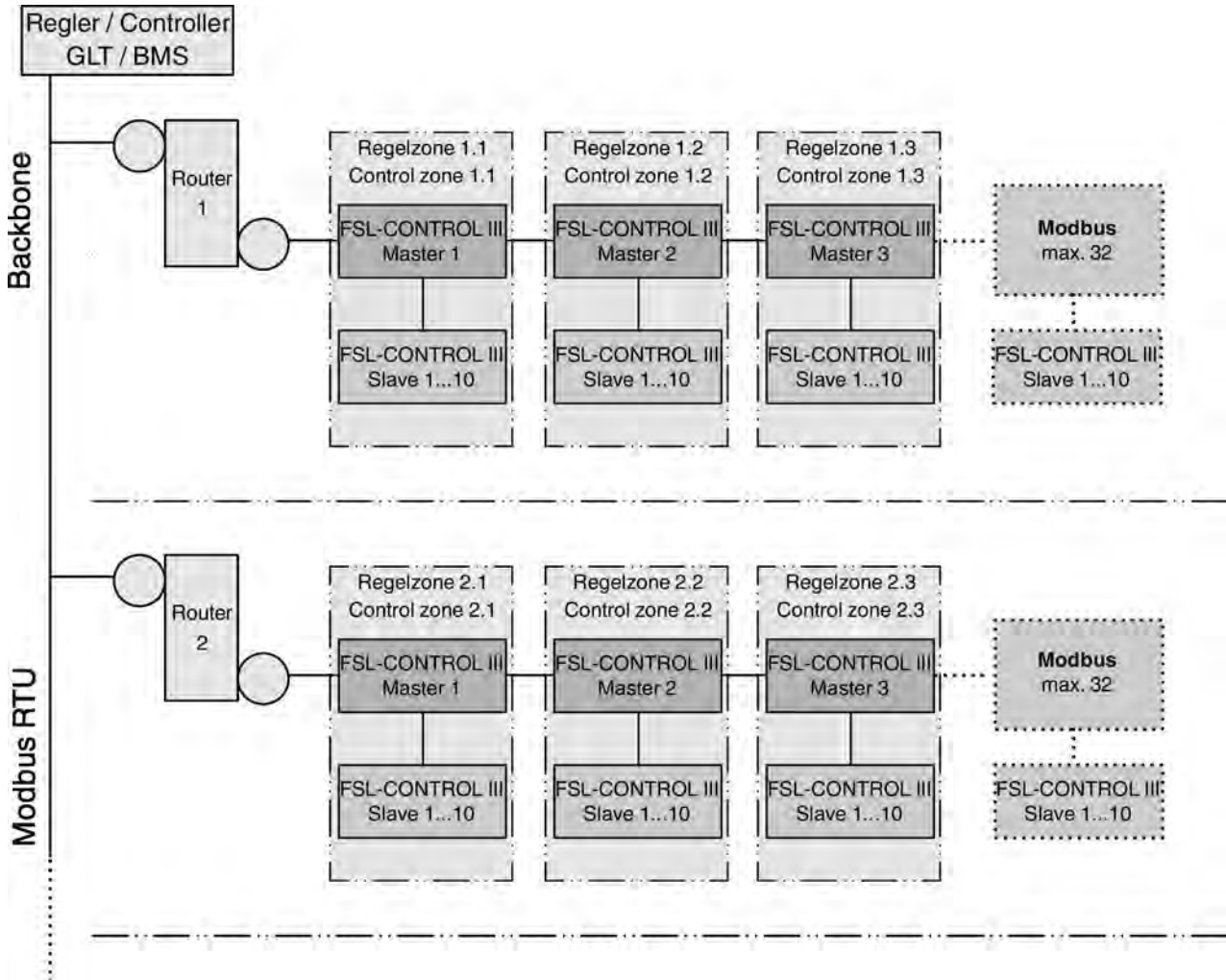


Fig. 70: FSL CONTROL III network configuration, example Modbus RTU; BACnet MS/TP

i 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 FSL CONTROL III system.

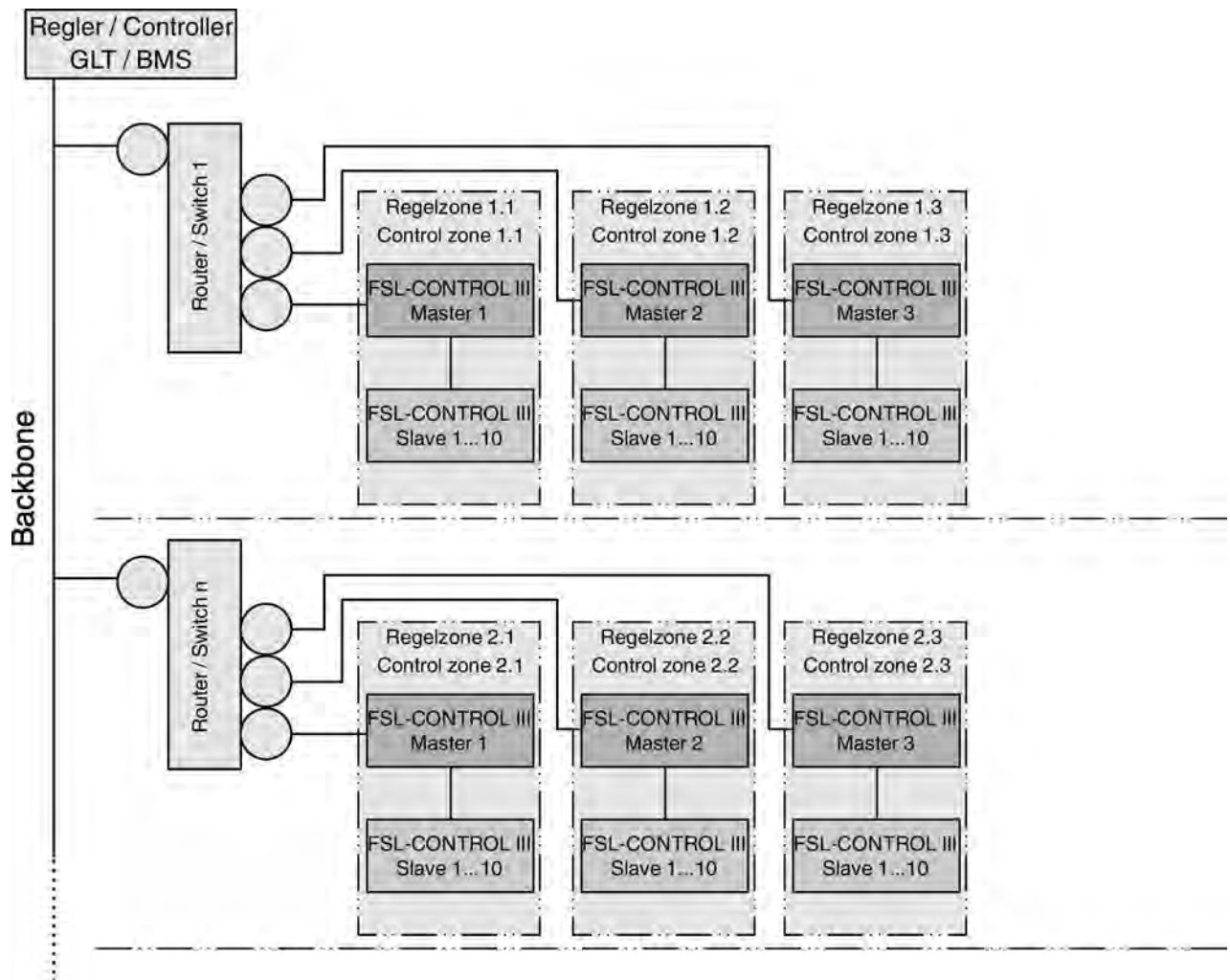


Fig. 71: FSL CONTROL III network configuration, Modbus TCP; BACnet IP

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 ↗
8.1.1.2 'Checking and replacing the filters' on page 51. 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

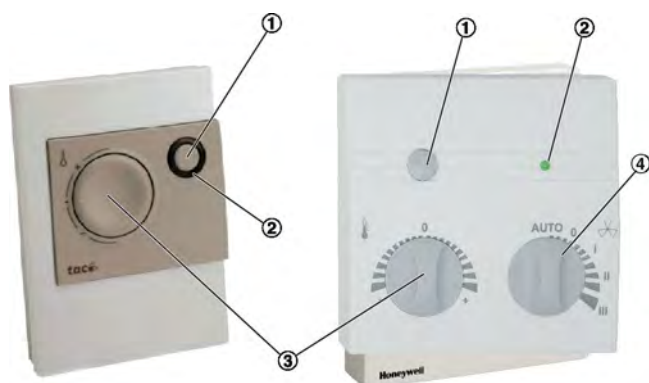


Fig. 72: Room control panels

- 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.

6.2 Digital control panel

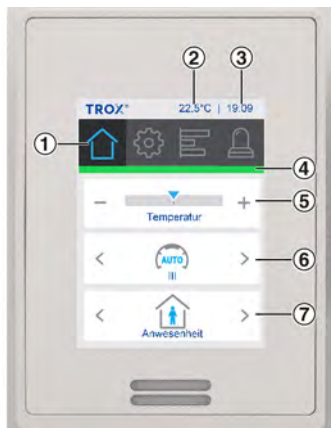







Fig. 73: Digital control panel

① menu		
	Starting screen	Display of all essential values and settings.
	Settings	Display of device name (configurable via settings) and current software version. Password-protected area for resetting the filter change display and activating the holiday circuit (operating mode = Off).
	Actual values	Display of the entire unit status, various settings and numerous measured values.
	Messages	Display of the alarm messages.
② Room temperature		
		Displays the actual room temperature.
③ Time		
	Displays the current time.	The display can be configured via the settings.
④ Air quality		
	Display of the indoor air quality in various gradations (CO ₂ - traffic light).	The display can be configured via the settings.

⑤ Temperature

	<p>You can change the setpoint temperature in increments of 1 K. You can change the default setpoint temperature from -3 K ... +3 K.</p> <p>Example:</p> <ul style="list-style-type: none"> ■ Default setpoint temperature: 21 °C ■ Minimum temperature you can set: 18 °C ■ Maximum temperature you can set: 24 °C 	<p>+ Increase of the setpoint temperature. (Room / extract air or supply air temperature, depending on the control strategy)</p> <p>– Reduction of the setpoint temperature. (Room / extract air or supply air temperature, depending on the control strategy)</p> <p>The control strategy can be configured via the settings.</p>
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⑥ Ventilation

	<p>Automatic ventilation; the fan speed depends on the controller.</p>	<p>Press < or > briefly to switch between the fan stages.</p>
	<p>Manual ventilation at the lowest speed (fan stage).</p>	
	<p>Manual ventilation control at a medium level.</p>	
	<p>Manual ventilation at the highest speed (fan stage).</p>	
	<p>Retreat - Operation with lowered airflow for quiet working.</p>	
	<p>Boost - Operation with maximum airflow for quick room flushing with fresh air.</p>	
	<p>Standby operation The ventilation units are switched off. No temperature maintenance.</p>	
	<p>Display of the activated fume cupboard switching (fan force)</p> <p>The stage corresponds to the fan stage of the supply air (configurable).</p> <p>Activation takes place via fume cupboard switching or central BMS. When the fume cupboard switching is active, operation via the control panel is not possible.</p>	

⑦ Operating mode		
	<p>Occupied The <i>'Occupied'</i> mode is used for occupied rooms.</p>	<p>Pressing < or > briefly switches between the operating modes <i>'Occupied'</i> <i>'Unoccupied'</i> and <i>'Occupied + V'</i> (optional).</p>
	<p>Unoccupied The <i>'Unoccupied'</i> mode is used for unoccupied rooms.</p>	<p>In case of <i>'Occupied'</i>, the device usually always ventilate at stage 1 at minimum. If the air quality is good, measured by means of an optional CO2 sensor, the device can run in the energy efficient secondary air mode. If the fresh air function (<i>'Occupied + V'</i>) is activated, the unit ventilates exclusively with outside air (fresh air).</p>
	<p>Fresh air <i>'Occupied + V'</i> (fresh air) is selected if the room is occupied and the fresh air function is active at the same time.</p>	
	<p>Standby <i>'Standby'</i> is selected if the room is not occupied and the ventilation units are not used to maintain the temperature, e.g. at night.</p>	<p><i>'Standby'</i> will only be displayed here. Activation is by means of Real Time Clock or by step switch (step 0).</p>

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 81

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

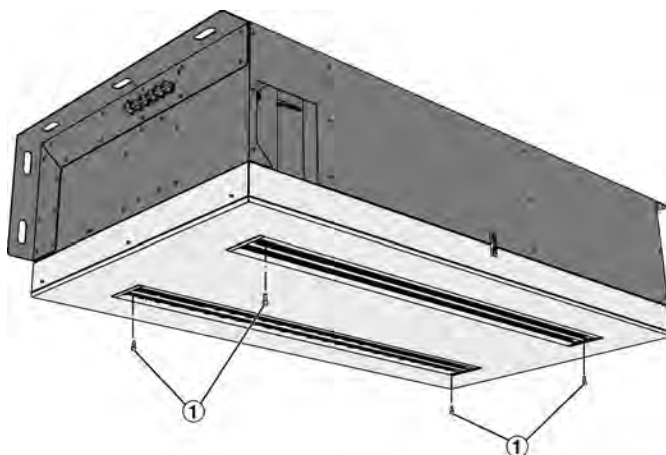
- Cleaning intervals to VDI 6022.
- Clean all surfaces with a damp (not wet) cloth.
- Use only common household cleaners, do not use any caustic, scouring or otherwise aggressive cleaning agents.

- 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.

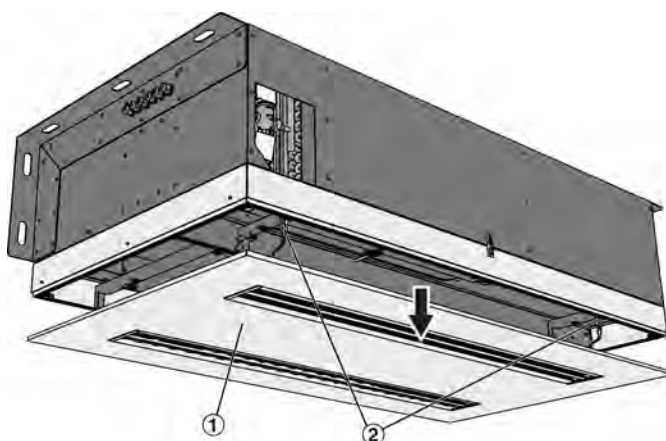
8.1 Maintenance

8.1.1 SCHOOLAIR-D

8.1.1.1 Removing the ceiling plate



1. ▶ Use an Allen key to remove the Allen screws (1) inside the slot diffusers.



2. ▶ The ceiling plate (1) is held in place by magnets. Pull the ceiling plate down, then unhook the three safety cables (2). Remove the ceiling plate and put it aside; protect it from possible damage.
 - ⇒ The ceiling plate has been removed.

8.1.1.2 Checking and replacing the filters

Personnel:

- Facility manager

Tool:

- Commercially available vacuum cleaner



Risk of allergic reaction to filter dust!

- Wear a dust mask when you change a filter.

Filters have to be changed after a year or if they no longer meet the technical or hygienic requirements.

Use only original filters. Replacement filters can be ordered from the manufacturer; state the filter material number in your order (see page 2). The filter material number is given in the replacement parts list ↗ 8.2 'Replacement parts list' on page 61 and on the filter itself.

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. ▶ Remove the ceiling plate of the ventilation unit ↗ on page 50 .

Checking and replacing the fine dust filter

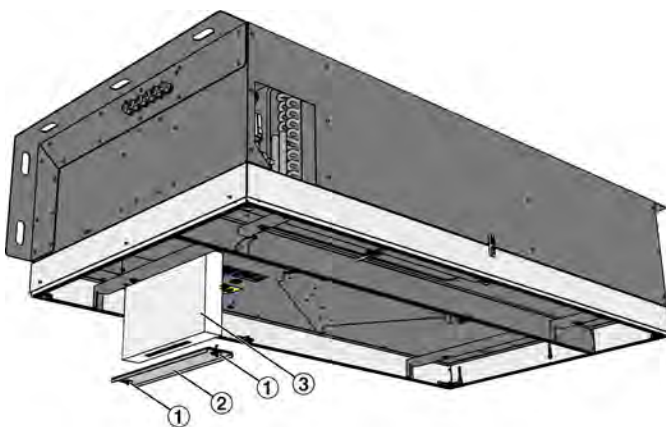


Fig. 74: Fine dust filter

3. ▶ Open the turn fasteners (Fig. 74 /1) with a quarter turn, then remove the filter chamber cover (Fig. 74 /2).

Pull the filter (Fig. 74 /3) out of the filter chamber.

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.



When you insert a filter, make sure that the two brackets (Fig. 74 /3) stick out from the filter chamber and that the text label is legible.

Once inserted, each filter must be flush with the surface as otherwise air will bypass the filter.

7. ▶ Insert the filter chamber cover and close the fasteners.

Checking and replacing the extract air filter pad

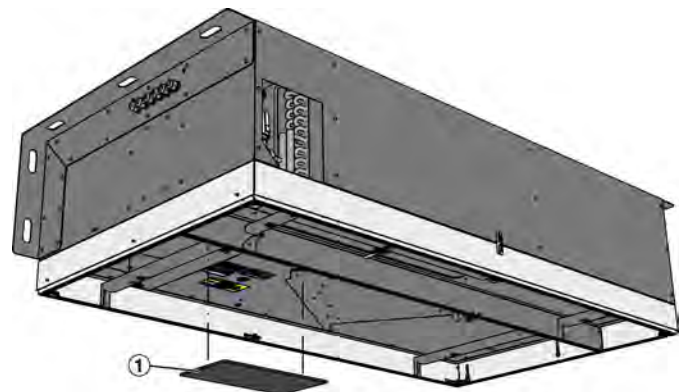


Fig. 75: Extract air filter (non-woven fibres)

8. ▶ Remove the filter pad (Fig. 75 /1) from below.
9. ▶ Check the filter pad for damage, contamination and deposits.
- 10.▶ Remove contamination in the ventilation unit with a commercially available vacuum cleaner.
- 11.▶ If a filter is intact, free of contamination and deposits, and if it has been used for less than 1 year, put it back (Velcro tape).
- If a filter has already been used for a year or if it does no longer meet the technical or hygiene requirements, replace it.
- 12.▶ Once you have checked and possibly replaced the filter, fix the ceiling plate again ↗ on page 54 .
- 13.▶ Switch on the power supply.

14. ▶ 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 change is complete.



Dispose of used filters with residual waste.

8.1.1.3 Cleaning the heat recovery unit

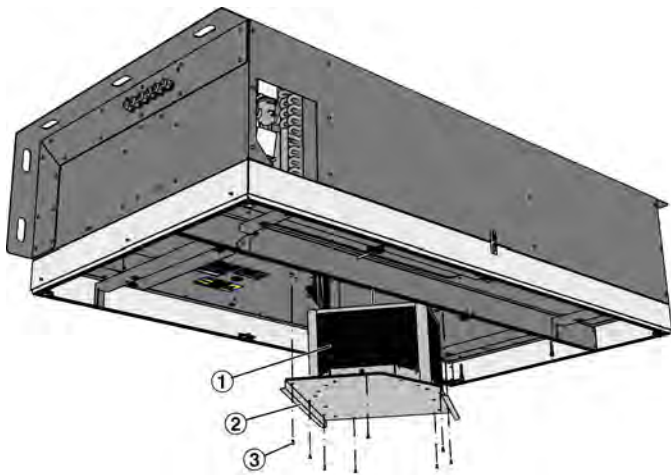


Fig. 76: Cleaning the recuperative heat exchanger

Personnel:

- Skilled qualified electrician

Tool:

- Commercially available vacuum cleaner

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. ▶ Remove the ceiling plate, ↪ on page 50 .
3. ▶ Loosen the screws (Fig. 76 /3) of the inspection access panel (Fig. 76 /2) for the heat exchanger (Fig. 76 /1), then pull the heat exchanger including the inspection access panel down and out of the unit.

4. ▶

! NOTICE!

Do not use any organic solvents (such as acetone or methanol) to clean the recuperative heat exchanger as these will damage it beyond repair.

! NOTICE!

Do not put the recuperative heat exchanger into a dishwasher.

Rinse the recuperative heat exchanger (Fig. 76 /3) with hot water (40 °C max.), e.g. by using a commercially available shower head.

5. ▶ Put the recuperative heat exchanger into an upright position and let it dry out over night.
6. ▶ Remove contamination in the ventilation unit with a commercially available vacuum cleaner.
7. ▶ Place the recuperative heat exchanger onto the rails and push it back into the opening, then fix the inspection access panel with screws.
8. ▶ Fix the ceiling plate again, ↪ on page 54 .
9. ▶ Switch on the power supply.

⇒ The recuperative heat exchanger has been cleaned.

8.1.1.4 Cleaning the heat exchanger and condensate drip tray

Personnel:

- Facility manager

Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

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. ▶ Remove the ceiling plate, ↗ on page 50

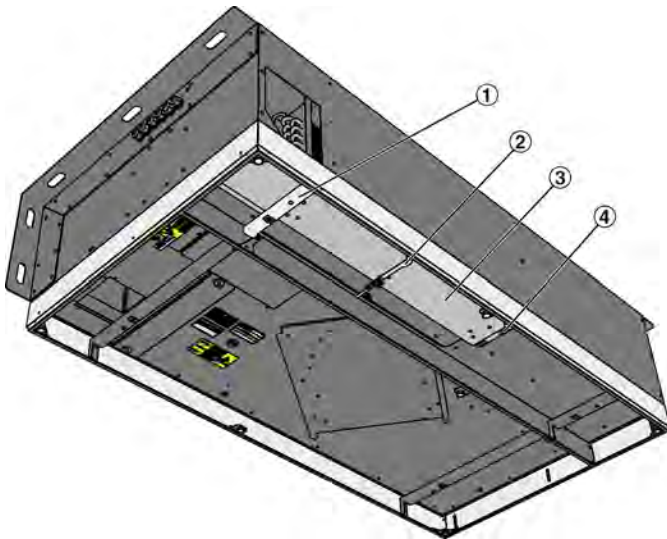


Fig. 77: Removing the condensate drip tray

3. ▶ Remove the cross bar (Fig. 77 /1).
4. ▶ Remove the supply air temperature sensor (Fig. 77 /2) with the holder.
5. ▶ Loosen the turn fasteners (Fig. 77 /4) to remove the condensate drip tray (Fig. 77 /3).

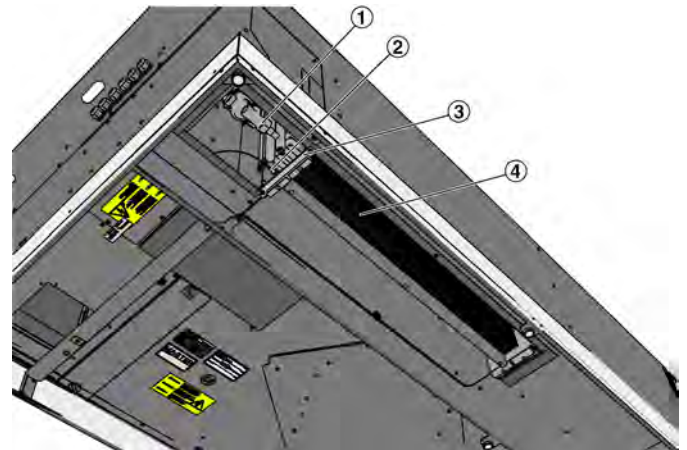


Fig. 78: Removing the heat exchanger

6. ▶ Remove the protective earth conductor (Fig. 78 /2) from the heat exchanger.
7. ▶ Depressurise the water-side connections (Fig. 78 /1) and disconnect the pipes from the heat exchanger.



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



CAUTION!

Danger of injury!

As soon as you loosen the heat exchanger bracket, the heat exchanger may fall down. Be sure to support the heat exchanger while you loosen any screws. It is best to ask someone to give you a hand.

8. ▶ Loosen the two Phillips screws on the heat exchanger fixing bracket (Fig. 78 /3), then remove the fixing bracket and pull the heat exchanger from below out of the casing.

Cleaning the heat exchanger

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



NOTICE!

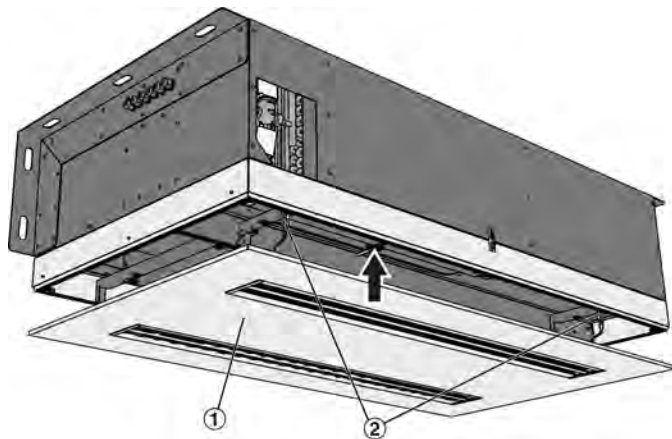
Be careful to not damage the fins of the heat exchanger.

Cleaning the condensate drip tray

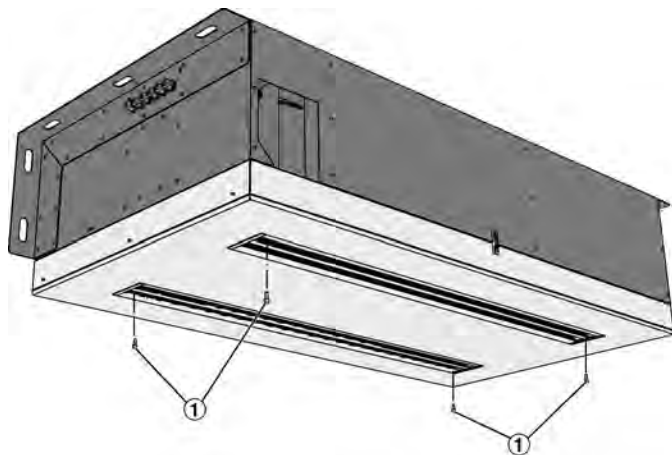
10. ▶ Clean the condensate drip tray (Fig. 77 /3) with a commercially available cleaner or disinfectant.
11. ▶ Reinstall the heat exchanger with the condensate drip tray by following the steps in reverse order. Fix the temperature sensor and the wires.

- 12. ▶ If necessary, refill the water system (operating pressure) and check for leaks.
- 14. ▶ Switch on the power supply.
 - ⇒ Cleaning of the heat exchanger and condensate drip tray is complete.

8.1.1.5 Fixing the ceiling plate



- 1. ▶ Hook the three safety cables (2) of the ceiling plate (1) into the casing. Press the ceiling plate from below onto the casing until it is kept in place by the magnets.



- 2. ▶ Fix the ceiling plate with the Allan screws (1) to the casing; to do so, insert the screws through the slot diffusers.
 - ⇒ The ceiling plate has been fixed.

8.1.2 SCHOOLAIR-D-HV

8.1.2.1 Opening/closing the inspection access panel

Opening the inspection access panel

Tool:

- TROX special key or Allen key size 10

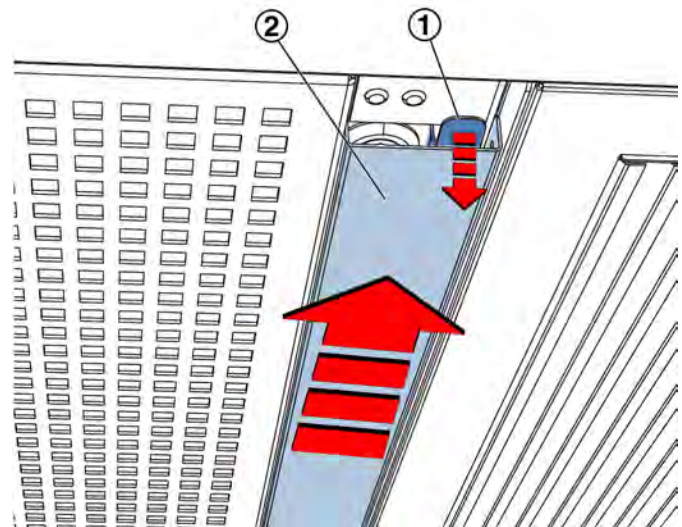


Fig. 79: Releasing the cover strip

- 1. ▶ On the outside of the device, engage the cover strip on the side and press down the tab (Fig. 79 /1). Then push the cover strip outwards and remove it. Store the cover strip for later assembly in such a way that it is not damaged.

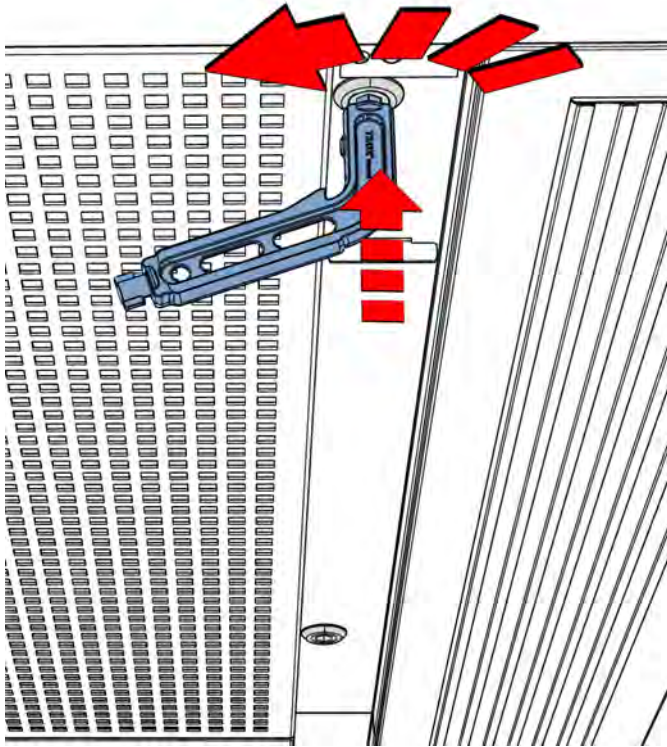


Fig. 80: Opening the inspection access panel lock

2. ▶



CAUTION!

Risk of injury from falling inspection access panel

To prevent the inspection access panels from opening in an uncontrolled manner, the inspection access panels have a safety latch closure.

To open the inspection access panel, insert the TROX special key on both locks and turn it 90° anticlockwise.

⇒ The inspection access panel falls into the safety latch.

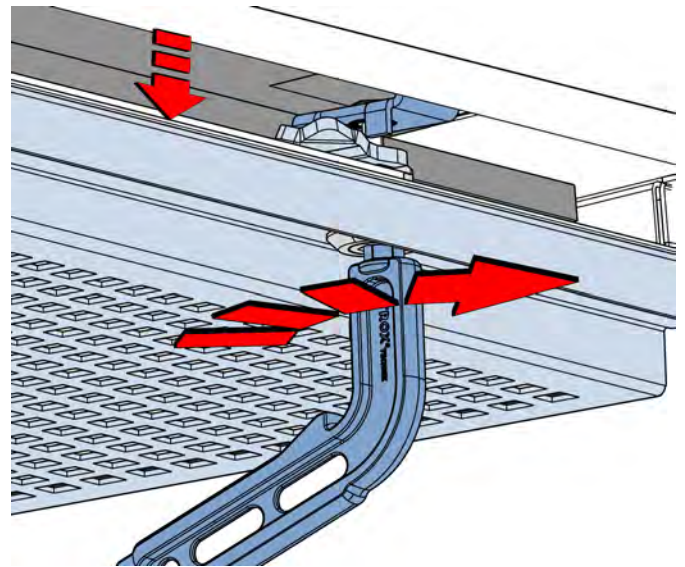


Fig. 81: Inspection access panel lock with safety latch

3. ▶ Hold the inspection access panel by hand and turn the catch with the safety tab back in the opposite direction (clockwise). Open the inspection access panel carefully by hand by about 90°. Do not let the lid fall!

Closing the inspection access panel.

Tool:

- TROX special key or Allen key size 10

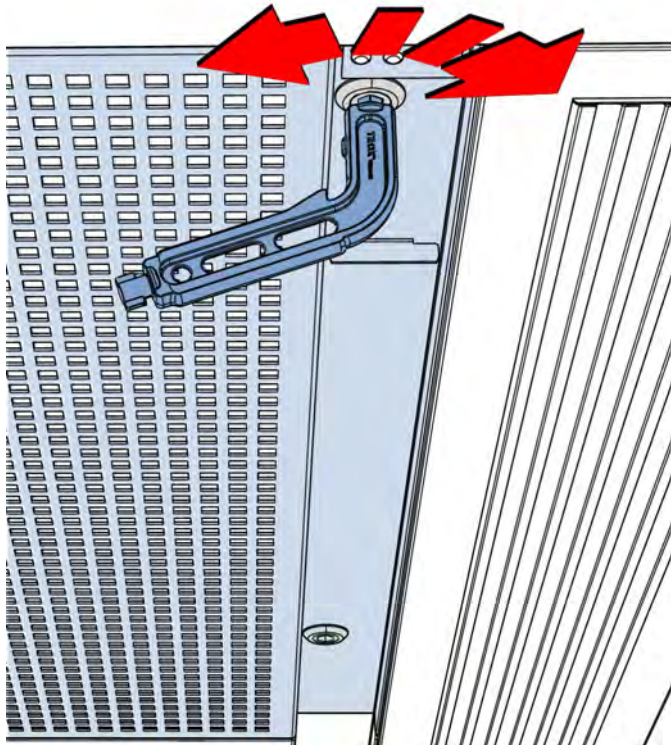


Fig. 82: Closing the inspection access panel.

1. ▶ Close the inspection access panel by hand and first close the safety tab with the TROX special key. Then close the second closure.

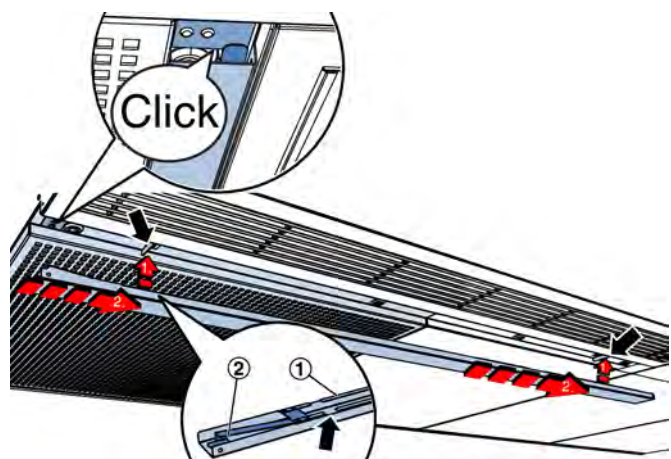


Fig. 83: Attaching the cover strip

2. ▶ Fit the cover strip (Fig. 83 /1) on the inspection access panel in the position shown and push it towards the centre of the device until the locking spring (Fig. 83 /2) audibly clicks into place.

8.1.2.2 Access to the service interface

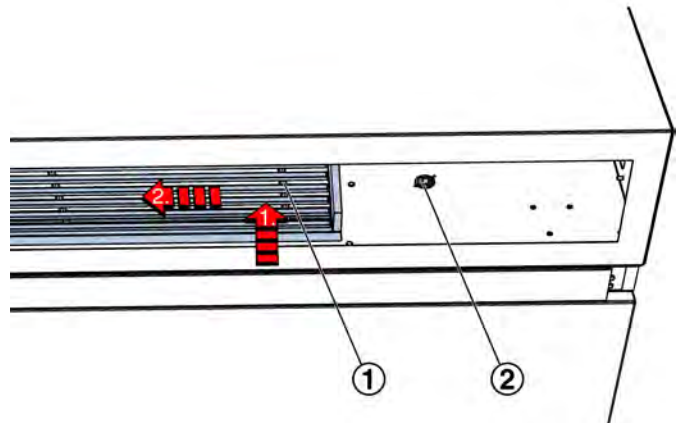


Fig. 84: Service interface

The service interface (RJ45) is located behind the supply air grille of the right half of the device. To make them accessible, lift the right grille slightly and slide it to the left.

8.1.2.3 Checking and replacing filters

Personnel:

- Facility manager

Tool:

- Commercially available vacuum cleaner

⚠ CAUTION!

Risk of allergic reaction to filter dust!

- Wear a dust mask when you change a filter.

Filters have to be changed after a year or if they no longer meet the technical or hygienic requirements.

Use only original filters. Replacement filters can be ordered from the manufacturer; state the filter material number in your order (see page 2). The filter material number is given in the replacement parts list 8.2 'Replacement parts list' on page 61 and on the filter itself.

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. ▶ Open the inspection access panel (Fig. 86 /2) of the ventilation unit ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .

Checking and replacing the fine dust filter

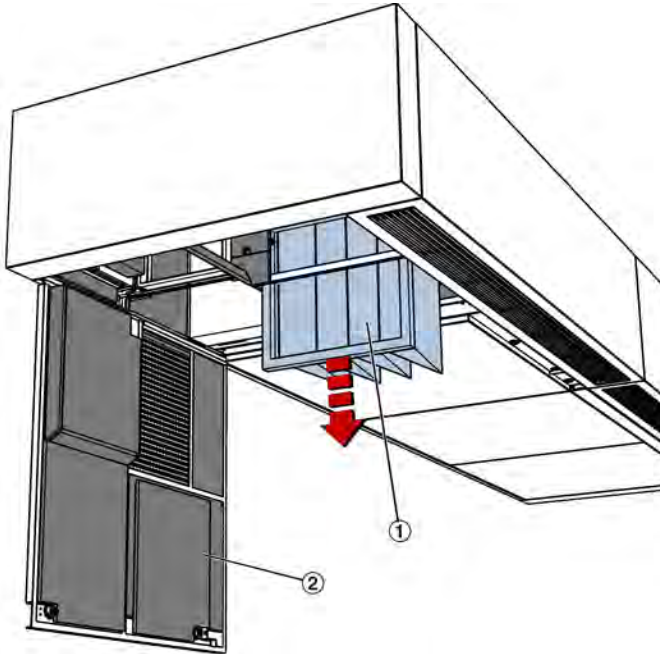


Fig. 85: Fine dust filter

3. ▶ Pull the filter (Fig. 74 /1) out of the filter chamber.
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.

Checking the extract air filter and replacing it

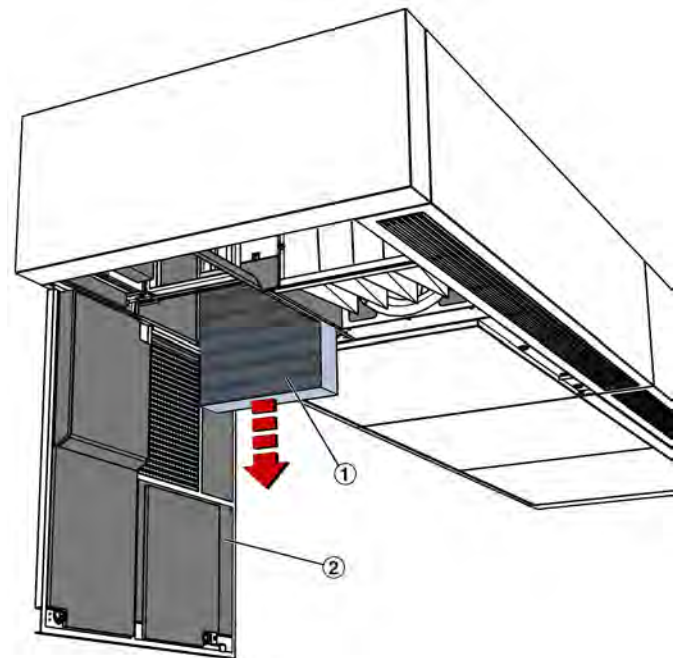


Fig. 86: Extract air filter

7. ▶ Pull the extract air filter (Fig. 86 /1) down and out.
 8. ▶ Check the filters for damage, contamination and deposits.
 9. ▶ Remove contamination in the ventilation unit with a commercially available vacuum cleaner.
 10. ▶ If a filter is intact, free of contamination and deposits, and if it has been used for less than 1 year, put it back.
- If a filter has already been used for a year or if it does no longer meet the technical or hygiene requirements, replace it.
11. ▶ After changing the filter, close the inspection access panel of the ventilation unit again ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .
 12. ▶ Switch on the power supply.
 13. ▶ 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 change is complete.



Dispose of used filters with residual waste.

8.1.2.4 Rotary heat exchanger, cleaning

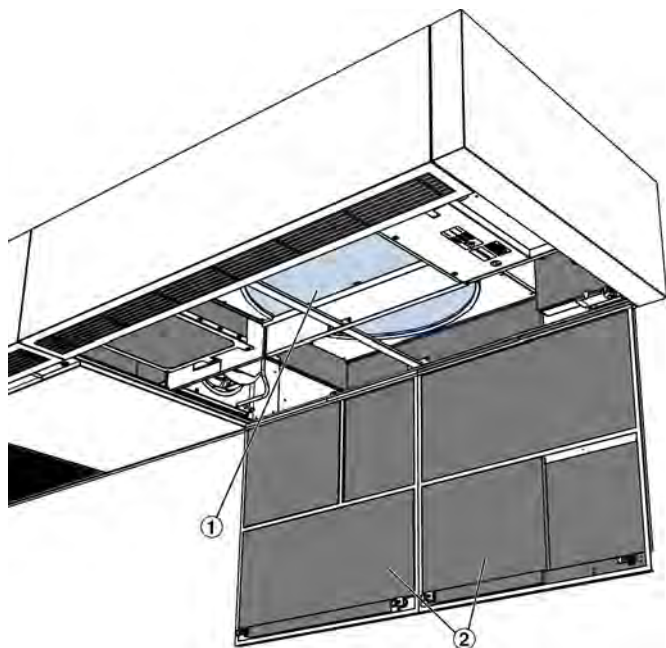


Fig. 87: Rotary heat exchanger, cleaning

Personnel:

- Skilled qualified electrician

Tool:

- Commercially available vacuum cleaner with brush

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. ▶** Open the inspection access panels (Fig. 87 /2) of the ventilation unit ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 .
- 3. ▶** Maintenance work according to table below.
- 4. ▶** Closing the inspection access panels (Fig. 87 /2) ↪ 8.1.2.1 'Opening/closing the inspection access panel' on page 54 ..
- 5. ▶** Switch on the power supply.
 - ⇒ The rotary heat exchanger has been cleaned.

Maintaining the rotary heat exchanger

Interval	Maintenance work	Personnel
Every 12 months	Visually check the rotary heat exchanger for foreign matter, contamination, hygienic condition, damage and corrosion. Clean if necessary.	Instructed person
	Visual inspection and turning of the rotor by hand	Instructed person
	Centre seal - Wear, contamination, foreign matter and contact. Clean if necessary.	
	Perimeter seal - Wear, contamination, foreign matter and contact. Clean if necessary.	
	Rotor - Unbalance and lateral runout.	
	Storage area - Check for noises or sluggishness.	
	Drive belt - Check the drive belt for wear and tension. Change in case of wear or damage or at the latest 3 years after commissioning and continuously every 3 years.	
Belt pulley - Contamination, damage and corrosion		
	Functional test Switch on the rotor drive with the aid of the software ↪ Installation and configuration instructions for single room control system FSL-CONTROL III.	HVAC technician
	Actuator - Smooth running	
	Storage area - Bearings for overheating, vibration and running noise.	
	Rotor - Alignment, smooth running, unbalance, lateral runout	
	Check terminals for a firm seat	HVAC technician

8.1.2.5 Cleaning the heat exchanger

Personnel:

- Facility manager

Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

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.

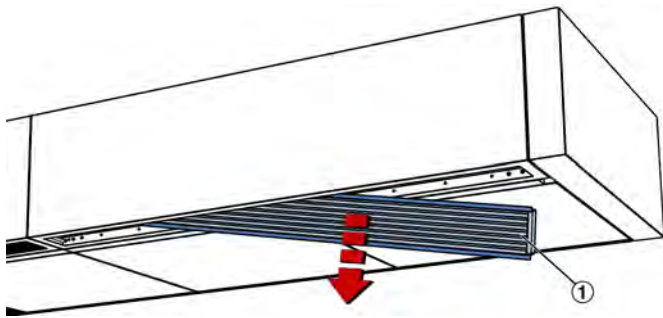


Fig. 88: Disassembly of the supply air grille

2. ▶ Lift the supply air grille (Fig. 88 /1) slightly, turn it and remove it. Store safely for later assembly.

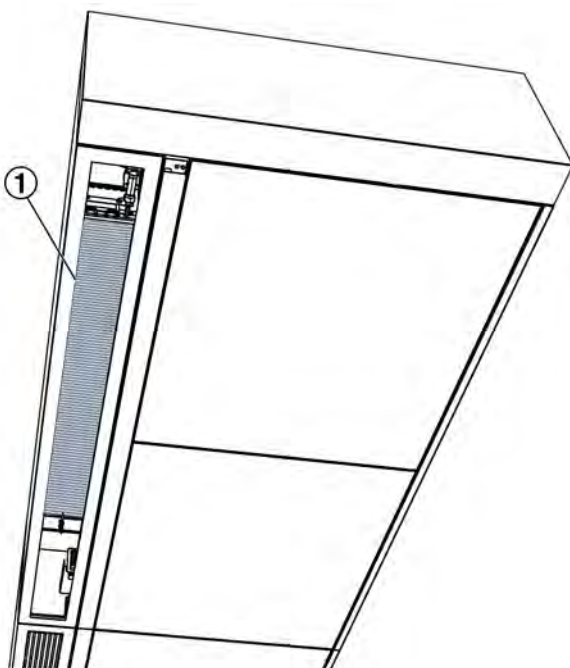


Fig. 89: Vacuum the heat exchanger

3. ▶ If there is little dirt, the fins of the heat exchanger can be cleaned by suction. In this case, it is not necessary to dismantle the heat exchanger.

Removing the heat exchanger



If dirt cannot be vacuumed up, the heat exchanger must be dismantled and then cleaned.

4. ▶ Depressurise the water-side connections (Fig. 89 /1) and disconnect the pipes from the heat exchanger.



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

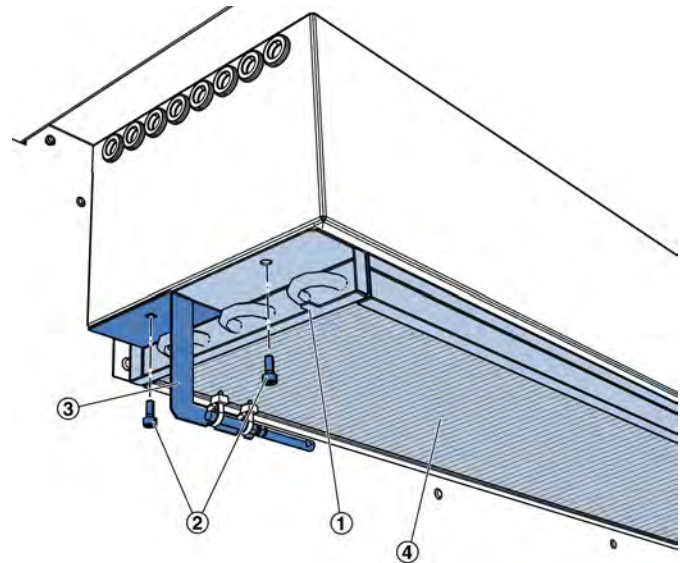


Fig. 90: Removing the heat exchanger

5. ▶ Disconnect the cable at the protective conductor connection (Fig. 90 /1) of the heat exchanger.



CAUTION!

Risk of injury from falling heat exchanger!

As soon as you loosen the heat exchanger bracket, the heat exchanger may fall down. Be sure to support the heat exchanger while you loosen any screws. It is best to ask someone to give you a hand.

6. ▶ Dismantle the holder of the heat exchanger by loosening the two screws (Fig. 90 /2), and leave the holder (Fig. 90 /3) of the temperature sensor hanging to the side. Remove the heat exchanger (Fig. 90 /4) by lifting it down out of the device.

Cleaning the heat exchanger

7. ▶ 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.

8. ▶ Reinstall the heat exchanger by following the steps in reverse order. Fix the temperature sensor and the wires.
9. ▶ If necessary, refill the water system (operating pressure) and check for leaks.
10. ▶ Switch on the power supply.
 - ⇒ The heat exchanger is clean.

8.2 Replacement parts list

8.2.1 SCHOOLAIR-D

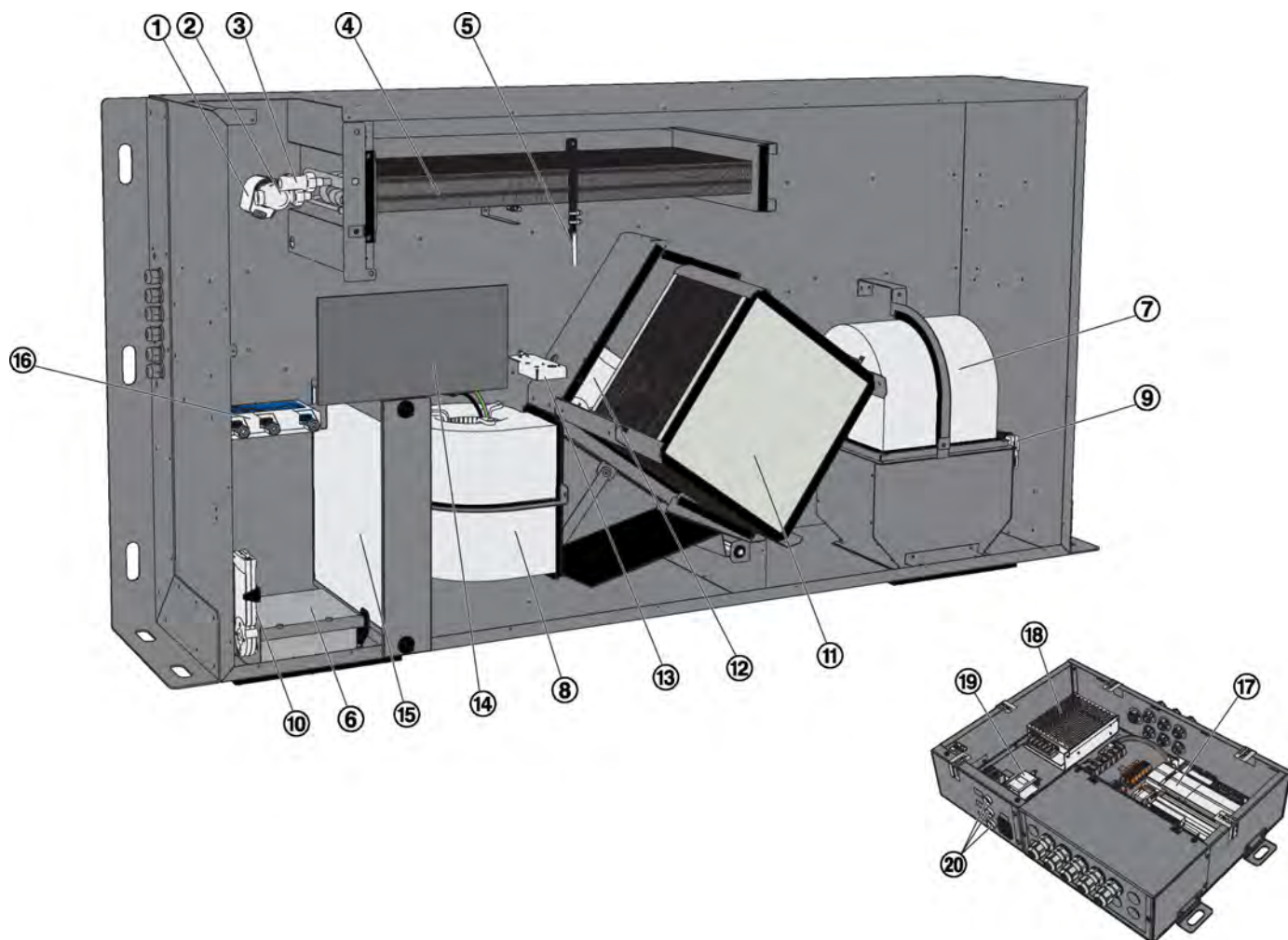


Fig. 91: SCHOOLAIR-D replacement parts



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 65 . TROX Service: ↪ 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	Valve actuator FSL-CONTROL III	See the labelling of the valve actuator
2	Straight-way valve	Order-specific
3	Lockshield	M431AQ4
4	2-pipe or 4-pipe heat exchanger	See the labelling on the heat exchanger
5	Supply air temperature sensor	A00000054037
6	Fresh air temperature sensor	M546EI4
7	Extract air centrifugal fan	M546FG0
8	Supply air centrifugal fan	

No.	Description	Replacement part no.
9	Actuator for exhaust air damper	M466EQ6
10	Actuator for outdoor air damper	
11	Heat recovery unit	A00000020095
12	Actuator for bypass damper	A00000028181
13	Combination CO ₂ and temperature sensor	A00000075813
14	Extract air filter (non-woven fibres)	A00000014673
15	Outdoor air filter	FP-ePM1-65%-NWO/324x307x50/STR
16	SKM module for controlling the dampers	M536ED0
17	Controller FSL-CONTROL III	A00000075513
18	Power supply unit FSL-CONTROL III	A00000062678
19	Power supply filter FSL-CONTROL III	A00000075465
20	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494

8.2.1.1 SCHOOLAIR-D-HV

Detail X

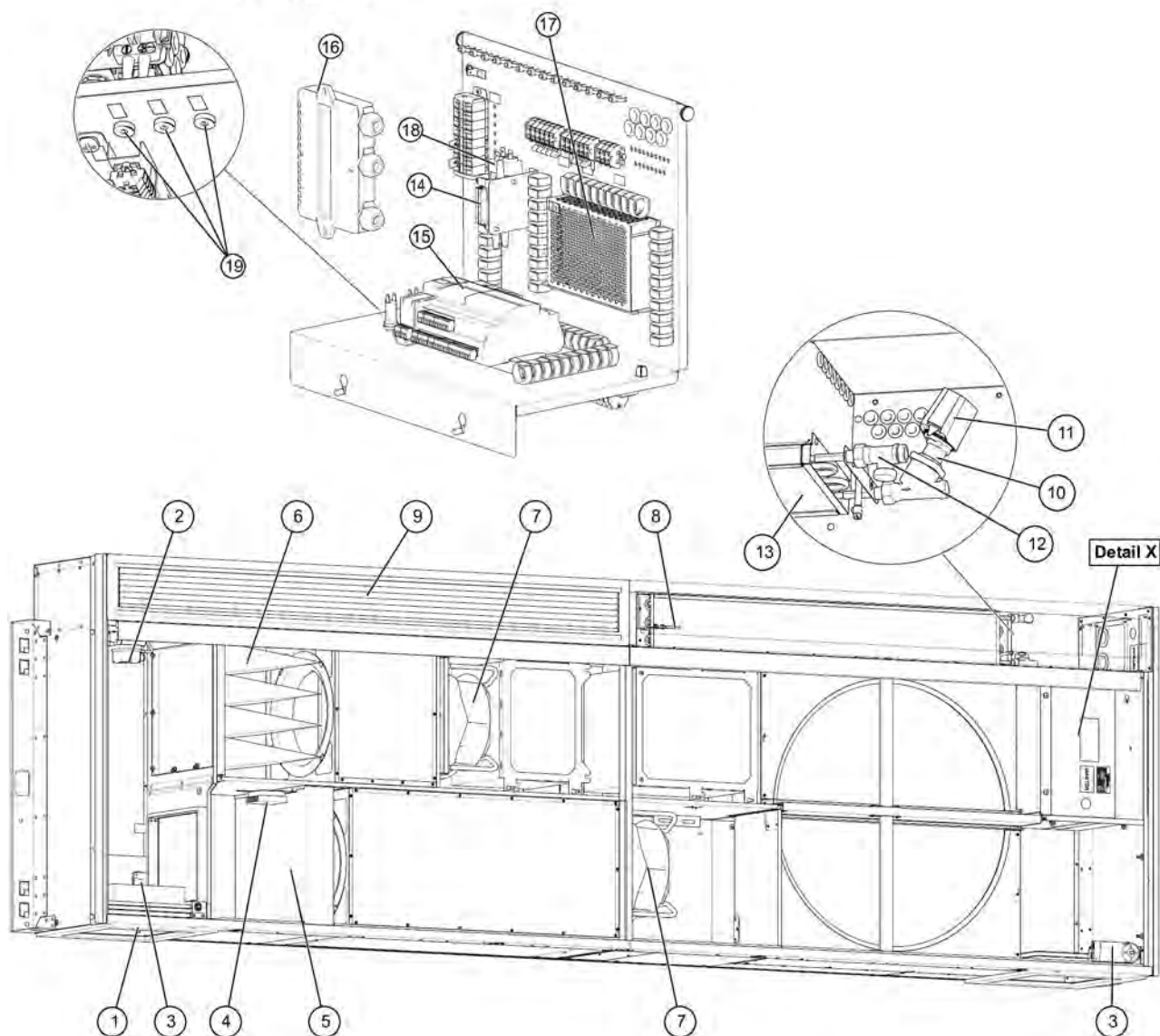


Fig. 92: SCHOOLAIR-D-HV replacement parts



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 65 . TROX Service: ↪ 'TROX Technical Service' on page 3

No.	Description	Replacement part no.
1	Fresh air temperature sensor	M546E14
2	Differential pressure monitoring of outdoor air filter	A00000064140
3	Actuator for outside air/ exhaust air damper	M466EQ6
4	CO ₂ sensor	A00000075813

No.	Description	Replacement part no.
5	Extract air ISO coarse 90%	ZL-COARSE-90%-NWO/ 385x387x92
6	Outdoor air filter ISO ePM1 65%	PFG -EPM1-60%- PLA-25/399x385x350x5
7	Centrifugal fan (supply air/extract air)	A00000081817
8	Supply air temperature sensor	A00000054037
9	Flow rectifier (supply air grille)	A00000062896
10	Straight-way valve	Order-specific
11	Valve actuator	See the labelling of the valve actuator
12	Lockshield	M431AQ4
13	2-pipe or 4-pipe heat exchanger	See the labelling on the heat exchanger
14	Speed controller 24 V (rotor)	A00000062863
15	Controller FSL-CONTROL III	A00000075513
17	Power supply unit FSL-CONTROL III	A00000062678
16	SKM module for controlling the outdoor air dampers	M536ED0
18	Power supply filter FSL-CONTROL III	A00000075465
19	Micro fuse 2 A / 50 V	A00000075499
	Micro fuse 4 A / 50 V	A00000075500
	Micro fuse 3.15 A / 250 V	A00000075494

8.3 Repair

The damper actuators and the fans are maintenance-free. If a component is defective, however, it has to be replaced. Replacement parts are listed in the replacement parts list and may be ordered from the TROX Service, ☎ 3

9 Technical data

9.1 General 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.

Rating plate



Fig. 93: 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

General data

SCHOOLAIR-D

Data	Value	Unit
Max. operating pressure, water side	6	bar
Max. operating temperature	75	°C
Max. operating temperature with flexible connecting hoses	55	°C
Supply voltage	230 ±10 %	V AC
Supply voltage, frequency	50/60	Hz
Power consumption (nominal volume flow rate)	52	W
Rating	146	VA
Protection level	IP 21	
Weight	100	kg

SCHOOLAIR-D-HV

Data	Value	Unit
Max. operating pressure, water side	6	bar
Max. operating temperature	75	°C
Max. operating temperature with flexible connecting hoses	55	°C
Supply voltage	230 ±10 %	V AC
Supply voltage, frequency	50/60	Hz
Power consumption (nominal volume flow rate)	150	W
Rating	640	VA
Protection level	IP 21	
Weight	380	kg

9.2 Performance data

9.2.1 SCHOOLAIR-D

SCHOOLAIR-D with 4-pipe heat exchanger

Volume flow rate	m³/h	Supply air			
		150	200	250	300
Total cooling capacity	W	685	911	1150	1350
Room cooling capacity	W	401	534	676	792
Air temperature inside the unit	°C	32.0	32.0	32.0	32.0
Relative humidity	%	40.0	40.0	40.0	40.0
Water content of the dry air	g/kg	11.9	11.9	11.9	11.9
Supply air temperature	°C	18.0	18.0	17.9	18.1
Condensate	g/h	0	0	0	0
Chilled water flow rate	l/h	70	110	170	210
Water temperature, inlet	°C	16	16	16	16
Water temperature, outlet	°C	24.4	23.1	21.8	21.5
Water side pressure drop	kPa	<3	<3	<7	<9
Total heating capacity (without heat recovery)	W	2640	3690	4610	5720
Room heating capacity	W	731	1129	1403	1533
Air temperature inside the unit	°C	-12.0	-12.0	-12.0	-12.0
Supply air temperature	°C	34.6	36.9	36.8	35.3
Hot water flow rate	l/h	50	90	130	180
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	14.4	24.5	29.3	32.5
Water side pressure drop	kPa	<3	<3	<3	<4

The table values are just examples and may differ for bespoke units.

Heat recovery has not been accounted for.

Calculation conditions

- **Cooling (summer):**
 - Outdoor air temperature: 32 °C
 - Rel. humidity: 40%
 - Room temperature: 26 °C
- **Heating (winter):**
 - Outdoor air temperature: -12 °C, 90% rh
 - Room temperature: 20 °C

SCHOOLAIR-D with 2-pipe heat exchanger

Volume flow rate	m³/h	Supply air			
		150	200	250	300
Total heating capacity (without heat recovery)	W	3120	4120	5180	5990
Room heating capacity	W	1102	1443	1820	1984
Air temperature inside the unit	°C	-12.0	-12.0	-12.0	-12.0
Supply air temperature	°C	43.0	42.6	42.8	40.8
Hot water flow rate	l/h	60	90	130	150
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	15.2	20.4	25.6	25.5
Water side pressure drop	kPa	0.8	1.5	2.9	3.7

The table values are just examples and may differ for bespoke units.

Heat recovery has not been accounted for.

Calculation conditions

- **Heating (winter):**
 - Outdoor air temperature: -12 °C, 90% rh
 - Room temperature: 21 °C

9.2.2 SCHOOLAIR-D-HV

SCHOOLAIR-D-HV with 2-pipe heat exchanger

Volume flow rate	m³/h	Supply air			
		300	500	800	1100
Total heating capacity	W	1300	2130	3150	3570
Room heating capacity	W	431	685	855	441
Air temperature inside the unit	°C	12.8	12.8	12.8	12.8
Supply air temperature	°C	25.3	25.1	24.2	22.2
Hot water flow rate	l/h	80	130	200	200
Water temperature, inlet	°C	35	35	35	35
Water temperature, outlet	°C	21.0	20.9	21.4	19.6
Water side pressure drop	kPa	3	7	14.5	14.5

The table values are just examples and may differ for bespoke units.

Calculation conditions

- **Heating (winter):**
 - Outdoor air condition: -12 °C, 90% r. H.
 - Indoor air condition: 21 °C, 40% r. H.

SCHOOLAIR-D-HV with 4-pipe heat exchanger

Volume flow rate	m³/h	Supply air			
		300	500	800	1100
Total cooling capacity	W	840	1190	1560	1770
Room cooling capacity	W	701	935	1176	1212
Air temperature inside the unit	°C	27.5	27.5	27.5	27.5
Rel. humidity	%	51.8	51.8	51.8	51.8
Supply air temperature	°C	19.0	20.4	21.6	22.7
Condensate	g/h	0	0	0	0
Chilled water flow rate	l/h	160	180	200	200
Water temperature, inlet	°C	16	16	16	16
Water temperature, outlet	°C	20.5	21.7	22.7	23.6
Water side pressure drop	kPa	8.5	10.5	12.5	12.5
Total heating capacity	W	1790	2510	3890	5090
Room heating capacity	W	912	1052	1576	1910
Air temperature inside the unit	°C	12.8	12.8	12.8	12.8
Supply air temperature	°C	30.1	27.3	26.9	26.2
Hot water flow rate	l/h	60	80	140	200
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	34.0	32.7	35.8	37.9
Water side pressure drop	kPa	1.5	2	5	9

The table values are just examples and may differ for bespoke units.

Calculation conditions

- **Cooling (summer):**
 - Outdoor air condition: 32 °C, 40% r. H.
 - Indoor air condition: 26 °C, 50% r. H.
- **Heating (winter):**
 - Outdoor air condition: -12 °C, 90% r. H.
 - Indoor air condition: 21 °C, 40% r. H.

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Appendix

EU declaration of conformity

SCHOOLAIR-D

EC declaration of conformity

according to the EU Machinery Directive 2006/42/EC, Annex {0}

TROX[®] TECHNIK
The art of handling air

Manufacturer**TROX GmbH**

Heinrich-Trox-Platz

D - 47504 Neukirchen-Vluyn

Description and identification {0}

Product / Article	Decentralised ventilation system ceiling unit
Type	SCHOOLAIR-D
Function	SCHOOLAIR-D including modular control system FSL-CONTROL

It is expressly declared that {0} fulfils all relevant provisions of the following EU Directives or Regulations:

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

Reference to the harmonised standards used, as referred to in Article 7 (2):

EN 547-2:1996+A1:2008	Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings
EN 547-3:1996+A1:2008	Safety of machinery - Human body measurements - Part 3: Anthropometric data
EN 1005-3:2002+A1:2008	Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation
EN 1005-2:2003+A1:2008	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
EN 1005-1:2001+A1:2008	Safety of machinery - Human physical performance - Part 1: Terms and definitions
EN ISO 13732-1:2008	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2006)
EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 14118:2018	Safety of machinery – Prevention of unexpected start-up (ISO 14118:2017)
EN ISO 13854:2019	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)
EN 60204-1:2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)
EN ISO 13857:2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)

Neukirchen-Vluyn, 2021-06-29



Jan Heymann
Authorised Representative, CE-marked
products

Page 1/1

SCHOOLAIR-D-HV

EC declaration of conformity

according to the EU Machinery Directive 2006/42/EC, Annex II 1. A



Manufacturer

TROX GmbH

Heinrich-Trox-Platz

D - 47504 Neukirchen-Vluyn

Manufacturer

TROX GmbH

Heinrich-Trox-Platz

D - 47504 Neukirchen-Vluyn

Person established in the Community authorised to compile the technical file

Jan Heymann, TROX GmbH

Person established in the Community authorised to compile the technical file

Jan Heymann, TROX GmbH

Description and identification of the machinery

Product / Article	Decentralised ventilation system ceiling unit
Type	SCHOOLAIR-D-HV
Function	SCHOOLAIR-D including rotary heat recovering unit

It is expressly declared that the machinery fulfils all relevant provisions of the following EU Directives or Regulations:

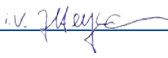
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (1)
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States 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

Reference to the harmonised standards used, as referred to in Article 7 (2):

EN 547-2:1996+A1:2008	Safety of machinery - Human body measurements - Part 2: Principles for determining the dimensions required for access openings
EN 547-3:1996+A1:2008	Safety of machinery - Human body measurements - Part 3: Anthropometric data
EN 1005-3:2002+A1:2008	Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation
EN 1005-2:2003+A1:2008	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
EN 1005-1:2001+A1:2008	Safety of machinery - Human physical performance - Part 1: Terms and definitions
EN ISO 13732-1:2008	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2006)
EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
EN ISO 14118:2018	Safety of machinery – Prevention of unexpected start-up (ISO 14118:2017)
EN 60204-1:2018	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2016, modified)

Neukirchen-Vluyn, 2021-06-29

Jan Heymann
Authorised Representative, CE-marked
products


Jan Heymann
Authorised Representative, CE-marked
products

Declaration of hygiene conformity

SCHOOLAIR-D /-D-HV

Declaration of hygiene conformity

Certificate



Type	SCHOOLAIR-D
Product	Decentralised ventilation units – Ceiling units
Manufacturer	TROX GmbH Heinrich-Trox-Platz • 47504 Neukirchen-Vluyn • Germany Phone +49(0)2845 2020 • Fax +49(0)2845 202265 E-Mail trox-de@troxgroup.com • Internet www.troxtechnik.com
European standards	EN 16798-3:2017-11
German standards	VDI 3803 Sheet 1:2010-02 VDI 6022 Sheet 1:2018-01
Austrian standards	ÖNORM H 6021:2016 08
Swiss guidelines	SWKI VA104-01
Test location (plant)	TROX GmbH Heinrich-Trox-Platz, 47504 Neukirchen-Vluyn, Germany

Summary of the test result

For the purpose of this declaration of conformity a sample of each product type mentioned above was tested at the factory, and related data sheets, technical documentation and test reports were appraised.
The test of the above mentioned samples and the appraisal of the provided documents have shown that the hygiene requirements stipulated in the above mentioned standards and guidelines are met. This is to confirm that the products meet the hygiene requirements stipulated in the specified standards and guidelines.



Neukirchen-Vluyn, the 11.09.2018

Dipl.-Ing. Dirk Scherder
VDI-geprüfter Fachingenieur RLQ (VDI-
certified engineer for room air quality)

Dipl.-Ing. Jan Heymann
Manager quality management

Product information according to ErP directive

SCHOOLAIR-D

Produktinformation

Zertifikat



a) Name des Herstellers

TROX GmbH
Heinrich-Trox-Platz • 47504 Neukirchen-Vluyn • Germany
Telefon +49 (0)2845 2020 • Telefax +49 (0)2845 202265
E-Mail trox@trox.de • Internet www.trox.de

b) Modellkennung

SCHOOLAIR-D-2/1640x400x800/C3
SCHOOLAIR-D-2/1640x400x800/R
SCHOOLAIR-D-4/1640x400x800/C3
SCHOOLAIR-D-4/1640x400x800/R

Produktinformationen für Nichtwohnraumlüftungsanlagen nach Verordnung (EU) Nr. 1253/2014 Artikel 4 Absatz 2

	Informationsanforderung	Daten Gerätekonfiguration
c)	Typ	Nichtwohnraumlüftungsanlage
c)		Zwei-Richtungs-Lüftungsanlage
d)	Antriebsart	Drehzahlregelung
e)	Wärmerückgewinnung (WRG)	Anderes (Rekuperativ)
f)	Thermischer Übertragungsgrad der WRG	54 %
g)	Nenn-Luftvolumenstrom (qvNenn)	0,058 m³/s
g)	Nenn-Luftvolumenstrom (qvNenn)	210 m³/h
h)	Elektrische Eingangsleistung bei qvNenn	0,04 kW
i)	SV _{Lint} bei qvNenn	490 W/(m³/s)
j)	Anströmgeschwindigkeit der Filter bei qvNenn	0,59 m/s
k)	Nennaußendruck	0 Pa - (Gerät ohne Kanalanschluss)
l)	Druckabfall der Lüftungsbauteile	
l)	• WRG _{SUP} / WRG _{ETH}	20 Pa / 32 Pa
l)	• ODA-Filter / ETH-Filter	24 Pa / 10 Pa
n)	Statischer Ventilator Wirkungsgrad nach EU Verordnung 327/2011	K.A. - (Verwendeter Ventilator liegt unterhalb des Geltungsbereichs der EU Verordnung 327/2011)
o)	Innere Leckluftquote bei qvNenn und 100 Pa	5,5 %
o)	Äußere Leckluftquote bei qvNenn und 100 Pa	4,0 %
p)	Jahres Energieverbrauch der Außenluftfilter bei 3000 h/a	13 kWh/a
q)	Filterwarnanzeige (Hinweis 1)	Am Raumbediengerät - (Doppelblinker der Status-LED)
r)	Gehäuse-Schalleistungspegel inkl. raumseitiger Zu- und Abluftdurchlässe bei qvNenn	39 dB(A)
s)	Zerlegungshinweise	www.trox.de

Hinweis 1: Die Filter sind regelmäßig zu wechseln! Sie steigern damit die Energieeffizienz des Geräts, senken den Stromverbrauch der Ventilatoren und schützen damit nachhaltig unsere Umwelt.

SCHOOLAIR-D-HV

Product information

Certificate



a) Name of manufacturer

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

b) Model name

SCHOOLAIR-D-HV-F-2/3555×405×1030/P1/C3
 SCHOOLAIR-D-HV-0-2/3355×405×1030/P1/C3

Product information for non-residential ventilation systems according to Directive (EU) No. 1253/2014 Article 4 Section 2

	Information requirement	Technical data for the supplied product
c)	Type	Non-residential ventilation unit
c)		Bidirectional ventilation unit
d)	Drive type	Speed control
e)	Heat recovery system (HRS)	Other (regenerative)
f)	Thermal efficiency of the heat recovery system	75 %
g)	Nominal volume flow rate (qvNom)	0,222 m³/s
g)	Nominal volume flow rate (qvNom)	800 m³/h
h)	Electric power input at qvNom	0,15 kW
i)	SFPint at qvNom	640 W/(m³/s)
j)	Upstream velocity of the filters at qvNom	1,45 m/s
k)	Nominal external pressure	0 Pa - (non-ducted unit)
l)	Pressure loss of the ventilation components	
l)	• HRSSUP / HRSETH	40 Pa / 60 Pa
l)	ODA filter / ETH filter	57 Pa / 27 Pa
n)	Static efficiency of fans in accordance with EU directive 327/2011	59 %
o)	Internal leakage air ratio at qvnom and 150 Pa	5,4 %
o)	External leakage rate at qvNom and 200 Pa	5 %
p)	Annual power consumption of the outdoor air filters at 3000 h/year	45 kWh/yr
q)	Filter warning (Note 1)	On the control panel (LED double blinking)
r)	Casing sound power level including supply and extract air terminal devices in the room at qvNom	43 dB(A)
s)	Information on disassembly	www.troxtechnik.com

Note 1: 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.

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 ↳ 52	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 ↳ 51	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 ↳ 52	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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