



Active chilled beams

Type DID-E2

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Product overview

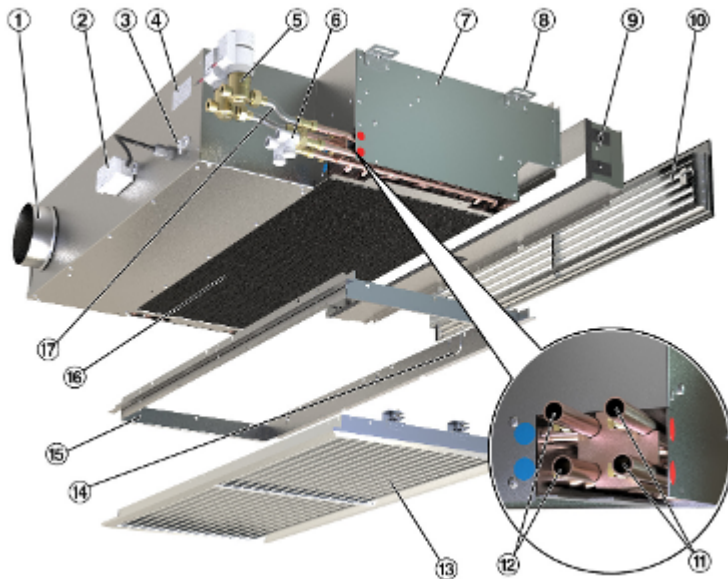


Fig. 1: Schematic illustration DID-E2-VC

- | | | | |
|---|---|----|---|
| 1 | Primary air spigot | 10 | Ventilation grille for supply air (optional) |
| 2 | Terminal box for electrical connection of volume flow controller (only with version VC) | 11 | Hot water circuit |
| 3 | Pressure measurement point (only with version VC) | 12 | Cold water circuit |
| 4 | Rating plate | 13 | Ventilation grille for secondary air (optional) |
| 5 | Water connections, valve with actuator (optional) | 14 | Safety cable for securing the ventilation grille |
| 6 | Water connections, lockshield (optional) | 15 | Installation subframe for ventilation grille for secondary air (optional) |
| 7 | Equipment casing | 16 | Heat exchanger |
| 8 | Hanging brackets (4 pieces) | 17 | Pipe connection for direct valve connection (optional) |
| 9 | Sliding spigot for supply air (optional) | | |

General information

About this manual

This 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

- Project-specific documents (if any)

Explanation of symbols

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.

Tips and recommendations




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

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.

Additional markers

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

Marker	Explanation
	Step-by-step instructions
1., 2., 3. ...	
	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)

TROX Technical Service

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

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

Online	www.troxtechnik.com
Phone	+49 2845 202-400

Warranty claims

The general delivery terms apply to warranty claims. For purchase orders placed with TROX GmbH, see "Section VI, Warranty Claims", of the Delivery and Payment Terms of TROX GmbH, www.trox.de/en/.

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- Copying content
- Translating content
- Saving content to electronic systems and editing it

Safety

Correct use

Active chilled beams provide centrally conditioned primary air (outdoor air) to rooms. Heat exchangers are used for additional cooling and/or heating.

Incorrect use



WARNING!
Danger due to incorrect use!
 Incorrect use of the unit can lead to dangerous situations.
 Never use the unit:

- in areas with potentially explosive atmospheres (EX);
- in humid rooms;
- in rooms with aggressive or dust-laden air.

Personnel

Qualification

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

Trained personnel

Trained personnel are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to carry out their assigned duties, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

Technical data

Description	Value
Primary air volume flow rate	8 – 57 l/s, 29 – 205 m³/h
Cooling capacity	up to 1600 W
Heating capacity	up to 1000 W
Max. operating pressure, water side	10 bar (6 bar in combination with connection hoses)
Max. operating temperature	75 °C (55 °C, when using flexible connecting hoses)
Minimum operating temperature	6 °C

! NOTICE!

Water damage to property caused by condensate!

If the temperature falls below the dew point, condensate will cause water damage to the device or building.

Adjust the chilled water flow temperature so that it cannot fall below the dew point.

Dimensions and weights

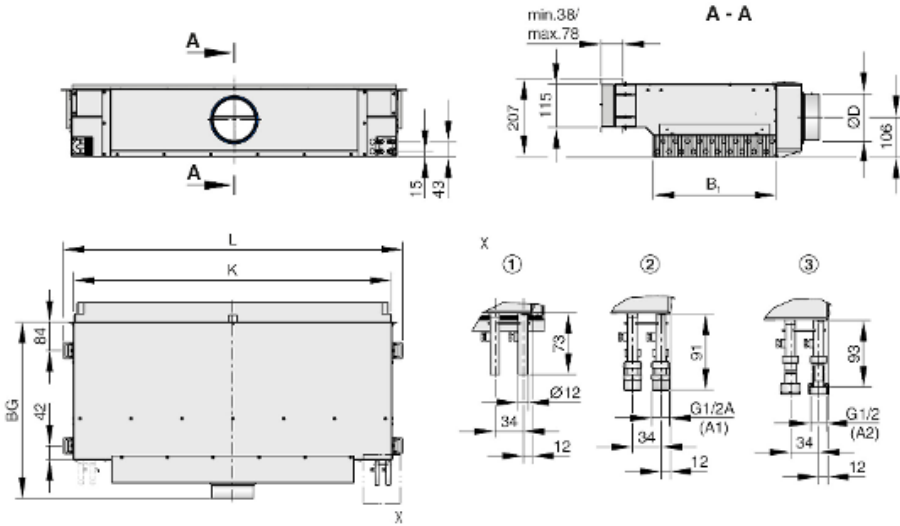


Fig. 2: Dimension drawing DID-E2 with supply air spigot (-Z) and without volume flow controller, DID-E2-4 shown

- 1 Ø12 mm pipe, plain tails
- 2 G½" external thread and flat seal
- 3 G½" union nut and flat seal

Weights (4L, 123, R+L) [kg]

Nominal length (LN)	1000 x 320	1000 x 512	1125 x 320	1125 x 512	1250 x 320	1250 x 512
DID-E2	15.5	20.5	17.0	23.0	19.0	25.0
Supply air spigot Z	1.7	1.7	1.9	1.9	2.1	2.1
Installation subframe ERS	1.4	1.5	1.6	1.7	1.8	1.9
Contained water heat exchanger	1.5	2.5	1.8	3.0	2.1	3.5

Dimensions [mm]

LN	L	K
1000	1000	940
1125	1125	1065
1250	1250	1190

Dimensions [mm]

BG	Width of heat exchanger B ₁
519	320
711	512

Dimensions [mm]

ØD
123
158

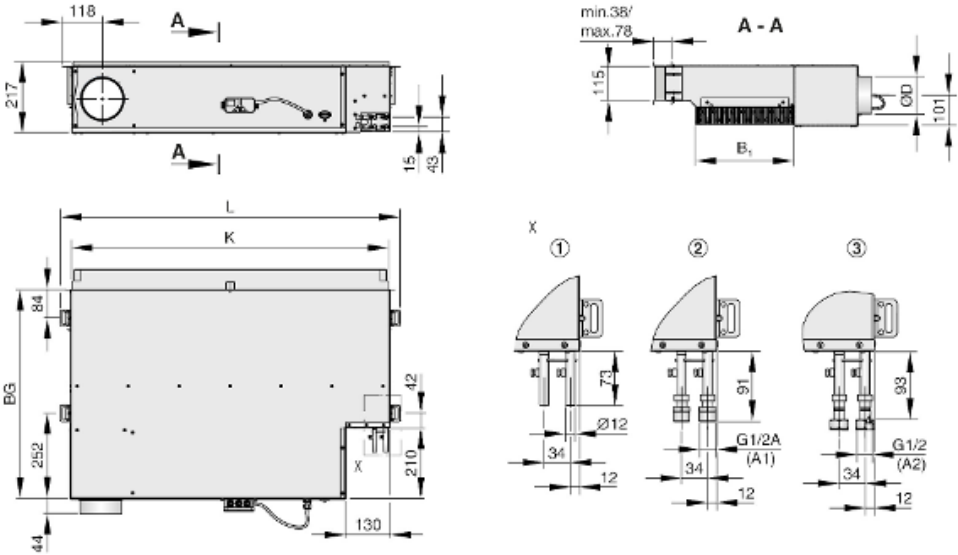


Fig. 3: Dimensional drawing DID-E2 with supply air spigot (-Z) and with volume flow controller (-VC), DID-E2-4 shown

- 1 Ø12 mm pipe, plain tails
- 2 G½" external thread and flat seal
- 3 G½" union nut and flat seal

Weights (4L, 123, R+L) [kg]

Nominal length (LN)	1000 x 320	1000 x 512	1125 x 320	1125 x 512	1250 x 320	1250 x 512
DID-E2-*-VC	21.5	26.5	24.0	29.5	26.0	32.0
Supply air spigot Z	1.7	1.7	1.9	1.9	2.1	2.1
Installation subframe ERS	1.4	1.5	1.6	1.7	1.8	1.9
Contained water WÜ	1.5	2.5	1.8	3.0	2.1	3.5

Dimensions [mm]

LN	L	K
1000	1000	940
1125	1125	1065
1250	1250	1190

Dimensions [mm]

ØD
123
158

Dimensions [mm]

BG	Width of heat exchanger B ₁
616	320
808	512

Transport and storage

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.

NOTICE!

Carry the unit in pairs in order to prevent any damage.

Storage

Please note:

- Store the unit only in its original packaging
- Protect the unit from the effects of weather
- Protect the unit from humidity, dust and contamination
- Storage temperature: -10 to 50 °C
- Relative humidity: 95 % max., non-condensing

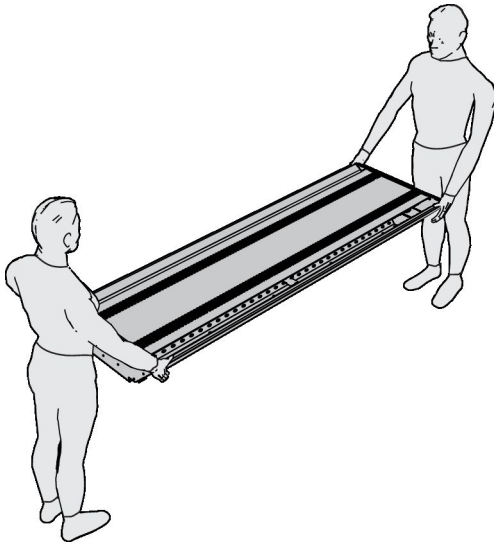


Fig. 4: Carrying the unit in pairs

Use only lifting and transport gear designed for the required load. Always secure the load against tipping and falling.

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness.

Installation

Fixing the device

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

Install the device before attaching the bulkhead!

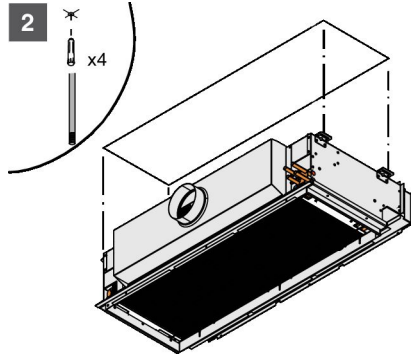
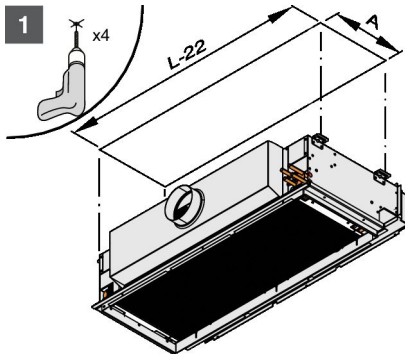
Only work in pairs; preferably use a lift.



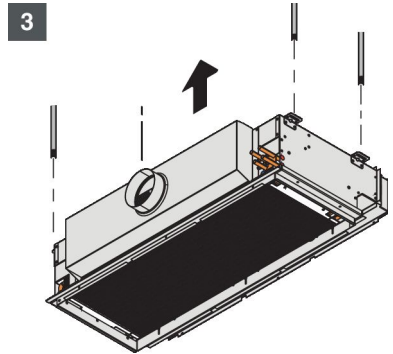
DANGER!

Danger of death from the fall of a suspended unit!

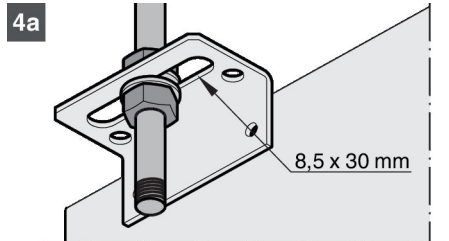
- Only use fixing materials designed for the required load.
- Use all hanging brackets supplied.
- Stand clear of suspended loads, unless properly secured.
- Check secure fixing after installation.



2. ▶ Install threaded rods



3. ▶ Insert the device

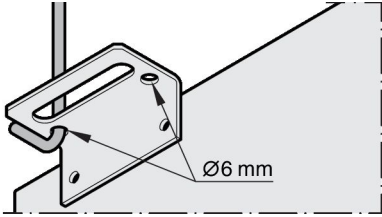


4. ▶ Fasten the device with threaded rods

Fig. 5: Dimensions / ↗ Chapter 4 'Technical data' on page 5 ↗ Chapter 4 'Technical data' on page 5

1. ▶	Width of heat exchanger B ₁	A
	320	280
	512	427

4b



5. ▶ Fasten device with vernier

Connect the ductwork

Active chilled beams DID-E2 have an outdoor air or primary air spigot.

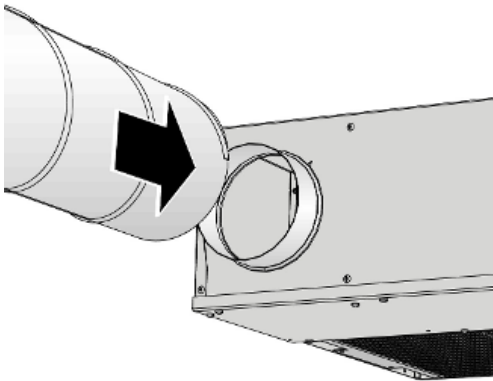


Fig. 6: DID-E2 air duct connection

The spigots are suitable for circular ducts according to EN 1506 or EN 13180.

Installing the plasterboard bulkhead

The DID-E2 active chilled beams must be clad with a plasterboard bulkhead provided by others after attachment to the ceiling. When doing so, the following points must be observed:

- The plasterboard bulkhead and material are provided by others.
- The plasterboard bulkhead must be self-supporting; the device must not bear any static loads of the plasterboard bulkhead.
- Install the plasterboard bulkhead so that the air distribution of the device is not affected.
- Remove sliding spigot for supply air (optional)



Hygiene VDI6022

If there is a connection between the secondary air and the plasterboard bulkhead (e.g. Fig. 13), the VDI6022 must be observed, e.g. provide a cleaning option for the plasterboard bulkhead and for the heat exchanger of the ventilation device.

We therefore recommend direct secondary air intake through the ventilation grille into the ventilation device Fig. 7.

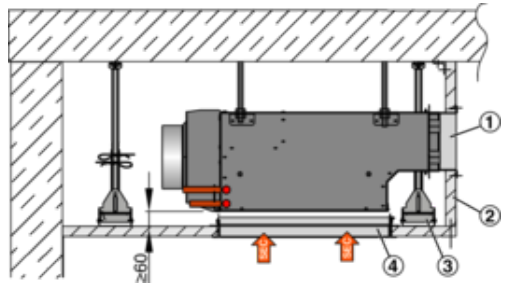


Fig. 7: DID-E2 installation example, without grille

- 1 Sliding spigot for supply air (optional)
- 2 Plasterboard bulkhead (provided by others)
- 3 Suspension (provided by others)
- 4 Installation subframe for secondary air grille (optional)

Mounting installation subframe for concealed screw fixing from supplied parts kit (optional)

- Folding of the provided brackets (5) along the perforation by 90°, so that narrow bends point outwards.
- Assemble the installation subframe using a plug-in connection so that insertion tabs hook in.
- Create an assembly opening in accordance with nominal size of the secondary air grille or pre-assembled installation subframe.
- The installation subframe should be assembled under the device (in the area of the heat exchanger) or at a distance from the device. The VDI 6022 must be observed here, e.g. provide cleaning option for plasterboard bulk-head.
- Fasten by clamping to the plasterboard bulk-head (clamping range 9-30 mm)
- Place one L-bracket (4) per long side above the ceiling in the opening
- Push the installation subframe from below through the opening and place the bend underneath the ceiling, at the same time press the L-bracket ((4) above) against the installation subframe (5) and fix it with screws (2). Assemble opposite L-bracket in the same way.
- Before installing the grille, install 2 diagonally offset safety cables (3) with securing sheets (1) on the installation subframe and grille.

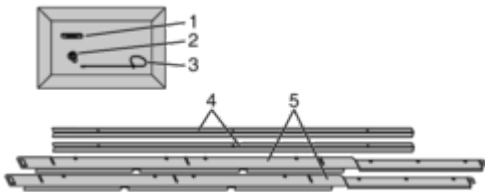


Fig. 8: Installation subframe individual parts

- 1 Securing sheet
- 2 Screw
- 3 Safety cable
- 4 L-bracket
- 5 Installation subframe

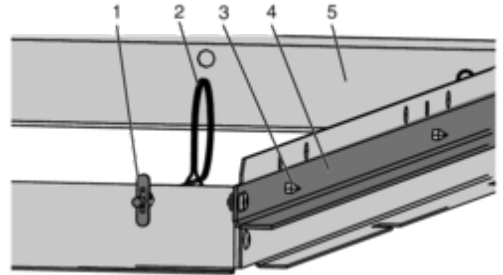


Fig. 9: Installation subframe mounted

- 1 Securing sheet
- 2 Safety cable
- 3 Screw
- 4 L-bracket
- 5 Installation subframe

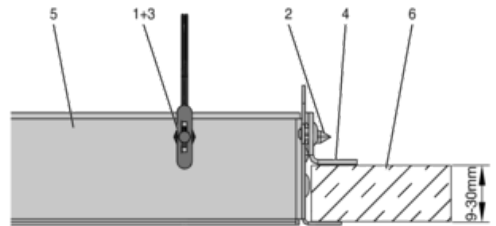


Fig. 10: Installation subframe clamping area

- 1 Securing sheet
- 2 Screw
- 3 Safety cable
- 4 L-bracket
- 5 Installation subframe
- 6 Bulkhead

⚠ CAUTION!

Risk of injury from a falling secondary air grille

If the secondary air grille is not secured, there is a risk of injury from the grille falling.

Safety cables for securing the grille are provided on the optional installation subframe. When mounting the grille, attach the safety cables to the grille.

If no installation subframe is being used, the grille must be secured on site against falling.

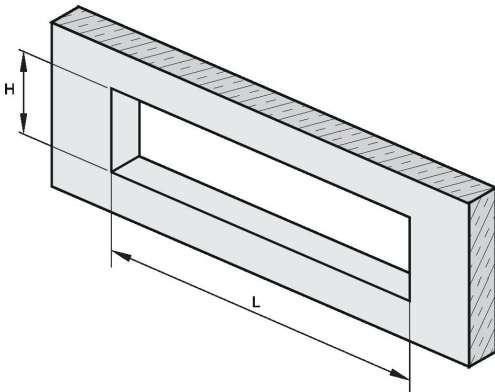


Fig. 11: Installation opening for ventilation grille and secondary air grille

Installation opening with installation subframe

L = Grille length to be ordered

H = Grille height to be ordered

Installation opening without installation subframe

L = Grille length to be ordered: L - 15 mm

H = Grille height to be ordered: H - 15 mm

Installation of sliding spigot for supply air (optional)

- Remove spigot from the device (keep screws)
- Create an assembly opening in accordance with the nominal size of the supply air grille / sliding spigot.
- Take into account the mounting range of the supply air sliding spigot. Range min. 38 mm / max. 78 mm from edge of the unit (supply air outlet of the unit) to room-side mounting opening.
- Push in the spigot from the outside through the plasterboard bulkhead into the device, and attach it on the inside to the device with screws (6 pieces).

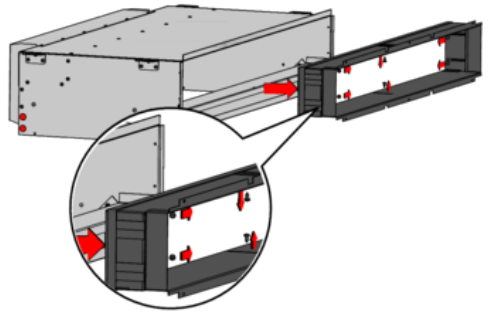


Fig. 12: Disassembly of installation subframe

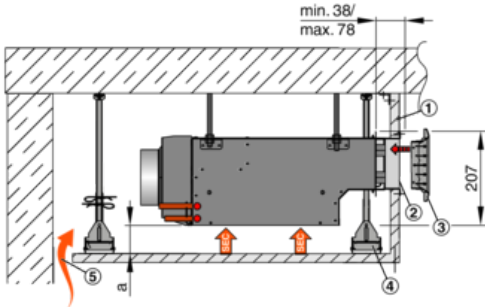


Fig. 13: DID-E2 bulkhead – air intake through open shadow gap

- a Minimum distance 50 mm, for distances between 50 and 150 mm, a reduction in performance of approx. 10% is expected, recommended distance ≥ 150 mm.
- 1 Plasterboard bulkhead (provided by others)
 - 2 Sliding spigot for supply air
 - 3 Ventilation grille for supply air (optional)
 - 4 Suspension (provided by others)
 - 5 Air intake through open shadow gaps

Connecting the water pipes

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

Heat exchanger variants

- **2-pipe system**
 - 2 water connections for connection to the hot or cold water circuit
 - Operating mode: either cooling or heating
 - Switching between heating and cooling is possible in changeover mode with switching valve
- **4-pipe system**
 - 4 water connections for connection to the hot and cold water circuit
 - 2 operating modes: cooling and heating

Marking of the water connections

- (blue) - Cold water circuit
- (red) - Hot water circuit

Water flow and return flow can be selected (in the respective circuit)

Make sure that the water temperature does not fall below the dew point.

Pipe connection on the unit	SW	Connection types
Copper tubes 12 × 1 mm	–	Solder joint (rigid) Flexible hoses
External thread G 1/2" (flat seal)	22	Screw connection (rigid) Flexible hoses
Union nut G 1/2" (flat seal)	24	Screw connection (rigid) Flexible hoses

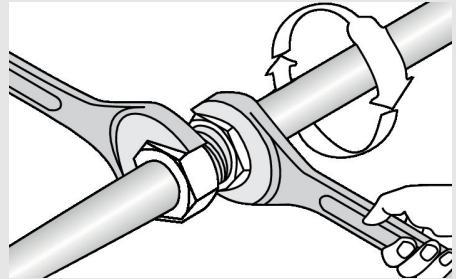
We recommend connecting with flexible hoses (accessories)

Screw connection (flexible hoses or screw connection)

Screw connection

- Ensure that the surfaces for seals are clean
- Insert seal and tighten screw connection by hand.

Risk of damage to the heat exchanger if not installed correctly!



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

Solder joint

Clean the pipe ends and make a proficient solder joint.

! NOTICE!

Damage to the heat exchanger due to frost!

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

Initial commissioning

Before you start commissioning:

- Check active chilled beams for correct position
- Remove protective film, if any
- Ensure that all active chilled beams are clean and free from residues and foreign matter

! NOTICE!

Hygienic requirements for ventilation and air conditioning systems must be carried out in accordance with VDI 6022, Sheet 1.

- Check water connections for correct installation (connection hoses with oxygen diffusion barrier)

! NOTICE!

The commissioning procedure is described in detail in BTGA rule 3.002

- Carry out leak and pressure tests
- Flushing the system
- Filling and venting the water-bearing system
- Carry out hydraulic balancing of the control zones.
- Actual/target comparison of the water parameters of the filling water

! NOTICE!

Parallel consideration of the requirements for preventing damage in water circuits in accordance with VDI/BTGA 6044 (cold water and cooling circuits) and VDI 2035 Sheet 1 (for hot water - heating systems) is the responsibility of the competent person. The water-bearing system must be assessed as a whole so that it complies with the applicable regulations in both cooling and heating mode. Filling and supplemental water must be filled into the system with the appropriate water quality in order to ensure the long-term operation of the system.

Pressure testing

A pressure test must be carried out pneumatically or hydraulically in closed water-based heating and cold or cooling water circuits in accordance with the general rules of technology or BTGA 3.002, and recorded. The hydraulic test should be carried out with the appropriate filling water quality. A pneumatic test is carried out with air or inert gas.

Rinsing/Flushing

Rinsing removes unwanted dirt particles from the water circuit. We recommend flushing with the appropriate filling water quality and taking a water sample at the end of the flushing process. Make sure that the system is completely emptied after the flushing process and then filled with suitable filling water.

Filling the system

After flushing, the system must be filled with suitable filling and supplemental water. Manufacturers' information for all installed components must be observed. Particular attention must be paid to compliance with the quality of the filling and supplemental water. During the water filling of the system, as well as during the necessary pressing or draining processes, it is recommended that these are permanently monitored.

Venting

Ensure complete venting to avoid problems in the system and to ensure full performance of the water-bearing systems. Since a continuously rising conduit to a venting point is usually impossible, thorough flushing is recommended until the system is air-free. Upstream installations must also be air-free so that no air is introduced into the ceiling system via supply lines.

Electrical connection

For ventilation devices with volume flow controller (VC), the electrical connection must be made once assembly is complete. Wiring is done in the terminal box ↪ Fig. 1/2.

- 24 V supply voltage only via safety transformer.

Terminal connections

No.	Designation	Core colour	Function
1	⊥ / -	black	Supply voltage 24 V AC/DC
2	~ / +	red	
3	Y	white	Control signal / force / sensor
5	U	orange	-Actual value signal -MP bus connection

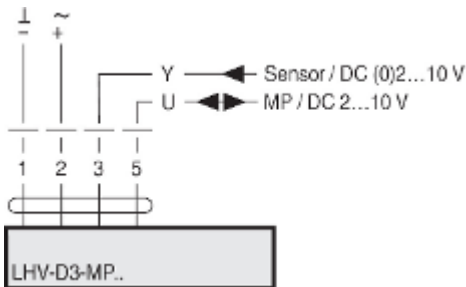


Fig. 14: Circuit diagram for volume flow controller

Maintenance and cleaning

Maintenance

The water quality may change during operation. The water quality must be monitored and documented at regular intervals to prevent corrosion.

Cleaning

Observe the following points when cleaning: Clean surfaces with a damp cloth. Use only common household cleaners, do not use any aggressive cleaning agents.

Cleaning the heat exchanger

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves



Hot surface!

Danger of burn or scald injuries when working on the hot water system.

Before working on the unit, shut down the system, depressurise it and let it cool down.



Danger of cutting your fingers on the fins of the heat exchanger

The heat exchanger has thin fins, which are very sharp; when you touch them, there is a danger of your cutting your fingers.

To avoid injuries, proceed carefully and wear protective gloves when you work on the heat exchanger.

1. ▶ To clean the heat exchanger, depending on the installation situation, disassemble the secondary air grille or open the cleaning opening.
2. ▶ Carefully vacuum the heat exchanger with an industrial vacuum cleaner. Be careful to not damage any blades. We recommend using a soft brush attachment for cleaning.
3. ▶ After cleaning, screw-fix the grille and close the cleaning opening.

4. ▶



CAUTION!

Danger of head injuries from the fall of the induced air grille!

Check that the induced air grille is securely fixed!