



Active chilled beams

Type DID614

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Product overview

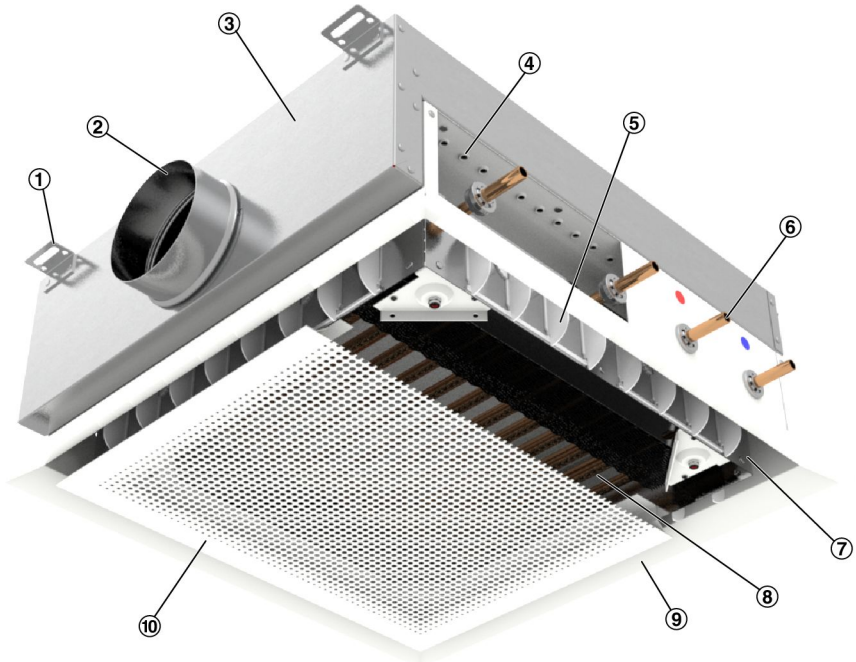


Fig. 1: Schematic illustration of DID614

- | | | | |
|---|-----------------------------------|---|---------------------|
| ① | Hanging brackets | ⑥ | Water connections |
| ② | Primary air spigot | ⑦ | Encasing (optional) |
| ③ | Casing | ⑧ | Heat exchanger |
| ④ | Nozzle plate with punched nozzles | ⑨ | Front frame |
| ⑤ | Air control blades (optional) | ⑩ | Induced air grille |

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:

- ▶ Loosen the screw.

- ▶



CAUTION!





Danger of finger entrapment when closing the lid.

Be careful when closing the lid.

- ▶ 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

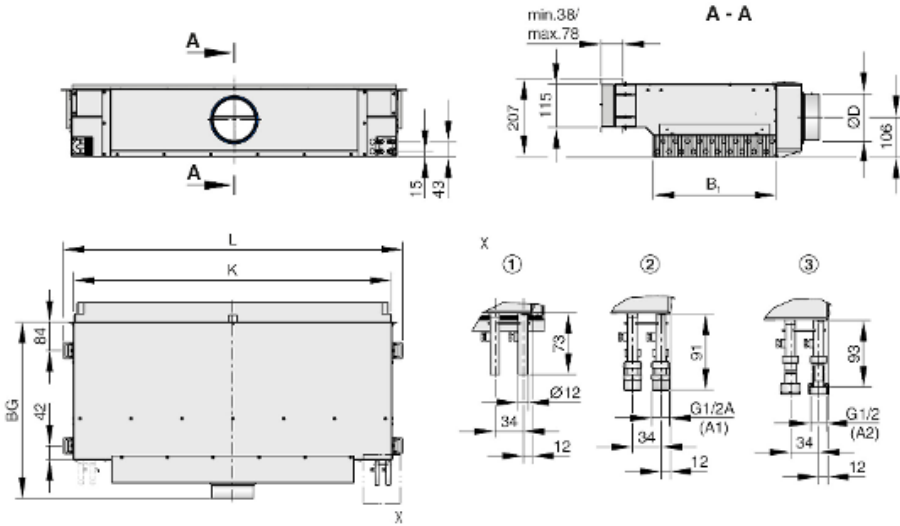


Fig. 2: Dimension drawing DID-E2 with supply air spigot (-Z) and without volume flow controller, DID-E2-4 shown

- 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 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]

BG	Width of heat exchanger B ₁
519	320
711	512

Dimensions [mm]

ØD
123
158

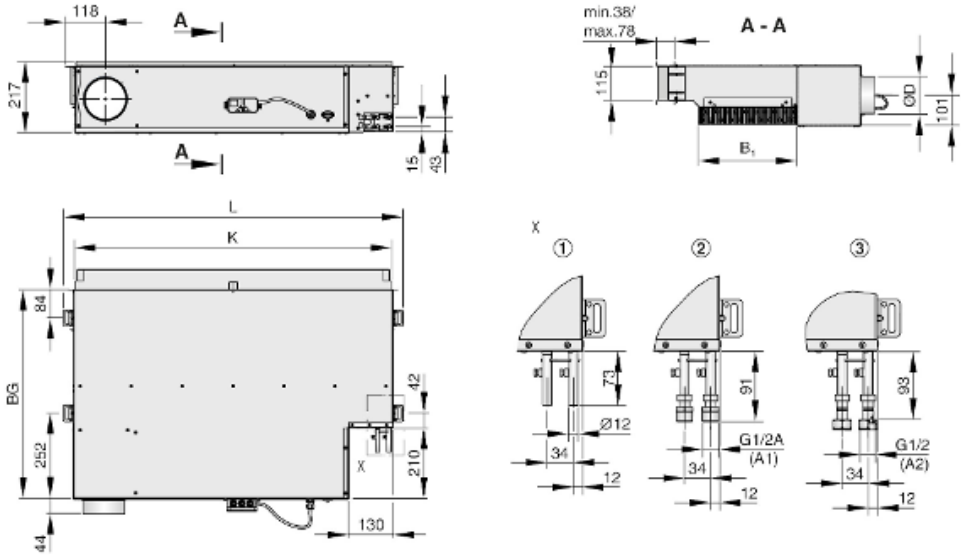


Fig. 3: Dimensional drawing DID-E2 with supply air spigot (-Z) and with volume flow controller (-VC), DID-E2-4 shown

- 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.

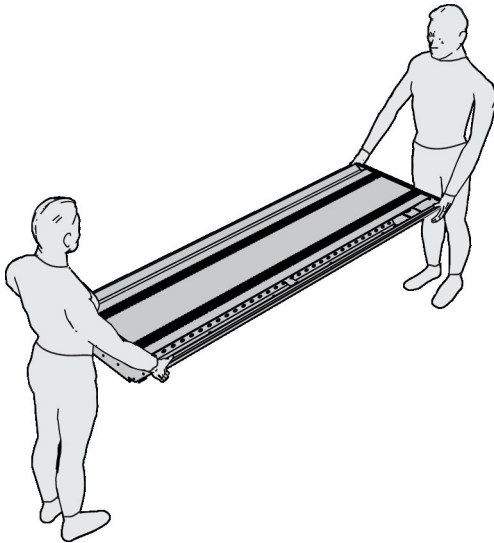


Fig. 4: Carrying the unit in pairs

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.

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

Installation

Ceiling installation

Active chilled beams are typically installed in suspended ceilings. Installation in the most common ceiling systems is shown below.

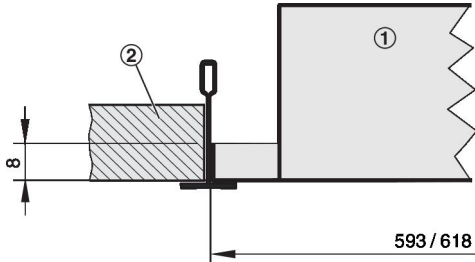


Fig. 5: Ceiling installation, T-bar

- ① DID614
- ② Ceiling tile

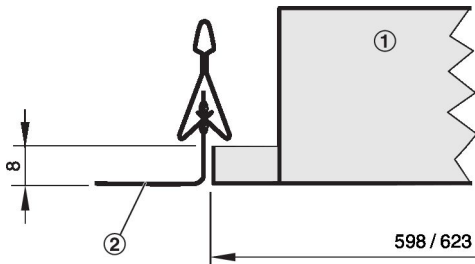


Fig. 6: Ceiling installation, clamping profile

- ① DID614
- ② Ceiling tile

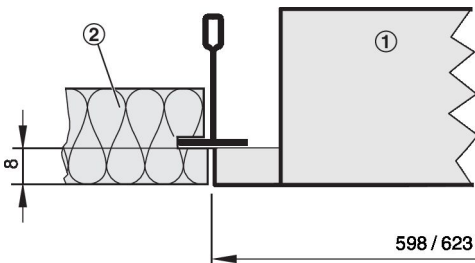


Fig. 7: Ceiling installation, concealed T-bar

- ① DID614
- ② Ceiling tile

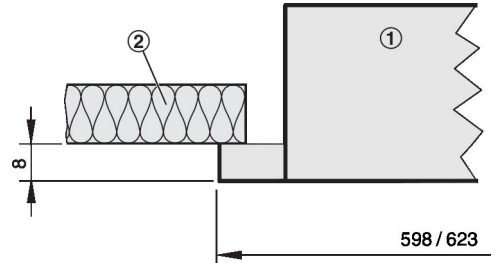


Fig. 8: Ceiling installation, plasterboard ceiling

- ① DID614
- ② Plasterboard ceiling

Installing the unit

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

If possible, install the unit before fixing the ceiling tiles; if this is not possible, remove the adjacent ceiling tiles.

Only work in pairs; preferably use a lift!



DANGER!

Danger of death from the fall of suspended loads!

- 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.

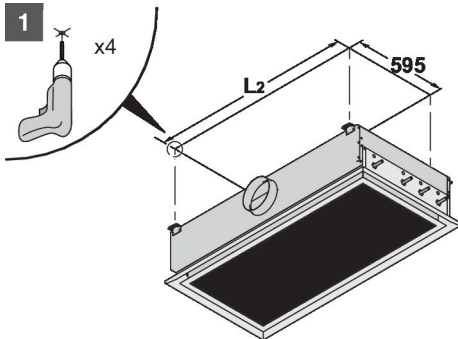


Fig. 9: Assembly step 1

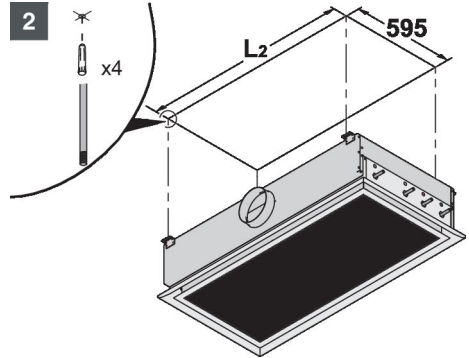


Fig. 10: Assembly step 2

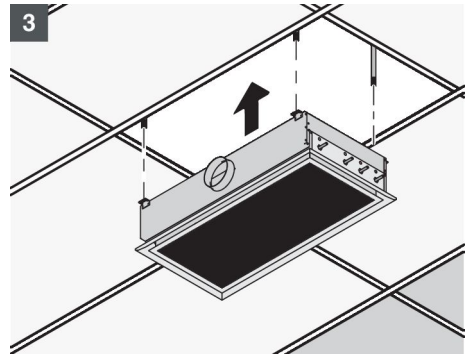


Fig. 11: Assembly step 3

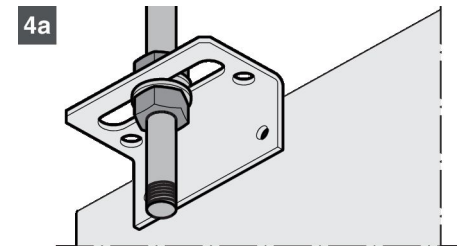


Fig. 12: Assembly step 4.1

4b

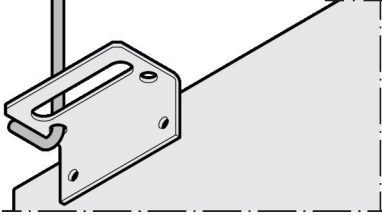
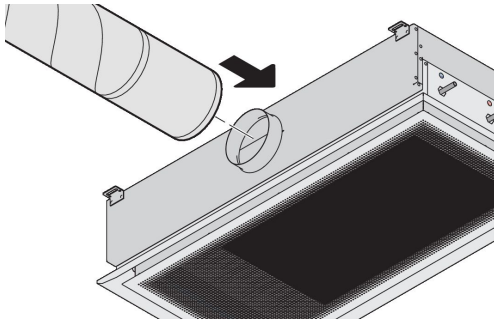


Fig. 13: Assembly step 4.2

Connecting the ductwork

Active chilled beams are fitted with a primary air (outdoor air) spigot.

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



Adjusting the nozzles

The DID614 is fitted with adjustable twin nozzles that allow for adapting the airflow velocity to changed operating conditions at a later stage, if required.



CAUTION!

Hot surfaces!

Danger of burn injuries when working on the hot water system!

Before working on the water-side connections, shut down the system and let it cool down.

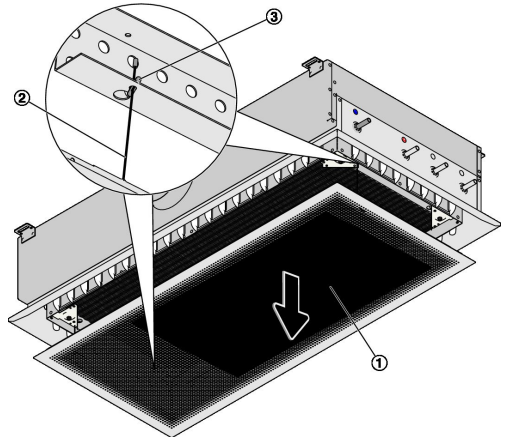


Fig. 14: Opening the induced air grille

- ▶ To open the induced air grille (Fig. 14/1), pull down the grille. To completely remove the grille, unhook the safety cables (Fig. 14/2) by pulling them down with the retaining plates (Fig. 14/3).

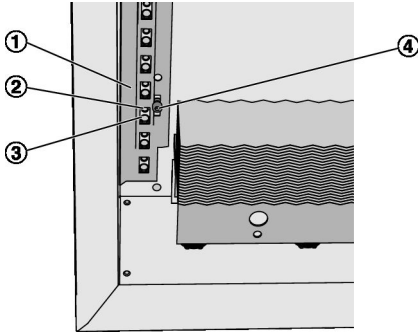


Fig. 15: DID614 nozzle adjustment

2. ▶ Loosen the Allen screws (SW4) (Fig. 14/4) of the flat adjustment bar (Fig. 14/1).
3. ▶ Slide the flat adjustment bar back or forth to open or close the nozzles, as required:
 - small nozzle open (Fig. 14/2) (DS)
 - large nozzle open (Fig. 14/3) (DB)
 - both nozzles open (DA, factory setting)
4. ▶ Manually tighten the Allen screws of the flat adjustment bar.
5. ▶ Fix the induced air grille.

Adjust the air control blades

The air discharge pattern can be changed by adjusting the optional air control blades in 15° increments up to 45° to the left or right.

Three air distribution patterns can be set.

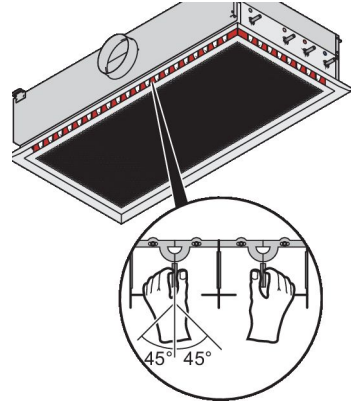


Fig. 16: Changing the air discharge pattern

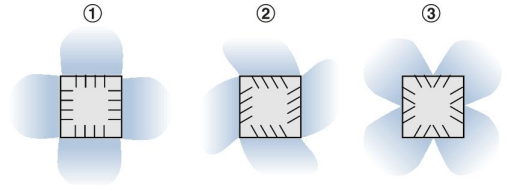


Fig. 17: Setting examples

- ① Straight air discharge
- ② Angled air discharge
- ③ Divergent air discharge

! NOTICE!

Incorrect handling will damage the air control blades!

To avoid any damage, always use both hands to adjust the air control blades.

Connecting heat exchanger

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 or 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

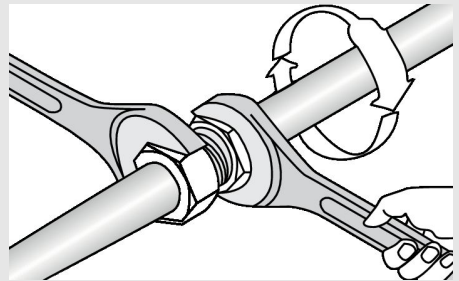
We recommend connecting with flexible hoses (accessories)

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!

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.

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

During cleaning, the following points must be observed

- Clean surfaces with a damp cloth
- Use only common household cleaners, do not use any aggressive cleaning agents
- Do not use cleaning agents that contain chlorine
- Do not use equipment for removing stubborn contamination, e.g., scrubbing sponges or scouring cream, as it may damage the surfaces.
- The cleaning intervals given in the VDI 6022 standard apply.

Cleaning the heat exchanger

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

1. ▶ Remove the induced air grille, ↪ *Chapter 6.1 'Ceiling installation' on page 9*

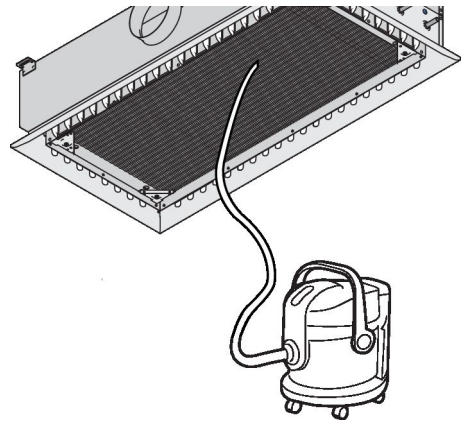


Fig. 18: Cleaning the heat exchanger

2. ▶ Carefully clean the heat exchanger with an industrial vacuum cleaner. Make sure that the blades are not bent. We recommend using a soft brush attachment for cleaning.
3. ▶ After cleaning, reattach the safety cables, and screw-fix and close the grille.

CAUTION!

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

Check that the induced air grille and safety cables are securely fixed!